CLAIMS

1. A method for identifying a cancer as likely to respond to an anti-Folate receptor 1 (FOLR1) immunoconjugate, the method comprising:

(a) contacting a biological sample comprising cells from the cancer with a detection antibody or antigen binding fragment thereof that specifically binds FOLR1;

(b) detecting binding of the detection antibody or antigen binding fragment thereof to the biological sample of step (a) using a detection method;

(c) assigning a score to the binding of step (b), wherein the score is assigned based on comparison to one or more reference samples; and

(d) comparing the score in step (c) to the score of one or more reference samples, wherein a score for the cancer FOLR1 level that is greater than the score for a normal or low FOLR1 expressing reference sample or a score for the cancer FOLR1 level that is equal to or greater than the score for a high FOLR1 expressing reference sample identifies the cancer as likely to respond to the anti-FOLR1 immunoconjugate,

wherein the anti-FOLRl immunoconjugate comprises an anti-FOLRl antibody, a linker, and a cytotoxic agent, wherein the anti-FOLRl antibody of the anti-FOLRl immunoconjugate comprises:

(i) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO: 3 (huMov19 vHC) and a light chain variable domain comprising the amino acid sequence of SEQ ID NO: 4 (huMov19 vLCv1.00) or

(ii) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO: 3 (huMov19 vHC) and a light chain variable domain comprising the amino acid sequence of SEQ ID NO: 5 (huMov 19 vLCv l .60).

2. The method of claim 1, wherein the light chain variable domain of the anti-FOLR1 antibody of the anti-FOLR1 immunoconjugate comprises the amino acid sequence of

SEQ ID NO:5 (huMovl9 vLCvl.60), particularly wherein the anti-FOLRl antibody of the immunoconjugate comprises (i) a heavy chain comprising the same amino acid sequence as the amino acid sequence of the heavy chain encoded by the plasmid deposited with the American Type Culture Collection (ATCC) as PTA-10772 and (ii) a light chain comprising the same amino acid sequence as the amino acid sequence of the light chain encoded by the plasmid deposited with the ATCC as PTA-l 0774.

3. The method of claim l or 2, wherein

(i) the linker is selected from the group consisting of: a cleavable linker, a non-cleavable linker, a hydrophilic linker, and a dicarboxylic acid based linker,

(ii) the linker is selected from the group consisting of: N-succinimidyl 4-(malcimidomcthyl) cyclohexanccarboxylatc (SMCC); N-sulfosuccinimidyl 4-(malcimidomcthyl) cyclohexanecarboxylate (sulfo-SMCC); N-succinimidyl-4-(iodoacetyl)-aminobenzoate tetraethyleneglycol] ester (SIAB); N-succinimidyl-[(N maleimidopropionamido)- (NHS-PEG4-maleimide); N-succinimidyl 4-(2-pyridyldithio)pentanoate (SPP); N-succinimidy l 4-(2-pyridyldithio)-2-sulfopcntanoatc (sulfo-SPP); N-succinimidyl 4-(2-pyridyldithio)butanoate (SPDB); and N-succinimidyl 4-(2-pyridyldithio)-2-sulfobutanoate (sulfo-SPDB), or

(iii) the linker is N-succinimidyl 4-(2-pyridyldithio)-2-sulfobutanoate (sulfo-SPDB).

4. The method of any one of claims l to 3, wherein the cytotoxic agent is selected from the group consisting of: a maytansinoid, maytansinoid analog, benzodiazcpinc, taxoid, CC1065, CC-1065 analog, duocarmycin, duocarmycin analog, calichcamicin, dolastatin, dolastatin analog, auristatin, tomaymycin derivative, and lcptomycin derivative or a prodrug of the cytotoxic agent, optionally wherein the cytotoxic agent is N(2')-deacetyl- N(2')-(3-mercapto-l-oxopropyl)-maytansine (DM1) or N(2')-deacctyl-N(2')-(4-mercapto-4-methyl-l-oxopentyl)-maytansine (DM4).

5. The method of claim 4, wherein the cytotoxic agent is N(2')-deacetyl-N(2')-(4-mercapto-4-methyl-1-oxopentyl)-maytansine (DM4).

6. The method of claim 4, wherein the linker is N-succinimidyl 4-(2-pyridyldithio)-2-sulfobutanoate (sulfo-SPDB), and wherein the cytotoxic agent is N(2')-deacetyl-N(2')-(4-mercapto-4-mcthyl-l-oxopentyl)-maytansinc (DM4).

7. The method of any one of claims l to 6, wherein the detection antibody or antigen binding fragment thereof

(i) comprises the HC variable domain of SEQ ID NO:3 and the LC variable domain of SEQ ID NO:4 or 5; or

(ii) is BN3.2.

8. The method of any one of claims l to 7, wherein the detection antibody or antigen binding fragment thereof further comprises a detection reagent selected from the group consisting of: an enzyme, a fluorophore, a radioactive label, and a luminophore.

9. The method of any one of claims l to 8, wherein the detection method is performed using an automated system.

10. The method of any of claims 1 to 9, wherein the detection method is immunohistochemistry (IHC), particularly wherein said IHC is calibrated IHC that can distinguish between different levels of FOLRl expression.

11. The method of any of claims l to 10, wherein the detection method distinguishes between staining intensity and staining uniformity in the FOLR1-expressing biological sample as compared to staining intensity and staining uniformity in the one or more reference samples.

12. The method of claim 11, wherein the biological sample has a staining intensity score of l or greater for FOLR1 expression by IHC, particularly

(i) wherein 25-75% of cells of the biological sample are stained for FOLR1 expression; or

(ii) wherein greater than 75% of cells of the biological sample are stained for FOLR1 expression.

13. The method of claim 11, wherein the biological sample has a staining intensity score of 2 or greater for FOLR1 expression by IHC, particularly

(i) wherein 25-75% of cells of the biological sample are stained for FOLR1 expression; or

(ii) wherein greater than 75% of cells of the biological sample are stained for FOLR1 expression.

14. The method of any one of claims 1 to 13, wherein cancer is selected from the group consisting of ovarian cancer, endometrial cancer, cancer of the peritoneum, and non-small cell lung cancer (NSCLC).