

CLAIMS**What is claimed is:—**

1. An anti-CD48 antibody or antigen binding fragment comprising three heavy chain CDRs and three light chain CDRs as follows:

(i) heavy chain CDR1 (HCDR1) consisting of SEQ ID NO:1, heavy chain CDR2 (HCDR2) consisting of SEQ ID NO:2, heavy chain CDR3 (HCDR3) consisting of SEQ ID NO:3; light chain CDR1 (LCDR1) consisting of SEQ ID NO:16, light chain CDR2 (LCDR2) consisting of SEQ ID NO:17, and light chain CDR3 (LCDR3) consisting of SEQ ID NO:18;

(ii) heavy chain CDR1 (HCDR1) consisting of SEQ ID NO:4, heavy chain CDR2 (HCDR2) consisting of SEQ ID NO:2, heavy chain CDR3 (HCDR3) consisting of SEQ ID NO:3; light chain CDR1 (LCDR1) consisting of SEQ ID NO:16, light chain CDR2 (LCDR2) consisting of SEQ ID NO:17, and light chain CDR3 (LCDR3) consisting of SEQ ID NO:18;

(iii) heavy chain CDR1 (HCDR1) consisting of SEQ ID NO:5, heavy chain CDR2 (HCDR2) consisting of SEQ ID NO:6, heavy chain CDR3 (HCDR3) consisting of SEQ ID NO:3; light chain CDR1 (LCDR1) consisting of SEQ ID NO:19, light chain CDR2 (LCDR2) consisting of SEQ ID NO:20, and light chain CDR3 (LCDR3) consisting of SEQ ID NO:21;

(iv) heavy chain CDR1 (HCDR1) consisting of SEQ ID NO:7, heavy chain CDR2 (HCDR2) consisting of SEQ ID NO:8, heavy chain CDR3 (HCDR3) consisting of SEQ ID NO:9; light chain CDR1 (LCDR1) consisting of SEQ ID NO:22, light chain CDR2 (LCDR2) consisting of SEQ ID NO:20, and light chain CDR3 (LCDR3) consisting of SEQ ID NO:18;

(v) heavy chain CDR1 (HCDR1) consisting of SEQ ID NO:27, heavy chain CDR2 (HCDR2) consisting of SEQ ID NO:28, heavy chain CDR3 (HCDR3) consisting of SEQ ID NO:29; light chain CDR1 (LCDR1) consisting of SEQ ID NO:42, light chain CDR2 (LCDR2) consisting of SEQ ID NO:43, and light chain CDR3 (LCDR3) consisting of SEQ ID NO:44;

(vi) heavy chain CDR1 (HCDR1) consisting of SEQ ID NO:30, heavy chain CDR2 (HCDR2) consisting of SEQ ID NO:28, heavy chain CDR3 (HCDR3) consisting of SEQ ID NO:29; light chain CDR1 (LCDR1) consisting of SEQ ID NO:42, light chain CDR2 (LCDR2) consisting of SEQ ID NO:43, and light chain CDR3 (LCDR3) consisting of SEQ ID NO:44;

(vii) heavy chain CDR1 (HCDR1) consisting of SEQ ID NO:31, heavy chain CDR2 (HCDR2) consisting of SEQ ID NO:32, heavy chain CDR3 (HCDR3) consisting of SEQ ID NO:29;

light chain CDR1 (LCDR1) consisting of SEQ ID NO:45, light chain CDR2 (LCDR2) consisting of SEQ ID NO:46, and light chain CDR3 (LCDR3) consisting of SEQ ID NO:47; or

(viii) heavy chain CDR1 (HCDR1) consisting of SEQ ID NO:33, heavy chain CDR2 (HCDR2) consisting of SEQ ID NO:34, heavy chain CDR3 (HCDR3) consisting of SEQ ID NO:35; light chain CDR1 (LCDR1) consisting of SEQ ID NO:48, light chain CDR2 (LCDR2) consisting of SEQ ID NO:46, and light chain CDR3 (LCDR3) consisting of SEQ ID NO:44.

2. The antibody or antigen binding fragment thereof of claim 1, wherein the anti-CD48 antibody or antigen-binding fragment thereof comprises:

(i) a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:10, and a light chain variable region comprising the amino acid sequence of SEQ ID NO:23; or

(ii) a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:36, and a light chain variable region comprising the amino acid sequence of SEQ ID NO:49.

