WHAT IS CLAIMED IS:

1. A method of treating a patient having a folate receptor 1 (FOLR1)-mediated disease comprising:

(a) measuring the shed FOLR1 protein level in a sample taken from a patient; and

(b) administering to the patient a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity if the patient's shed FOLR1 protein level is elevated relative to a reference FOLR1 protein level;

wherein the active agent effectively treats the disease or disorder.

2. A method of treating a patient having a FOLR1-mediated disease or disorder comprising:

(a) administering to a patient having a FOLR1-mediated disease or disorder a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(b) measuring the patient'sshed FOLR1 protein level using an antibody or antigen-binding fragment thereof that does not competitively inhibit the binding of the active agent to FOLR1; and

(c) increasing the amount and/or frequency of subsequent fixed doses if the patient's shed FOLR1 protein level is elevated relative to a reference FOLR1 protein level;

wherein a decrease in shed FOLR1 levels of the patient is indicative of treatment efficacy.

3. A method of decreasing FOLR1 protein in a patient comprising:

(a) measuring the shed FOLR1 protein level in a sample taken from a patient having a FOLR1-mediated disease or disorder; and

(b) administering to the patient a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity if the patient's shed FOLR1 protein level is elevated relative to a reference FOLR1 protein level;

wherein the administration of the active agent decreases shed FOLR1 levels in the patient.

4. A method of decreasing FOLR1 protein in a patient comprising:

(a) administering to a patient having a FOLR1-mediated disease or disorder a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(b) measuring a patient's shed FOLR1 protein level using an antibody or antigen-binding fragment thereof that does not competitively inhibit the binding of the active agent to FOLR1; and

(c) increasing the amount and/or frequency of subsequent fixed doses if the patient's shed FOLR1 protein level is elevated relative to a reference FOLR1 protein level;

wherein the administration of the active agent decreases shed FOLR1 levels in the patient.

5. A method of monitoring therapeutic efficacy of a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity in a patient having a folate receptor 1 (FOLR1)-mediated disease comprising:

(a) measuring a first shed FOLR1 protein level in a patient having a FOLR1-mediated disease or disorder;

(b) administering to the patient a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(c) measuring a second shed FOLR1 protein level in the patient following active agent administration; and

(d) comparing the second shed FOLR1 protein level to the first shed FOLR1 protein level;

wherein the first and second shed FOLR1 levels are measured using an antibody or antigen-binding fragment that does not competitively inhibit the binding of the active agent to FOLR1; and

wherein a decrease between the first and second shed FOLR1 levels indicates therapeutic efficacy.

6. A method of treating a patient having a FOLR1-mediated disease or disorder comprising:

(a) administering to a patient having a FOLR1-mediated disease or disorder a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(b) submitting a sample taken from the patient for measurement of shed FOLR1 protein level;

(c) determining from the results of the measurement whether the patient's shed FOLR1 protein level is elevated relative a reference FOLR1 protein level; and,

(d) increasing the amount and/or frequency of subsequent fixed doses if the patient's shed FOLR1 protein level is elevated;

wherein the shed FOLR1 level is measured using an antibody that does not competitively inhibit the binding of the active agent to FOLR1.

7. A method of treating a patient having a FOLR1-mediated disease or disorder comprising:

(a) administering to a patient having a FOLR1-mediated disease or disorder a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(b) submitting a sample taken from the patient for measurement of a shed FOLR1 protein level and comparison to a reference FOLR1 protein level; and

(c) increasing the amount and/or frequency of subsequent fixed doses if the patient's shed FOLR1 protein level is elevated;

wherein a decrease in the shed FOLR1 levels of the patient is indicative of treatment efficacy.

8. A method of treating a patient having a FOLR1-mediated disease or disorder comprising:

(a) obtaining a sample from a patient having a FOLR1-mediated disease or disorder, where the patient has received a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(b) measuring a shed FOLR1 protein level from the sample using an antibody or antigen-binding fragment thereof that does not competitively inhibit the binding of the active agent to FOLR1;

(c) determining whether the patient's shed FOLR1 protein level is elevated relative to a reference FOLR1 protein level;

(d) increasing or instructing a healthcare provider to increase the amount and/or frequency of subsequent fixed doses if the patient's shed FOLR1 protein level is elevated;

wherein a decrease in the shed FOLR1 protein level of the patient is indicative of treatment efficacy.

9. A method of treating a patient having a FOLR1-mediated disease comprising:

(a) measuring the FOLR1 protein level on circulating tumor cells taken from a patient; and

(b) administering to the patient a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity if the FOLR1 protein level on the patient's circulating tumor cells is elevated relative to a reference FOLR1 protein level;

wherein the active agent effectively treats the disease or disorder.

10. A method of treating a patient having a FOLR1-mediated disease or disorder comprising:

(a) administering to a patient having a FOLR1-mediated disease or disorder a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(b) measuring a patient's FOLR1 protein level on circulating tumor cells using an antibody or antigen-binding fragment thereof that does not competitively inhibit the binding of the active agent to FOLR1; and

(c) increasing the amount and/or frequency of subsequent fixed doses if the FOLR1 protein level on the patient's circulating tumor cells is elevated relative to a reference FOLR1 protein level;

wherein a decrease in FOLR1 levels on the patient's circulating tumor cells is indicative of treatment efficacy.

11. A method of decreasing FOLR1 protein in a patient comprising:

(a) measuring the FOLR1 protein level on circulating tumor cells taken from a patient having a FOLR1-mediated disease or disorder using an antibody or antigen-binding fragment thereof; and

(b) administering to the patient a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity if the FOLR1 protein level on the patient's circulating tumor cells is elevated relative to a reference FOLR1 protein level;

wherein the administration of the active agent decreases FOLR1 levels in the patient.

