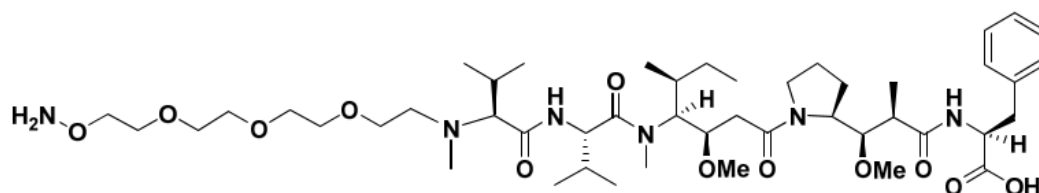


WHAT IS CLAIMED:

1. An antibody drug conjugate comprising an anti-prostate specific membrane antigen antibody (anti-PSMA) comprising a heavy chain sequence selected from set forth in SEQ ID NO: 8; 10, 12, or 14 and the light chain sequence set forth in~~selected from~~ SEQ ID NO: 9, 11, 13, or 15, wherein the drug linker is conjugated to position A114 according to the Kabat numbering scheme of the heavy chain sequence via a para-acetyl phenylalanine, and wherein the drug-linker is a non-cleavable monomethyl auristatin F having the structure:



2. ~~The anti PSMA antibody of claim 1, wherein the heavy chain comprises a variable region sequence selected from SEQ ID NO: 1 and the light chain comprises a variable region sequence selected from the group of SEQ ID NO: 2, 3, 4, or 5.~~
3. ~~The anti PSMA antibody of claim 1, wherein the heavy chain sequence comprises a non-naturally encoded amino acid.~~
4. ~~————— The anti PSMA antibody of claim 3, wherein the non-naturally encoded amino acid comprises a carbonyl group, an aminooxy group, a hydrazine group, a hydrazide group, a semicarbazide group, an azide group, or an alkyne group.~~
5. ~~The anti PSMA antibody of claim 4, wherein the non-naturally encoded amino acid is para-acetyl phenylalanine, p-nitrophenylalanine, p-sulfotyrosine, p-carboxyphenylalanine, o-nitrophenylalanine, — m-nitrophenylalanine, — p-boronyl — phenylalanine, — o-boronylphenylalanine, — m-boronylphenylalanine, — p-aminophenylalanine, — o-aminophenylalanine, m-aminophenylalanine, p-acylphenylalanine, o-acylphenylalanine, m-acylphenylalanine, — p-OMe — phenylalanine, — o-OMe — phenylalanine, — m-OMe phenylalanine, p-sulfophenylalanine, o-sulfophenylalanine, m-sulfophenylalanine, 5-nitro His, 3-nitro Tyr, 2-nitro Tyr, nitro-substituted Leu, nitro-substituted His, nitro-substituted De, nitro-substituted Trp, 2-nitro Trp, 4-nitro Trp, 5-nitro Trp, 6-nitro Trp, 7-nitro Trp, 3-~~

~~aminotyrosine, 2 aminotyrosine, O sulfotyrosine, 2 sulfooxyphenylalanine, 3-sulfooxyphenylalanine, o-carboxyphenylalanine, m-carboxyphenylalanine, p-acetyl-L-phenylalanine, a-p-propargyl-phenylalanine, O-methyl-L-tyrosine, L-3-(2-naphthyl)alanine, 3-methyl-phenylalanine, O-4-allyl-L-tyrosine, 4-propyl-L-tyrosine, tri-O-acetyl-GlcNAc β -serine, L-Dopa, fluorinated phenylalanine, isopropyl-L-phenylalanine, p-azido-L-phenylalanine, p-acyl-L-phenylalanine, p-benzoyl-L-phenylalanine, L-phosphoserine, phosphoserine, phosphonotyrosine, p-iodo-phenylalanine, p-bromophenylalanine, p-amino-L-phenylalanine, isopropyl-L-phenylalanine or p-propargyloxy-phenylalanine.~~

~~6. The anti-PSMA antibody of claim 5, wherein the non-naturally encoded amino acid is para-acetyl-phenylalanine.~~

~~7. An antibody drug conjugate comprising a humanized anti-PSMA antibody comprising a heavy chain and light chain sequence according to claim 1 conjugated to at least one drug-linker selected from Tables 1-3, wherein the conjugation occurs via a non-naturally encoded amino acid incorporated in the heavy chain sequence.~~

~~8. The antibody drug conjugate of claim 7, wherein the drug linker comprises a cytotoxic agent.~~

~~9. The antibody drug conjugate of claim 8, wherein the cytotoxic agent is a dolastatin, dolastatin derivative or analog thereof.~~

~~10. The antibody drug conjugate of claim 9, wherein the dolastatin, dolastatin derivative or analog is a monomethyl auristatin selected from monomethyl auristatin F (MMAF) or monomethyl auristatin E (MMAE).~~

~~11. The antibody drug conjugate of claim 10, wherein the monomethyl auristatin is cleavable MMAE or MMAF, non-cleavable MMAE or MMAF, short cleavable MMAE or MMAF.~~

~~192.~~ A pharmaceutical composition comprising the antibody drug conjugate of claim ~~7-1~~ and at least one pharmaceutically acceptable adjuvant, binder, buffer, carrier, diluent or excipient.

