Claims

1. A composition comprising an anti-FOLR1 immunoconjugate for use in ovarian cancer therapy in a human subject,

wherein a FOLR1 staining intensity score of 2 or greater has been detected in greater than 75% of cells in a tumor sample from the subject using an immunohistochemistry (IHC) detection method that distinguishes between staining intensity and staining uniformity in a FOLR1- expressing cancer sample;

wherein the anti-FOLR1 immunoconjugate comprises an anti-FOLR1 antibody or an antigen binding fragment thereof, a linker, and a cytotoxic agent, and wherein the linker links the anti-FOLR1 antibody or antigen binding fragment thereof to the cytotoxic agent.

2. The composition for use of claim 1, wherein the IHC detection method comprises detecting FOLR1 expression with a detection antibody or antigen binding fragment thereof that specifically binds FOLR1, wherein the detection antibody or antigen binding fragment thereof is the antibody BN3.2.

3. The composition for use of claim 2, 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.

4. The composition for use of claim 3, wherein the detection reagent is selected from the group consisting of: biotin, digoxigenin, fluorescein, tritium, and rhodamine.

5. The composition for use of any one of claims 1-4, wherein the IHC detection method distinguishes between staining intensity and staining uniformity in a FOLR1-expressing cancer sample as compared to staining intensity and staining uniformity in one or more reference samples, wherein the one or more reference samples comprise tissue, cells, or cell pellets.

6. The composition for use of claim 5, wherein the one or more reference samples is a negative reference sample.

7. The composition for use of any one of claims 1-6, wherein the tumor sample is a formalin fixed paraffin embedded sample.

8. The composition for use any one of claims 1-7, wherein the IHC detection method is performed manually.

9. The composition for use any one of claims 1-7, wherein the IHC detection method is performed using an automated system.

10. The composition for use of any one of claims 1-9, wherein a staining intensity score of 3 or greater has been detected in greater than 75% of cells in the tumor sample from the subject.

11. The composition for use of any one of claims 1-10, wherein the linker is selected from the group consisting of: *N*-succinimidyl 4-(2-pyridyldithio)pentanoate (SPP); *N*-succinimidyl 4-(2-pyridyldithio)-2-sulfopentanoate (sulfo-SPP); *N*-succinimidyl 4-(2-pyridyldithio)butanoate (SPDB); *N*-succinimidyl 4-(2-pyridyldithio)-2-sulfobutanoate (sulfo-SPDB); *N*-succinimidyl 4-(maleimidomethyl) cyclohexanecarboxylate (SMCC); *N*-sulfosuccinimidyl 4-(maleimidomethyl) cyclohexanecarboxylate (sulfoSMCC); *N*-succinimidyl-4-(iodoacetyl)-aminobenzoate (SIAB); and *N*-succinimidyl-[(N-maleimidopropionamido)-tetraethyleneglycol] ester (NHS-PEG4-maleimide).

12. The composition for use of claim 11, wherein the linker is *N*-succinimidyl 4-(2-pyridyldithio)-2-sulfobutanoate (sulfo-SPDB).

13. The composition for use of any one of claims 1-12, wherein the cytotoxic agent is selected from the group consisting of: maytansinoid, maytansinoid analog, benzodiazepine, taxoid, CC-1065, CC-1065 analog, duocarmycin, duocarmycin analog, calicheamicin, dolastatin, dolastatin analog, auristatin, tomaymycin derivative, and leptomycin derivative or a prodrug of the cytotoxic agent.

14. The composition for use of claim 13, wherein the cytotoxic agent is a maytansinoid.

15. The composition for use of claim 1, wherein the anti-FOLR1 antibody or antigen binding fragment thereof comprises a heavy chain (HC) CDR1 comprising GYFMN (SEQ ID NO:6); a

HC CDR2 comprising RIHPYDGDTFYNQKFQG (SEQ ID NO:7); and a HC CDR3 comprising YDGSRAMDY (SEQ ID NO:8) and a light chain (LC) CDR1 comprising KASQSVSFAGTSLMH (SEQ ID NO:9); a LC CDR2 comprising RASNLEA (SEQ ID NO:10); and a LC CDR3 comprising QQSREYPYT (SEQ ID NO:11); and wherein the cytotoxic agent is a maytansinoid.

16. The composition for use of claim 1, wherein the anti-FOLR1 antibody or antigen binding fragment thereof comprises a HC variable domain comprising the amino acid sequence of SEQ ID NO:3 and a LC variable domain comprising the amino acid sequence of SEQ ID NO:5; and wherein the cytotoxic agent is a maytansinoid.

17. The composition for use of claim 15 or 16, wherein the immunoconjugate further comprises a second maytansinoid, optionally wherein the immunoconjugate comprises 2-8 maytansinoids per antibody or antigen binding fragment thereof.

18. The composition for use of claim 14, wherein the maytansinoid is N(2')-deacetyl-N(2')-(4-mercapto-4-methyl-1-oxopentyl)-maytansine (DM4).

19. The composition for use of any one of claims 1-18, wherein the linker is *N*-succinimidyl 4-(2-pyridyldithio)-2-sulfobutanoate (sulfo-SPDB) and the cytotoxic agent is N(2')-deacetyl-N(2')-(4-mercapto-4-methyl-1-oxopentyl)-maytansine (DM4).