12. A method of decreasing FOLR1 protein in a patient having a FOLR1-mediated disease or disorder comprising:

(a) administering to a patient having a FOLR1-mediated disease or disorder a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(b) measuring a patient's FOLR1 protein level on circulating tumor cells using an antibody or antigen-binding fragment thereof that does not competitively inhibit the binding of the active agent to FOLR1; and

(c) increasing the amount or frequency of subsequent fixed doses if the FOLR1 protein level on the patient's circulating tumor cells is elevated relative to a reference FOLR1 protein level;

wherein the administration of the active agent decreases FOLR1 levels in the patient.

13. A method of monitoring therapeutic efficacy of a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity in a patient comprising:

(a) measuring a first FOLR1 protein level in a patient's circulating tumor cells taken from a patient having a FOLR1-mediated disease or disorder;

(b) administering to the patient a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(c) measuring a second FOLR1 protein level in a patient's circulating tumor cells taken from the patient following active agent administration; and

(d) comparing the second FOLR1 protein level to the first FOLR1 protein level;

wherein the first and second FOLR1 levels are measured using an antibody or antigen-binding fragment that dose not competitively inhibit the binding of the active agent to FOLR1; and

wherein a decrease between the first and second FOLR1 levels indicates therapeutic efficacy.

14. A method of treating a patient having a FOLR1-mediated disease or disorder comprising:

(a) administering to a patient having a FOLR1-mediated disease or disorder a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(b) submitting a sample of circulating tumor cells taken from the patient for measurement of FOLR1 protein level;

(c) determining from the results of the measurement whether the FOLR1 protein level on the patient's circulating tumor cells is elevated relative to a reference FOLR1 protein level; and,

(d) increasing the amount and/or frequency of subsequent fixed doses if the FOLR1 protein level on the patient's circulating tumor cells is elevated relative to the reference FOLR1 protein level;

wherein the FOLR1 level is measured using an antibody that does not competitively inhibit the binding of the active agent to FOLR1.

15. A method of treating a patient having a FOLR1-mediated disease or disorder comprising:

(a) administering to a patient having a FOLR1-mediated disease or disorder a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(b) submitting a sample of circulating tumor cells taken from the patient for measurement of shed FOLR1 protein level and comparison to a reference FOLR1 protein level; and

(c) increasing the amount and/or frequency of subsequent fixed doses if the FOLR1 protein level on the patient's circulating tumor cells is elevated compared to the reference FOLR1 protein level;

wherein a decrease in the FOLR1 protein levels on the patient's circulating tumor cells is indicative of treatment efficacy.

16. A method of treating a patient having a FOLR1-mediated disease or disorder comprising:

(a) obtaining a sample of circulating tumor cells from a patient having a FOLR1-mediated disease or disorder, where the patient has received a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity;

(b) measuring a FOLR1 protein level from the sample using an antibody or antigen-binding fragment thereof that does not competitively inhibit the binding of the active agent to FOLR1;

(c) determining whether the FOLR1 protein level on the patient's circulating tumor cells is elevated relative to a reference FOLR1 protein level;

(d) increasing or instructing a healthcare provider to increase the amount or frequency of subsequent fixed doses if the FOLR1 protein level on the patient's circulating tumor cells is elevated relative to the reference FOLR1 protein level;

wherein a decrease in the FOLR1 protein level on the patient's circulating tumor cells is indicative of treatment efficacy.17. The method of claim 1 or 3, wherein the shed FOLR1 is measured using an antibody that does not competitively inhibit binding of the active agent to FOLR1.

18. The method of claim 9 or 11, wherein the FOLR1 on circulating tumor cells is measured using an antibody that does not competitively inhibit binding of the active agent to FOLR1.

19. The method of any one of claims 2, 4, 5, 10, 12, or 13, wherein the patient's shed FOLR1 protein level or the patient's FOLR1 level of circulating tumor cells is detected in a sample or sample obtained from the patient.

20. The method of any one of claims 1, 3, 6-9, 11, or 14-19, wherein the measured FOLR1 protein level is measured in a bodily fluid and/or wherein the sample is a bodily fluid sample.

21. The method of claim 20, wherein said bodily fluid is ascites fluid.

22. The method of claim 20, wherein said bodily fluid is serum, blood, or plasma.

23. The method of any of claims 1, 3, 6-9, 11, or 14-19, wherein the measured FOLR1 protein level is measured in a peripheral blood sample and/or wherein the sample is a peripheral blood sample.

24. The method of any of claims 1-23, wherein said patient has cancer.

25. The method of any one of claims 1-23, wherein said FOLR1-mediated disease or disorder is cancer.

26. The method of claim 24 or 25, wherein said cancer is a FOLR1 elevated cancer selected from the group consisting of: ovarian, non-small cell lung cancer, uterine, endometrial, pancreatic, renal, lung, and breast cancer.

27. The method of claim 26, wherein said ovarian cancer is platinum resistant or platinum refractory.

28. The method of claim 26, wherein said lung cancer is non-small cell lung cancer (NSCLC).

29. The method of claim 26, wherein said cancer is endometrial cancer.

30. The method of any of claims 2, 4-8, 10, or 12-29, wherein said antibody or antigen-binding fragment thereof used to measure FOLR1 protein level is a murine, chimeric, humanized, resurfaced, or human antibody or antigen-binding fragment thereof.

31. The method of any one of claims 2, 4-8, 10, or 12-30, wherein said antibody or antigen-binding fragment thereof used to measure FOLR1 protein level binds to a human folate receptor 1 with a Kd of about 1.0 nM to about 10 nM.

32. The method of any one of claims 2, 4-8, 10, or 12-30, wherein said antibody or antigen-binding fragment thereof used to measure FOLR1 protein level binds to a human folate receptor 1 with a Kd of about 0.5 nM to about 5 nM.

33. The method of claim 31 or 32, wherein the binding affinity is measured by cytometry, surface plasmon resonance spectroscopy, ELISA, or radioimmunoassay.