3. The antibody or antigen binding fragment of claim 1 or 2, wherein the anti-CD48 antibody comprises:

(a) the heavy chain amino acid sequence of SEQ ID NO:12 and the light chain amino acid sequence of SEQ ID NO:25;

(b) the heavy chain amino acid sequence of SEQ ID NO:14 and the light chain amino acid sequence of SEQ ID NO:25;

(c) The heavy chain amino acid sequence of SEQ ID NO:63 and the light chain amino acid sequence of SEQ ID NO:25;

(e) the heavy chain amino acid sequence of SEQ ID NO:38 and the light chain amino acid sequence of SEQ ID NO:51;

(f) the heavy chain amino acid sequence of SEQ ID NO:40 and the light chain amino acid sequence of SEQ ID NO:51; or

(g) The heavy chain amino acid sequence of SEQ ID NO:65 and the light chain amino acid sequence of SEQ ID NO:51.

4. The antibody or antigen binding fragment thereof of any one of claims 1-3, wherein the antibody or antigen binding fragment thereof comprises a Fab fragment, a Fab' fragment, a F(ab')₂ fragment, a single chain Fv (scFv), a disulfide-linked Fv (sdFv), a Fd fragment, a Fv fragment, a

dAb fragment, a maxibody, a minibody, an intrabody, a diabody, a half antibody, a one-arm antibody, a monoclonal antibody, a bispecific antibody, a bispecific T-cell engage antibody, a multispecific antibody, a chimeric antigen receptor T-cell, or a radioimmunconjugate.

45. A nucleic acid encoding the encoding the antibody of any one of claims 1-3.

~~5. The nucleic acid of claim 4 comprising the nucleic acid sequence of SEQ ID NO:11, SEQ ID NO:37, SEQ ID NO:24, or SEQ ID NO:50.~~

~~66.~~ The nucleic acid of claim ~~4-5~~ comprising the nucleic acid sequence of SEQ ID NOs: 11, 13, 15, 24, 37, 39, 41, 75, 77, 26, 50 or 52.

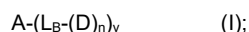
~~77.~~ A vector comprising the nucleic acid of ~~any one of claims 4, 5, or 6~~ claim 5 or 6.

8. A cell line comprising the ~~vector of claim 7 or the~~ nucleic acid of ~~any one of claims 4, 5, or 6~~ claim 5 or 6, or the vector of claim 7.

9. A method of making the antibody; or antigen binding fragment thereof; of any one of claims 1-3 comprising growing the cell line of claim 8 under suitable conditions to express the antibody, then purifying and isolating the antibody.

~~10. The antibody, or antigen binding fragment thereof, of claim 1, 2, or 3, wherein the antibody or antigen binding fragment thereof comprises a Fab fragment, a Fab' fragment, a F(ab')₂ fragment, a single chain Fv (scFv), a disulfide linked Fv (sdFv), a Fd fragment, a Fv fragment, a dAb fragment, a single domain antibody, a maxibody, a minibody, a nanobody, an intrabody, a diabody, a half antibody, a one-arm antibody, a monoclonal antibody, a bispecific antibody, a bispecific T-cell engage antibody, a multispecific antibody, a chimeric antigen receptor T-cell, or a radioimmunconjugate.~~

~~110.~~ An antibody drug conjugate of Formula (I):



wherein:

A is an antibody, or antibody antigen binding fragment thereof, that specifically binds to human CD48;

L_B is a linker;

D is a cytotoxic agent, but excluding BCL-2 inhibitors, MCL-1 inhibitors, and BCL-XL inhibitors;

n is an integer from 1 to 10, and

y is an integer from 1 to 10,

where the Linker-Drug moiety ($L_B-(D)_n$) is covalently attached to the antibody, or antigen binding fragment thereof, (A).

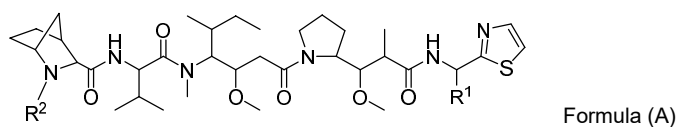
4211. The antibody drug conjugate of claim 4410, wherein the cytotoxic agent~~drug moiety~~ is an Eg5 inhibitor, a V-ATPase inhibitor, a HSP90 inhibitor, an IAP inhibitor, an mTor inhibitor, a microtubule stabilizer, a microtubule destabilizer, an auristatin, a dolastatin, a maytansinoid, a MetAP (methionine aminopeptidase), an inhibitor of nuclear export of proteins CRM1, a DPPIV inhibitor, an inhibitor of phosphoryl transfer reactions in mitochondria, a protein synthesis inhibitor, a kinase inhibitor, a CDK2 inhibitor, a CDK9 inhibitor, a proteasome inhibitor, a kinesin inhibitor, an HDAC inhibitor, a DNA damaging agent, a DNA alkylating agent, a DNA intercalator, a DNA minor groove binder, an RNA polymerase inhibitor, an amanitin, a spliceosome inhibitor, a topoisomerase inhibitor, a DHFR inhibitor, and a pro-apoptotic agent, but excluding BCL-2 inhibitors, MCL-1 inhibitors, and BCL-XL inhibitors-