~~203.~~ The pharmaceutical composition of claim ~~19-2~~ further comprising ~~and~~ a chemotherapeutic agent, hormonal agent, antitumor agent, immunostimulatory agent, immunomodulator, corticosteroid or combination thereof.

4. The pharmaceutical composition of claim 3 wherein the additional therapeutic agent is a hormonal agent.

5. The pharmaceutical composition of claim 4, wherein the hormonal agent is enzalutamide.

6. The antibody drug conjugate of claim 1 or the pharmaceutical composition of any one of claims 2 to 5 for use in therapy.

7. The antibody drug conjugate of claim 1 or the pharmaceutical composition of claim 2 for use in reducing or inhibiting tumor growth or progression in a PSMA-expressing cancer or cancer cell.

8. The pharmaceutical composition of any one of claims 3 to 5 for use in reducing or inhibiting tumor growth or progression in a PSMA-expressing cancer or cancer cell.

9. The antibody drug conjugate of claim 1 or the pharmaceutical composition of claim 2 for use in combination with an effective amount of an additional therapeutic agent to reduce or inhibit tumor growth or progression in a PSMA-expressing cancer or cancer cell.

~~1410.~~ The antibody drug conjugate or pharmaceutical composition for use according to claim 9 ~~method of claim 12~~, wherein the additional therapeutic agent ~~is a~~ chemotherapeutic agent, hormonal agent, antitumor agent, immunostimulatory agent, immunomodulator, corticosteroid or combination thereof.

11. The antibody drug conjugate or pharmaceutical composition for use according to claim 10, wherein the additional therapeutic agent is a hormonal agent.

12. The antibody drug conjugate or pharmaceutical composition for use according to claim 11, wherein the hormonal agent is enzalutamide.

~~12~~13. Use of the antibody drug conjugate of claim 1 or the pharmaceutical composition of claim 2 in the preparation of a medicament for~~A method of reducing or inhibiting tumor growth or progression in a PSMA-expressing cancer or cancer cell comprising contacting the PSMA-expressing cancer or cancer cell with an effective amount of the antibody drug conjugate of claim 7.~~

~~13~~14. The use of claim 13~~method of claim 12~~, wherein the reducing or inhibiting tumor growth or progression in a PSMA-expressing cancer or cancer cell ~~further comprising~~ comprises contacting the PSMA-expressing cancer or cancer cell with an effective amount of an additional therapeutic agent.

15. The use of claim 14, wherein medicament comprises an effective amount of the additional therapeutic agent.

16. The use of claim 14, wherein the PSMA-expressing cancer or cancer cell is contacted with the additional therapeutic agent separate to the medicament.

~~18~~17. The~~method of claim 16~~use of any one of claims 14 to 16, wherein the additional therapeutic agent is a chemotherapeutic agent, hormonal agent, antitumor agent, immunostimulatory agent, immunomodulator, corticosteroid or combination thereof.

18. The use of claim 17 wherein the additional therapeutic agent is a hormonal agent.

~~15~~19. The~~method~~use of claim ~~18~~14, wherein the hormonal agent is enzalutamide.

~~16. A method of treating a subject having a PSMA-expressing cancer cell or cancer comprising: administering to the subject an effective amount of an antibody drug conjugate to treat the PSMA-expressing cancer or cancer cell, wherein the antibody drug conjugate comprises a PSMA antibody comprising a heavy chain and light chain sequence of claim 1 conjugated to drug linker via a non-naturally encoded amino acid incorporated in the antibody; and wherein the drug linker is selected from Tables 1-3.~~

- ~~17. The method of claim 16 for treating a subject having PSMA related disease or cancer comprising providing to the subject a therapeutically effective amount of anti PSMA antibody drug conjugate and a therapeutic agent.~~
- ~~21. The pharmaceutical composition of claim 19 for use as a medicament for treating cancer in a subject.~~
- ~~22. The pharmaceutical composition of claim 20 for use as a medicament for treating cancer in a subject.~~
- ~~23. A nucleic acid encoding any of SEQ. ID. NO 1-17.~~
- ~~24. A vector comprising a nucleic acid of claim 23.~~