34. The method of claim 33, wherein the cytometry is flow cytometry.

35. The method of any one of claims 2, 4-8, 10, or 12-34, wherein said antibody or antigen-binding fragment thereof used to measure FOLR1 protein level does not bind folate receptor 2 or folate receptor 3.

36. The method of any one of claims 1-8, 16, or 18-35, wherein said measured FOLR1 protein level is measured using two different anti-FOLR1 antibodies or antigen-binding fragments thereof.

37. The method of any one of claims 2, 4-8, 10, or 12-36, wherein at least one antibody or antigen-binding fragment thereof used to measure FOLR1 protein level is bound to a solid support.

38. The method of claim 37, wherein the solid support is a microtiter plate.

39. The method of any one of claims 2, 4-8, 10, or 12-38, wherein at least one antibody or antigen-binding fragment thereof used to measure FOLR1 protein level comprises a detection agent.

40. The method of claim 39, wherein the detection agent is a chromogenic detection agent, a fluorogenic detection agent, an immunofluorescent detection agent, an enzymatic detection agent, or an electrochemiluminescent detection agent.

41. The method of claim 39 or 40, wherein the detection agent is horseradish peroxidase (HRP).

42. The method of any of claims 1-41, wherein the FOLR1 protein levels are determined using an enzyme linked immunosorbent assay (ELISA).

43. The method of claim 42, wherein said ELISA is a sandwich ELISA.

44. The method of any of claims 2, 4-8, 10, or 12-43, wherein at least one antibody or antigen-binding fragment thereof used to measure FOLR1 protein specifically binds to the same FOLR1 epitope as an antibody selected from the group consisting of:

(a) an antibody comprising the polypeptide of SEQ ID NO:25 and the polypeptide of SEQ ID NO:29;

(b) an antibody comprising the polypeptide of SEQ ID NO:26 and the polypeptide of SEQ ID NO:30;

(c) an antibody comprising the polypeptide of SEQ ID NO:27 and the polypeptide of SEQ ID NO:31; and

(d) an antibody comprising the polypeptide of SEQ ID NO:28 and the polypeptide of SEQ ID NO:32.

45. The method of any of claims 2, 4-8, 10, or 12-44, wherein at least one antibody or antigen-binding fragment thereof used to measure FOLR1 protein competitively inhibits FOLR1 binding of an antibody selected from the group consisting of:

(a) an antibody comprising the polypeptide of SEQ ID NO:25 and the polypeptide of SEQ ID NO:29;

(b) an antibody comprising the polypeptide of SEQ ID NO:26 and the polypeptide of SEQ ID NO:30;

(c) an antibody comprising the polypeptide of SEQ ID NO:27 and the polypeptide of SEQ ID NO:31; and

(d) an antibody comprising the polypeptide of SEQ ID NO:28 and the polypeptide of SEQ ID NO:32.

46. The method of any of claims 2, 4-8, 10, or 12-45, wherein at least one antibody or antigen-binding fragment thereof used to measure FOLR1 protein comprises amino acid sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21;

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24; and

(e) variants of (a) to (d) comprising 1, 2, 3, or 4 conservative amino acid substitutions.

47. The method of any of claims 1-46, wherein the active agent comprises the FOLR1 antibody huMov19.

48. The method of claim 47, wherein the huMov19 antibody or an antigen-binding fragment thereof is conjugated to a cytotoxic agent.

49. The method of claim 48, wherein the huMov19 antibody or an antigen-binding fragment thereof is administered as an antibody maytansinoid conjugate further comprising the maytansinoid DM4 and the cleavable sulfo-SPDB linker (IMGN853).

50. An antibody or antigen-binding fragment thereof that specifically binds to the same FOLR1 epitope as an antibody selected from the group consisting of:

(a) an antibody comprising the polypeptide of SEQ ID NO:25 and the polypeptide of SEQ ID NO:29;

(b) an antibody comprising the polypeptide of SEQ ID NO:26 and the polypeptide of SEQ ID NO:30;

(c) an antibody comprising the polypeptide of SEQ ID NO:27 and the polypeptide of SEQ ID NO:31; and

(d) an antibody comprising the polypeptide of SEQ ID NO:28 and the polypeptide of SEQ ID NO:32.

51. An antibody or antigen-binding fragment thereof that specifically binds to FOLR1, wherein said antibody or antigen-binding fragment thereof competitively inhibits binding to FOLR1 of an antibody selected from the group consisting of:

(a) an antibody comprising the polypeptide of SEQ ID NO:25 and the polypeptide of SEQ ID NO:29;

(b) an antibody comprising the polypeptide of SEQ ID NO:26 and the polypeptide of SEQ ID NO:30;

(c) an antibody comprising the polypeptide of SEQ ID NO:27 and the polypeptide of SEQ ID NO:31; and

(d) an antibody comprising the polypeptide of SEQ ID NO:28 and the polypeptide of SEQ ID NO:32.

52. An antibody or antigen-binding fragment thereof that specifically binds to FOLR1, wherein said antibody or antigen-binding fragment thereof comprises amino acid sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21;

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24; and

(e) variants of (a) to (d) comprising 1, 2, 3, or 4 conservative amino acid substitutions.

53. The antibody or antigen-binding fragment thereof of claim 52, wherein the antibody or antigen-binding fragment thereof comprises at least two amino acid sequences that each are at least 90% identical to one of the two amino acid sequences selected from the group consisting of:

(a) SEQ ID NO:25 and SEQ ID NO:29;

(b) SEQ ID NO:26 and SEQ ID NO:30;

(c) SEQ ID NO:27 and SEQ ID NO:31; and

(d) SEQ ID NO:28 and SEQ ID NO:32.