13. —The antibody drug conjugate of claim 11, wherein the ~~drug moiety is an~~ Eg5 inhibitor, a V-ATPase inhibitor, a HSP90 inhibitor, an IAP inhibitor, an mTor inhibitor, a microtubule stabilizer, ~~a microtubule destabilizer, an auristatin, a dolastatin, a maytansinoid, a MetAP (methionine aminopeptidase), an inhibitor of nuclear export of proteins CRM1, a DPPIV inhibitor, an inhibitor of phosphoryl transfer reactions in mitochondria, a protein synthesis inhibitor, a kinase inhibitor, a CDK2 inhibitor, a CDK9 inhibitor, a proteasome inhibitor, a kinesin inhibitor, an HDAC inhibitor, a DNA damaging agent, a DNA alkylating agent, a DNA intercalator, a DNA minor groove binder, an RNA polymerase inhibitor, an amanitin, a spliceosome inhibitor, a topoisomerase inhibitor, and a DHFR inhibitor.~~

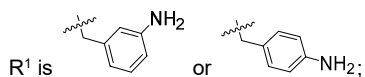
14. The antibody drug conjugate of claim 11, preferably, wherein the cytotoxic agent drug moiety is an auristatin.

~~45~~12. The antibody drug conjugate of claim ~~44~~10, wherein:

D is a cytotoxic agent selected from a compound of Formula (A):



wherein:



R² is H, C₁-C₆alkyl, -C(=O)R³, -(CH₂)_mOH, -C(=O)(CH₂)_mOH, -

C(=O)((CH₂)_mO)_nR⁴, -((CH₂)_mO)_nR⁴ or C₁-C₆alkyl which is optionally substituted with -CN, -C(=O)NH₂ or 1 to 5 hydroxyl;

each R³ is independently selected from C₁-C₆alkyl and C₁-C₆alkyl which is optionally substituted with 1 to 5 hydroxyl;

and

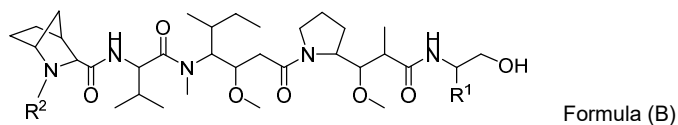
each R⁴ is independently selected from H and C₁-C₆alkyl;

each n is independently selected from 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12;

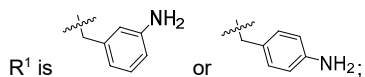
and

each m is independently selected from 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10;

or D is a cytotoxic agent selected from a compound of Formula (B):



wherein:



R^2 is H, C_1 - C_6 alkyl, $-C(=O)R^3$, $-(CH_2)_mOH$, $-C(=O)(CH_2)_mOH$, $-C(=O)((CH_2)_mO)_nR^4$, $-((CH_2)_mO)_nR^4$ or C_1 - C_6 alkyl which is optionally substituted with $-CN$, $-C(=O)NH_2$ or 1 to 5 hydroxyl;
each R^3 is independently selected from C_1 - C_6 alkyl and C_1 - C_6 alkyl which is optionally substituted with 1 to 5 hydroxyl;

and

each R^4 is independently selected from H and C_1 - C_6 alkyl.

each n is independently selected from 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12;

and

each m is independently selected from 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10; preferably

(1)

~~16. The antibody drug conjugate of claim 15, wherein n is 1, 2, 3, 4, 5, 6, 7 or 8;~~

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~~17. The antibody drug conjugate of claim 15 or 16, wherein~~

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~~(2) y is 1, 2, 3 or 4; and/or;~~

~~(3)~~

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~~18. The antibody drug conjugate of any one of claims 15-17, wherein each L_B~~