54. The antibody or antigen-binding fragment thereof of claim 53, wherein the amino acid sequences each are at least 95% identical to one of the two amino acid sequences selected from the group consisting of:

(a) SEQ ID NO:25 and SEQ ID NO:29;

(b) SEQ ID NO:26 and SEQ ID NO:30;

(c) SEQ ID NO:27 and SEQ ID NO:31; and

(d) SEQ ID NO:28 and SEQ ID NO:32.

55. The antibody or antigen-binding fragment thereof of claim 54, wherein the amino acid sequences each are at least 99% identical to one of the two amino acid sequences selected from the group consisting of:

(a) SEQ ID NO:25 and SEQ ID NO:29;

(b) SEQ ID NO:26 and SEQ ID NO:30;

(c) SEQ ID NO:27 and SEQ ID NO:31; and

(d) SEQ ID NO:28 and SEQ ID NO:32.

56. The antibody or antigen-binding fragment thereof of claim 55, wherein the amino acid sequences are selected from the group consisting of:

(a) SEQ ID NO:25 and SEQ ID NO:29;

(b) SEQ ID NO:26 and SEQ ID NO:30;

(c) SEQ ID NO:27 and SEQ ID NO:31; and

(d) SEQ ID NO:28 and SEQ ID NO:32.

57. The antibody or antigen-binding fragment thereof of any of claims 50-56, wherein said antibody or antigen-binding fragment thereof is murine, non-human, humanized, chimeric, resurfaced, or human.

58. The antibody or antigen-binding fragment thereof of any of claims 50-57, wherein said antibody binds to human FOLR1 but not FOLR2 or FOLR3.

59. The antibody or antigen-binding fragment thereof of any of claims 50-58, which is a full length antibody.

60. The antibody or antigen-binding fragment thereof of any of claims 50-59, which is an antigen-binding fragment.

61. The antibody or antigen-binding fragment thereof of claim 60, wherein said antibody or antigen-binding fragment thereof comprises a Fab, Fab', F(ab')2, Fd, single chain Fv or scFv, disulfide linked Fv, V-NAR domain, IgNar, intrabody, IgGΔCH2, minibody, F(ab')3,

tetrabody, triabody, diabody, single-domain antibody, DVD-Ig, Fcab, mAb2, (scFv)2, or scFv-Fc.

62. The antibody or antigen-binding fragment thereof of claim 61, wherein said antibody or antigen-binding fragment thereof is a Fab, Fab', F(ab')2, Fd, single chain Fv or scFv, disulfide linked Fv, V-NAR domain, IgNar, intrabody, IgGΔCH2, minibody, F(ab')3, tetrabody, triabody, diabody, single-domain antibody, DVD-Ig, Fcab, mAb2, (scFv)2, or scFv-F

63. A polypeptide that specifically binds FOLR1, wherein said polypeptide comprises the sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21;

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24; and

(e) variants of (a) to (d) comprising 1, 2, 3, or 4 conservative amino acid substitutions.

64. The polypeptide of claim 63, wherein said polypeptide comprises at least two sequences that are each at least 90% identical to one of the two sequences selected from the group consisting of :

(a) SEQ ID NO:25 and SEQ ID NO:29;

(b) SEQ ID NO:26 and SEQ ID NO:30;

(c) SEQ ID NO:27 and SEQ ID NO:31; and

(d) SEQ ID NO:28 and SEQ ID NO:32.

65. The polypeptide of claim 64, wherein the sequences are each at least 95% identical to one of the two sequences selected from the group consisting of:

(a) SEQ ID NO:25 and SEQ ID NO:29;

(b) SEQ ID NO:26 and SEQ ID NO:30;

(c) SEQ ID NO:27 and SEQ ID NO:31; and

(d) SEQ ID NO:28 and SEQ ID NO:32.

66. The polypeptide of claim 65, wherein the sequences are each at least 99% identical to one of the two sequences selected from the group consisting of :

(a) SEQ ID NO:25 and SEQ ID NO:29;

(b) SEQ ID NO:26 and SEQ ID NO:30;

(c) SEQ ID NO:27 and SEQ ID NO:31; and

(d) SEQ ID NO:28 and SEQ ID NO:32.

67. The polypeptide of claim 66, wherein the sequences are selected from the group consisting of:

(a) SEQ ID NO:25 and SEQ ID NO:29;

(b) SEQ ID NO:26 and SEQ ID NO:30;

(c) SEQ ID NO:27 and SEQ ID NO:31; and

(d) SEQ ID NO:28 and SEQ ID NO:32.

68. The antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-67, wherein the antibody, antigen-binding fragment thereof, or polypeptide is recombinantly produced.

69. The antibody, antigen-binding fragment thereof, or polypeptide of any of claim 50-68, which binds to a human FOLR1 with a Kd of about 1.0 nM to about 10 nM.

70. The antibody, antigen-binding fragment thereof, or polypeptide of any of claims 50-68, which binds to a human FOLR1 with a Kd of about 1.0 nM or better.

71. The antibody, antigen-binding fragment thereof, or polypeptide of claim 69 or 70, wherein the binding affinity is measured by cytometry, surface plasmon resonance spectroscopy, ELISA, or radioimmunoassay.

72. The antibody, antigen-binding fragment thereof, or polypeptide of claim 71, wherein the cytometry is flow cytometry.

73. A nucleic acid molecule encoding the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-72.

74. A vector comprising the nucleic acid molecule of claim 73.

75. The vector of claim 74, wherein said vector further comprises a promoter binding site and optionally an enhancer sequence.

76. The vector of claim 74 or 75, wherein said vector is a plasmid, a virus, a phage, a bacterium or a viroid.

77. A method of detecting FOLR1 protein in a sample comprising contacting said sample with the antibody, antigen-binding fragment thereof, or polypeptide of any of claims 50-71.

78. The method of claim 77, wherein said antibody, antigen-binding fragment thereof, or polypeptide is detectably labeled.

79. The method of claim 78, wherein said label is selected from the group consisting of immunofluorescent label, chemiluminescent label, phosphorescent label, enzyme label, radiolabel, avidin/biotin, colloidal gold particles, colored particles and magnetic particles.

80. The method of any of claims 77-79, wherein FOLR1 protein is detected by radioimmunoassay, Western blot assay, immunofluorescent assay, enzyme immunoassay, immunoprecipitation assay, chemiluminescent assay, cytometry, or immunohistochemical assay.

81. The method of claim 80, wherein the cytometry is flow cytometry.

82. The method of any of claims 77-81, wherein said sample is a bodily fluid, cell, or tissue sample.

83. The method of claim 82, wherein said cell is a circulating tumor cell.

84. The method of claim 82, wherein said bodily fluid is blood, plasma, or serum.

85. The method of any one of claims 77-82 or 84, wherein said FOLR1 protein is shed FOLR1 protein.

86. The method of any of claims 77-84, wherein FOLR1 protein is detected on circulating tumor cells in said sample.

87. A cell producing the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71.

88. The cell of claim 87, wherein said cell is an isolated cell.

89. The cell of claim 87 or 88, wherein said cell comprises the nucleic acid of claim 66 and/or the vector of any of claims 74-76.

90. The cell of any of claims 87-89, wherein said cell is a bacterial cell or a eukaryotic cell.

91. A method of making the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, comprising (a) culturing the cell of any one of claims 87-89; and (b) isolating said antibody, antigen-binding fragment thereof, or polypeptide from said cultured cell.

92. An immunoassay kit for detecting shed FOLR1 protein in a sample, the kit comprising: (a) first reagent, wherein the first reagent is an antibody or antigen-binding fragment thereof or polypeptide specifically binding to human FOLR1, wherein said antibody or antigen-binding fragment thereof does not competitively inhibit the binding of huMov19 to FOLR1, and (b) a second reagent, wherein the second reagent is a detection reagent.

93. The kit of claim 92, wherein the first reagent is a capture reagent, and wherein the kit further comprises a solid support for the capture reagent.

94. The kit of claim 93, wherein the capture reagent is immobilized on the solid support.

95. The kit of any one of claim 93 or 94, wherein the capture reagent is coated on a microtiter plate.

96. The kit of any one of claims 92-95, wherein the kit further comprises a detection reagent which is a second, different antibody or antigen-binding fragment thereof or polypeptide specifically binding to human FOLR1.

97. The kit of any one of claims 92-96, wherein the first reagent and/or the second reagent comprises amino acid sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21;

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24; and

(e) variants of (a) to (d) comprising 1, 2, 3, or 4 conservative amino acid substitutions.

98. The kit of any one of claims 92-97, wherein said second reagent is detected using a species specific antibody.

99. The kit of any one of claims 92-98, further comprising a detection means for the detectable reagent.

100. The kit of claim 99, wherein the detection means is colorimetric.

101. The kit of any of claims 92-100, further comprising a FOLR1 polypeptide as an antigen standard.

102. The kit of claim 101, wherein said FOLR1 polypeptide is FOLR1-Fc.

103. An active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity for use in a method for treating cancer, wherein increased expression of FOLR1 protein has been measured in a cancerous sample from the subject using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78 or 79 prior to administration of the active agent.

104. An active agent comprising an antibody or antigen-binding fragment thereof thereof that modulates FOLR1 activity for use in a method for treating a FOLR1-mediated disease or disorder, comprising:

(a) measuring the FOLR1 protein level in a patient sample using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78, or 79; and

(b) administering to the patient a fixed dose of the active agent if the patient's FOLR1 protein level is elevated relative to a reference FOLR1 protein level.

105. An active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity for use in a method for treating a FOLR1-mediated disease or disorder, comprising:

(a) administering to a patient having a FOLR1-mediated disease or disorder a fixed dose of the active agent;

(b) measuring the patient's FOLR1 protein level using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78, or 79; and

(c) increasing the amount or frequency of subsequent fixed doses if the patient's FOLR1 protein level is elevated relative to a reference FOLR1 protein level.

106. An active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity for use in a method for treating a FOLR1-mediated disease or disorder, wherein

(a) the FOLR1 protein level measured in a sample taken from a patient is compared a reference FOLR1 protein level using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78, or 79; and

(b) a fixed dose of the active agent is administered if the patient's FOLR1 protein level is elevated relative to the reference FOLR1 protein level,

wherein the administration of the active agent decreases the FOLR1 protein level.

107. An active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity for use in a method for treating a FOLR1-mediated disease or disorder, wherein FOLR1-expressing cells in a patient are decreased, wherein

(a) a fixed dose of the active agent is administered to the patient;

(b) the FOLR1 protein level measured in a sample obtained from the patient is compared to a reference FOLR1 protein level using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78, or 79; and

(c) the amount or frequency of subsequent fixed doses is increased if the patient's FOLR1 protein level is elevated relative to the reference FOLR1 protein level;

wherein the administration of the active agent decreases the FOLR1 protein level.

108. An active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity for use in a method for monitoring the therapeutic efficacy of a fixed dose of the active agent in a patient comprising:

(a) measuring a first FOLR1 protein level in a sample from a patient having a FOLR1-mediated disease or disorder using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78, or 79;

(b) administering to the patient a fixed dose of the active agent;

(c) measuring a second FOLR1 protein level in a sample taken from the patient following active agent administration using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78 or 79; and

(d) comparing the second FOLR1 protein level to the first FOLR1 protein level;

wherein a decrease between the first and second FOLR1 protein levels indicates therapeutic efficacy.