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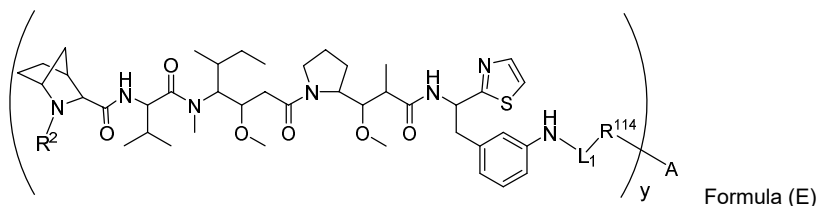
~~is independently selected from a cleavable linker or a non-cleavable linker.~~

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~~19. The antibody drug conjugate of any one of claims 15-18, wherein each L_B is a cleavable linker.~~

~~20. The antibody drug conjugate of any one of claims 15-18, wherein each L_B is a non-cleavable linker.~~

2413. An antibody drug conjugate having the structure of Formula (E):



wherein:

A represents an antibody or antigen binding fragment thereof that specifically binds to human CD48;

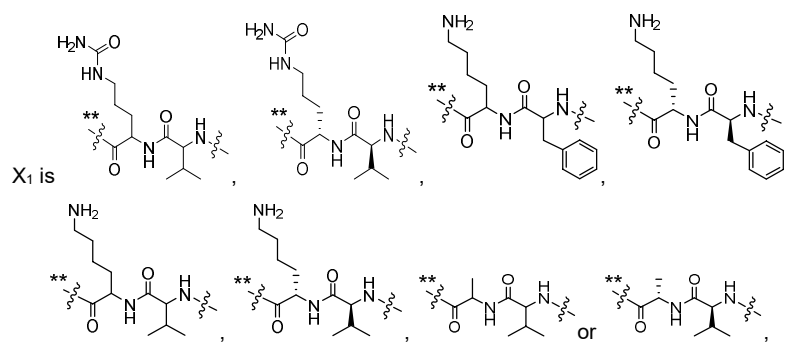
y is an integer from 1 to 10;

R² is H, C₁-C₆alkyl, -C(=O)R³, -(CH₂)ₘOH, -C(=O)(CH₂)ₘOH, -C(=O)((CH₂)ₘO)ₙR⁴, -((CH₂)ₘO)ₙR⁴ or C₁-C₆alkyl which is optionally substituted with -CN, -C(=O)NH₂ or 1 to 5 hydroxy;

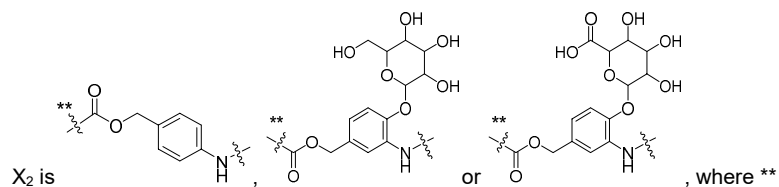
each R³ is independently selected from C₁-C₆alkyl and C₁-C₆alkyl which is optionally substituted with 1 to 5 hydroxyl;

each R⁴ is independently selected from H and C₁-C₆alkyl;

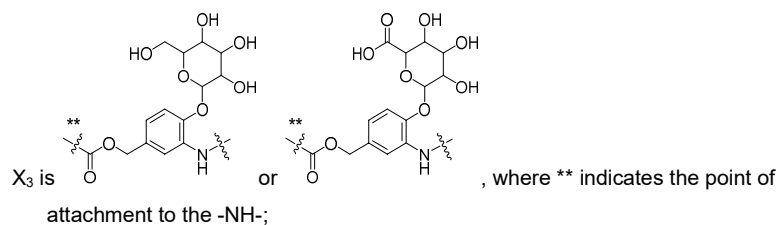
L₁ is -X₁C(=O)((CH₂)ₘO)ₚ(CH₂)ₘ-**, -X₁C(=O)(CH₂)ₘ-**, -X₂X₁C(=O)((CH₂)ₘO)ₚ(CH₂)ₘ-**, -X₂X₁C(=O)(CH₂)ₘ-**, -X₃C(=O)((CH₂)ₘO)ₚ(CH₂)ₘ-**, -X₃C(=O)(CH₂)ₘ-**, -X₃C(=O)(CH₂)ₘNHC(=O)((CH₂)ₘO)ₚ(CH₂)ₘ-**, -X₃C(=O)(CH₂)ₘNHC(=O)(CH₂)ₘ-**, -X₃C(=O)(CH₂)ₘ-**, -X₁C(=O)((CH₂)ₘO)ₚ(CH₂)ₘX₄(CH₂)ₘ-**, -X₁C(=O)(CH₂)ₘX₄(CH₂)ₘ-**, -X₂X₁C(=O)((CH₂)ₘO)ₚ(CH₂)ₘX₄(CH₂)ₘ-** or -X₂X₁C(=O)(CH₂)ₘX₄(CH₂)ₘ-**, where ** indicates the point of attachment to R¹¹⁴.