109. An active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity for use in a method for treating a FOLR1-mediated disease or disorder in a patient, comprising:

(a) administering a fixed dose of the active agent to a patient having a FOLR1-mediated disease or disorder;

(b) submitting a sample taken from the patient for measurement of a FOLR1 protein level using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78, or 79;

(c) determining from the results of the measurement whether the patient's FOLR1 protein level is elevated relative to a reference FOLR1 protein level; and,

(d) increasing the amount and/or frequency of subsequent fixed doses if the patient's FOLR1 protein level is elevated relative to the reference FOLR1 protein level.

110. An active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity for use in a method for treating a FOLR1-mediated disease or disorder, comprising:

(a) administering a fixed dose of the active agent to a patient having a FOLR1-mediated disease or disorder;

(b) submitting a sample taken from the patient for measurement of a FOLR1 protein level using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78, or 79 and comparison of the measured FOLR1 protein level to a reference FOLR1 protein level; and

(c) increasing the amount or frequency of subsequent fixed doses if the patient's FOLR1 protein level is elevated relative to the reference FOLR1 protein level;

wherein a decrease in the FOLR1 levels of the patient is indicative of treatment efficacy.

111. An active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity for use in a method for treating a FOLR1-mediated disease or disorder, comprising:

(a) obtaining a sample from a patient having a FOLR1-mediated disease or disorder, where the patient has received a fixed dose of the active agent;

(b) measuring a FOLR1 protein level from the sample using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71;

(c) determining whether the patient's FOLR1 protein level is elevated relative to a a reference FOLR1 protein level;

(d) increasing or instructing a healthcare provider to increase the amount and/or frequency of subsequent fixed doses if the patient's FOLR1 protein level is elevated relative to the reference FOLR1 protein level;

wherein a decrease in the FOLR1 of the patient is indicative of treatment efficacy.112. An active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity for use in a method for treating a FOLR1-mediated disease or disorder wherein increased expression of FOLR1 has been measured in a sample from the subject using the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71 and 78 to 79 prior to administration of the active agent.

113. The active agent for use of any one of claims 103-112, wherein the measured FOLR1 protein is shed FOLR1.

114. The active agent for use of any one of claims 103-112, wherein the measured FOLR1 protein is on a circulating tumor cell.

115. The active agent for use of any one of claims 103-114, wherein the FOLR1 protein level is measured in a bodily fluid.

116. The active agent for use of claim 115, wherein said bodily fluid is ascites fluid.

117. The active agent for use of claim 115, wherein said bodily fluid is serum, blood, or plasma.

118. The active agent for use of any of claims 103-114, wherein the FOLR1 protein level is measured in a peripheral blood sample.

119. The active agent for use of any one of claims 104-118, wherein said patient has cancer.

120. The active agent for use of any one of claims 104-118, wherein the FOLR1-mediated disease or disorder is cancer.

121. The active agent for use of claim 103, 119, or 120 wherein said cancer is a FOLR1 elevated cancer selected from the group consisting of: ovarian, non-small cell lung cancer, uterine, endometrial, pancreatic, renal, lung, and breast cancer.

122. The active agent for use of claim 121, wherein said ovarian cancer is platinum resistant or platinum refractory.

123. The active agent for use of claim 121, wherein said lung cancer is non-small cell lung cancer (NSCLC).

124. The active agent for use of claim 121, wherein said cancer is endometrial cancer.

125. The active agent for use of any one of claims 103-124, wherein the FOLR1 protein level is measured using two different antibodies or antigen-binding fragments thereof or polypeptides specifically binding FOLR1.

126. The active agent for use of any one of claims 104-125 wherein said antibody, antigen-binding fragment thereof, or polypeptide used to detect FOLR1 protein is bound to a solid support.

127. The active agent for use of claim 126, wherein said solid support is a microtiter plate.

128. The active agent for use of any one of claims 104-127, wherein said antibody, antigen-binding fragment thereof, or polypeptide used to detect FOLR1 protein comprises a detection agent.

129. The active agent for use of claim 128, wherein the detection agent is a chromogenic detection agent, a fluorogenic detection agent, an enzymatic detection agent, or an electrochemiluminescent detection agent.

130. The active agent for use of claim 128 or 129, wherein the detection agent is horseradish peroxidase (HRP).

131. The active agent for use of any one of claims 103-130, wherein the FOLR1 protein levels are determined using an enzyme linked immunosorbent assay (ELISA).

132. The active agent for use of claim 131, wherein said ELISA is a sandwich ELISA.

133. The active agent for use of any one of claims 103-132, wherein the active agent comprises the FOLR1 antibody huMov19.

134. The active agent for use of claim 133, wherein the huMov19 is conjugated to a cytotoxic agent.

135. The active agent for use of claim 134, wherein the huMov19 is administered as an antibody maytansinoid conjugate further comprising the maytansinoid DM4 and the cleavable sulfo-SPDB linker (IMGN853).

136. The antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78, or 79 for use as a diagnostic.

137. (a) An antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71 and 78 to 79, or

(b) An antibody or antigen-binding-fragment thereof that does not competitively inhibit the binding to FOLR1 of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity,

for use in the treatment of a FOLR1-mediated disease or disorder with an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity

and/or for monitoring therapeutic efficacy of a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity.

138. An antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71 and 78 to 79 for use in a method of diagnosing

(i) a FOLR1-mediated disease or disorder and/or

(ii) the response to the treatment of a FOLR1-mediated disease or disorder with a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity and/or

(iii) the therapeutic efficacy of a treatment with a fixed dose of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity.

139. The antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71, 78, or 79 for use in a method for diagnosing cancer in a patient suffering therefrom.

140. The antibody, antigen-binding fragment thereof, or polypeptide for use of claim 139, wherein the cancer is associated with elevated levels of FOLR1.

141. The antibody, antigen-binding fragment thereof, or polypeptide for use of any of claims 136 to 140, wherein said antibody, antigen-binding fragment thereof, or polypeptide comprises a detection agent.

142. The antibody, antigen-binding fragment thereof, or polypeptide for use of claim 141, wherein the detection agent is a chromogenic detection agent, a fluorogenic detection agent, an enzymatic detection agent, or an electrochemiluminescent detection agent.

143. The method of any one of claims 2, 4-8, or 17,

wherein the FOLR-1 mediated disease is cancer,

wherein the active agent comprises IMGN853, and

wherein the shed FOLR1 protein level is measured using an ELISA assay using at least two anti-FOLR1 antibodies that do not competitively inhibit the binding of the active agent to FOLR1, wherein each of the at least two anti-FOLR1 comprise amino acid sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21; and

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24.

144. The method of any one of claims 10, 12-16, or 18,

wherein the FOLR-1 mediated disease is cancer,

wherein the active agent comprises IMGN853,

wherein the anti-FOLR1 antibody that does not competitively inhibit the binding of the active agent to FOLR1 comprises the amino acid sequences

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21; or

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24; and

wherein the FOLR1 protein is detected by cytometry.

145. The method of claim 143 or 144, wherein the cancer is ovarian cancer.

146. The method of claim 145, wherein the ovarian cancer is platinum resistant or platinum refractory.

147. The method of claim 143 or 144, wherein the cancer is NSCLC.

148. The method of claim 143 or 144, wherein the cancer is endometrial cancer.

149. The active agent of any one of claims 104-112,

wherein the FOLR-1 mediated disease is cancer,

wherein the active agent comprises IMGN853, and

wherein the shed FOLR1 protein level is measured using an ELISA assay using at least two anti-FOLR1 antibodies that do not competitively inhibit the binding of the active agent to FOLR1, wherein each of the at least two anti-FOLR1 comprise amino acid sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21; and

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24.

150. The active agent of any one of claims 104-112,

wherein the FOLR-1 mediated disease is cancer,

wherein the active agent comprises IMGN853, and

wherein the shed FOLR1 protein level is measured using an ELISA assay using at least two anti-FOLR1 antibodies that do not competitively inhibit the binding of the active agent to FOLR1, wherein each of the at least two anti-FOLR1 comprise amino acid sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21; and

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24.

151. The active agent for use of claim 149 or 150, wherein the cancer is ovarian cancer.

152. The active agent for use of claim 151, wherein the ovarian cancer is platinum resistant or platinum refractory.

153. The active agent for use of claim 149 or 150, wherein the cancer is NSCLC.

154. The active agent for use of claim 149 or 150, wherein the cancer is endometrial cancer.

155. A method of treating cancer comprising administering an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity to a patient with elevated shed FOLR1 protein levels relative to a reference FOLR1 protein level, wherein the patient's FOLR1 protein levels were measured using the antibody, antigen-binding fragment, or polypeptide of any one of claims 50-71.

156. A method of treating cancer comprising administering an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity to a patient with elevated FOLR1 protein levels on circulating tumor cells relative to a reference FOLR1 protein level, wherein the patient's FOLR1 protein levels were measured using the antibody, antigen-binding fragment, or polypeptide of any one of claims 50-71.

157. The method of claim 155 or 156, wherein the active agent comprises IMGN853

158. The method of any one of claims 155-157, wherein the cancer is ovarian cancer.

159. The method of claim 158, wherein the ovarian cancer is platinum resistant or platinum refractory.

160. The method of any one of claims 155-157, wherein the cancer is NSCLC.

161. The method of any one of claims 155-157, wherein the cancer is endometrial cancer.

162. Use of an antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 50-71 and 78 to 79 for the measurement of FOLR1 protein level in a sample *in vitro*.

AMENDED CLAIMS
received by the International Bureau on 11 March 2014 (11.03.2014).

WHAT IS CLAIMED IS:

1. An antibody or antigen-binding fragment thereof that specifically binds to the same FOLR1 epitope as, or competitively inhibits the binding to FOLR1 of, an antibody selected from the group consisting of:

(a) an antibody comprising the polypeptide of SEQ ID NO:25 and the polypeptide of SEQ ID NO:29;

(b) an antibody comprising the polypeptide of SEQ ID NO:26 and the polypeptide of SEQ ID NO:30;

(c) an antibody comprising the polypeptide of SEQ ID NO:27 and the polypeptide of SEQ ID NO:31; and

(d) an antibody comprising the polypeptide of SEQ ID NO:28 and the polypeptide of SEQ ID NO:32.

2. The antibody or antigen-binding fragment of claim 1, wherein said antibody or antigen-binding fragment thereof comprises amino acid sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21;

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24; and

(e) variants of (a) to (d) comprising 1, 2, 3, or 4 conservative amino acid substitutions.

3. The antibody or antigen-binding fragment thereof of claim 1 or 2, wherein said antibody or antigen-binding fragment thereof comprises amino acid sequences selected from the group consisting of:

(a) SEQ ID NO:25 and SEQ ID NO:29;

(b) SEQ ID NO:26 and SEQ ID NO:30;

(c) SEQ ID NO:27 and SEQ ID NO:31; and

(d) SEQ ID NO:28 and SEQ ID NO:32.

4. The antibody or antigen-binding fragment thereof of any one of claims 1-3, wherein said antibody or antigen-binding fragment thereof is murine, non-human, humanized, chimeric, resurfaced, or human.

5. A polypeptide that specifically binds FOLR1, wherein said polypeptide comprises the sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21;

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24; and

(e) variants of (a) to (d) comprising 1, 2, 3, or 4 conservative amino acid substitutions.

6. A nucleic acid molecule encoding the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 1-5.

7. A method of detecting FOLR1 protein in a sample comprising contacting said sample with the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 1-5.

8. The method of claim 7, wherein the FOLR1 protein is detected by radioimmunoassay, Western blot assay, immunofluorescent assay, enzyme immunoassay, immunoprecipitation assay, chemiluminescent assay, cytometry, or immunohistochemical assay.