where ** indicates the point of attachment to the -NH- or to X_2 ;



indicates the point of attachment to the -NH-;



X_4 is

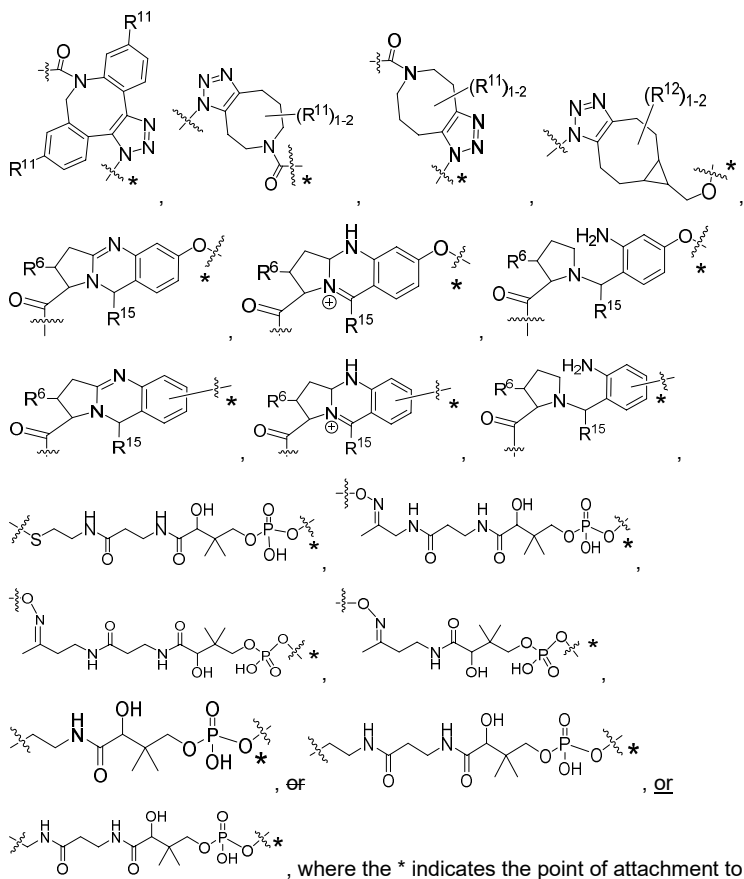
where the * indicates the point of attachment is toward R¹¹.

R^{114} is , , , , , , , , , , , , , , , , , , ,

$\text{CH}_2\text{NHCH}_2\text{CH}_2^-$, $-\text{NHCH}_2\text{CH}_2^-$, $-\text{S}-$,
 

The image displays four chemical structures, labeled 1, 2, 3, and 4, which are substituted phthalazine derivatives. Each structure features a phthalazine core with various substituents and functional groups indicated by wavy lines and asterisks.

- Structure 1:** A phthalazine core with a 1,2,3,4-tetrahydro-1H-benzocyclohepta[1,2-b:4,5-b']phthalazine system. It has a substituent R^{10} at the 1-position and a wavy line with an asterisk at the 2-position.
- Structure 2:** A phthalazine core with a 1,2,3,4-tetrahydro-1H-benzocyclohepta[1,2-b:4,5-b']phthalazine system. It has a substituent R^{11} at the 1-position and a wavy line with an asterisk at the 2-position.
- Structure 3:** A phthalazine core with a 1,2,3,4-tetrahydro-1H-benzocyclohepta[1,2-b:4,5-b']phthalazine system. It has a substituent R^{11} at the 1-position and a wavy line with an asterisk at the 2-position.
- Structure 4:** A phthalazine core with a 1,2,3,4-tetrahydro-1H-benzocyclohepta[1,2-b:4,5-b']phthalazine system. It has a substituent R^{11} at the 1-position and a wavy line with an asterisk at the 2-position.