9. The method of claim 8, wherein the cytometry is flow cytometry.

10. The method of claim 7 or 8, wherein said FOLR1 protein is shed FOLR1 protein.

11. The method of claim 7 or 8, wherein said FOLR1 protein is detected on circulating tumor cells in said sample.

12. The method of claim 8, wherein the enzyme immunoassay is enzyme linked immunosorbent assay (ELISA).

13. The method of claim 8, wherein the FOLR1 protein is detected by immunohistochemical assay.

14. A cell producing the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 1-5.

15. A method of making the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 1-5, comprising (a) culturing the cell of claim 12; and (b) isolating said antibody, antigen-binding fragment thereof, or polypeptide from said cultured cell.

16. An immunoassay kit for detecting FOLR1 protein in a sample, the kit comprising: (a) a first reagent, wherein the first reagent is antibody or antigen-binding fragment thereof of any one of claims 1-4 or the polypeptide of claim 5, and (b) a second reagent, wherein the second reagent is a detection reagent.

17. A method of treating cancer comprising administering an active agent comprising an antibody or antigen-binding fragment thereof that specifically binds to FOLR1 to a patient with elevated FOLR1 protein levels, wherein the elevated FOLR1 protein levels were measured using the antibody or antigen-binding fragment thereof of any one of claims 1-4 or the polypeptide of claim 5.

WHAT IS CLAIMED IS:

1. An antibody or antigen-binding fragment thereof that specifically binds to the same FOLR1 epitope as, or competitively inhibits the binding to FOLR1 of, an antibody selected from the group consisting of:

(a) an antibody comprising the polypeptide of SEQ ID NO:25 and the polypeptide of SEQ ID NO:29;

(b) an antibody comprising the polypeptide of SEQ ID NO:26 and the polypeptide of SEQ ID NO:30;

(c) an antibody comprising the polypeptide of SEQ ID NO:27 and the polypeptide of SEQ ID NO:31; and

(d) an antibody comprising the polypeptide of SEQ ID NO:28 and the polypeptide of SEQ ID NO:32.

2. The antibody or antigen-binding fragment of claim 1, wherein said antibody or antigen-binding fragment thereof comprises amino acid sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21;

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24; and

(e) variants of (a) to (d) comprising 1, 2, 3, or 4 conservative amino acid substitutions.

3. The antibody or antigen-binding fragment thereof of claim 1 or 2, wherein said antibody or antigen-binding fragment thereof comprises amino acid sequences selected from the group consisting of:

(a) SEQ ID NO:25 and SEQ ID NO:29;

(b) SEQ ID NO:26 and SEQ ID NO:30;

(c) SEQ ID NO:27 and SEQ ID NO:31; and

(d) SEQ ID NO:28 and SEQ ID NO:32.

4. The antibody or antigen-binding fragment thereof of any one of claims 1-3, wherein said antibody or antigen-binding fragment thereof is murine, non-human, humanized, chimeric, resurfaced, or human.

5. A polypeptide that specifically binds FOLR1, wherein said polypeptide comprises the sequences selected from the group consisting of:

(a) SEQ ID NOs: 1, 2, and 3 and SEQ ID NOs: 13, 14, and 15;

(b) SEQ ID NOs: 4, 5, and 6 and SEQ ID NOs: 16, 17, and 18;

(c) SEQ ID NOs: 7, 8, and 9 and SEQ ID NOs: 19, 20, and 21;

(d) SEQ ID NOs: 10, 11, and 12 and SEQ ID NOs: 22, 23, and 24; and

(e) variants of (a) to (d) comprising 1, 2, 3, or 4 conservative amino acid substitutions.

6. A nucleic acid molecule encoding the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 1-5.

7. A method of detecting FOLR1 protein in a sample comprising contacting said sample with the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 1-5.

8. The method of claim 7, wherein the FOLR1 protein is detected by radioimmunoassay, Western blot assay, immunofluorescent assay, enzyme immunoassay, immunoprecipitation assay, chemiluminescent assay, cytometry, or immunohistochemical assay.

9. The method of claim 8, wherein the cytometry is flow cytometry.

10. The method of claim 7 or 8, wherein said FOLR1 protein is shed FOLR1 protein.

11. The method of claim 7 or 8, wherein said FOLR1 protein is detected on circulating tumor cells in said sample.

12. The method of claim 8, wherein the enzyme immunoassay is enzyme linked immunosorbent assay (ELISA).

13. The method of claim 8, wherein the FOLR1 protein is detected by immunohistochemical assay.

14. A cell producing the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 1-5.

15. A method of making the antibody, antigen-binding fragment thereof, or polypeptide of any one of claims 1-5, comprising (a) culturing the cell of claim 12; and (b) isolating said antibody, antigen-binding fragment thereof, or polypeptide from said cultured cell.

16. An immunoassay kit for detecting FOLR1 protein in a sample, the kit comprising: (a) a first reagent, wherein the first reagent is antibody or antigen-binding fragment thereof of any one of claims 1-4 or the polypeptide of claim 5, and (b) a second reagent, wherein the second reagent is a detection reagent.

17. Use of active agent comprising an antibody or antigen-binding fragment thereof that specifically binds to FOLR1 in the manufacture of a medicament for the treatment of cancer in a patient, wherein the treatment comprises detecting elevated FOLR1 protein levels in a sample from the patient using the antibody or antigen-binding fragment thereof of any one of claims 1-4 or the polypeptide of claim 5.

18. Use of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity in the manufacture of a medicament for the treatment of cancer in a patient with an elevated shed FOLR1 protein level.

19. Use of an active agent comprising an antibody or antigen-binding fragment thereof that modulates FOLR1 activity in the manufacture of a medicament for the treatment of cancer in a patient with elevated FOLR1 protein on circulating tumor cells.