A;

each R^6 is independently selected from H and C_{1-6} alkyl;each R^{10} is independently selected from H, C_{1-6} alkyl, F, Cl, and $-OH$;each R^{11} is independently selected from H, C_{1-6} alkyl, F, Cl, $-NH_2$, $-OCH_3$, $-OCH_2CH_3$, $-N(CH_3)_2$, $-CN$, $-NO_2$ and $-OH$;each R^{12} is independently selected from H, C_{1-6} alkyl, fluoro, benzyloxy substituted with $-C(=O)OH$, benzyl substituted with $-C(=O)OH$, C_{1-4} alkoxy substituted with $-C(=O)OH$ and C_{1-4} alkyl substituted with $-C(=O)OH$;

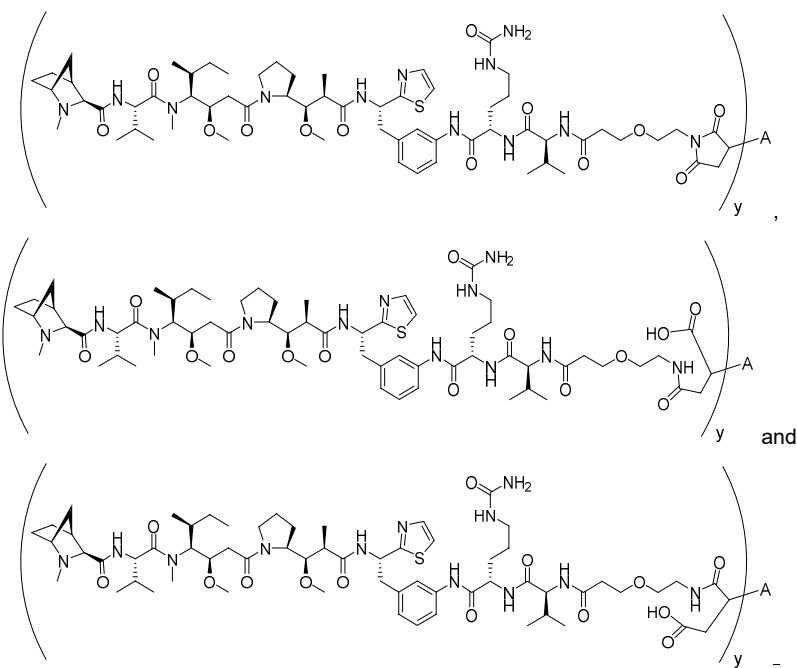
each R^{15} is independently selected from H, $-CH_3$ and phenyl;

each n is independently selected from 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12;

each m is independently selected from 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10, and

each p is independently selected from 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14.

2214. The antibody drug conjugate of claim ~~24~~13, selected from



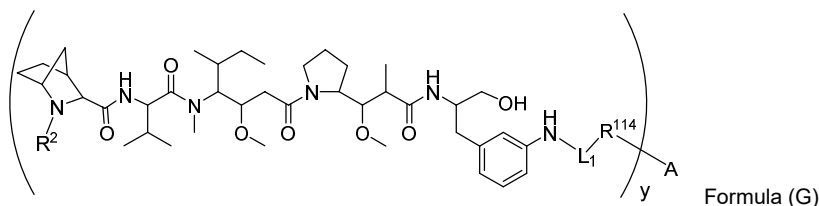
wherein:

~~A represents an antibody or antigen-binding fragment thereof that specifically binds to human~~

~~CD48, and~~

~~y is an integer from 1 to 10.~~

2315. An antibody drug conjugate having the structure of Formula (G):



wherein:

A represents an antibody or antigen binding fragment thereof that specifically binds to human CD48;

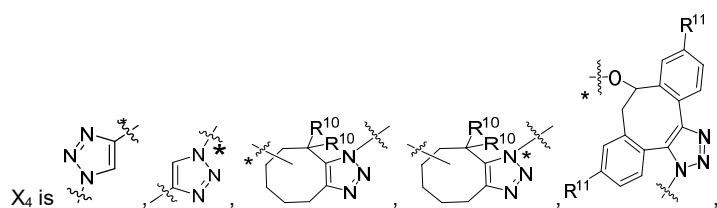
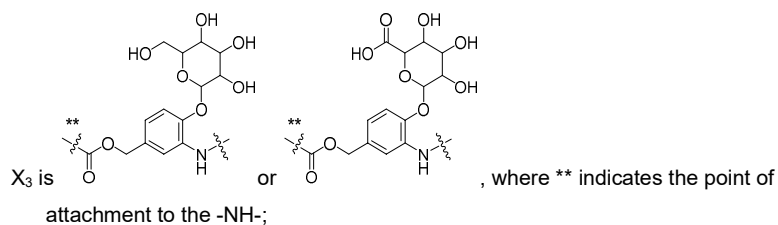
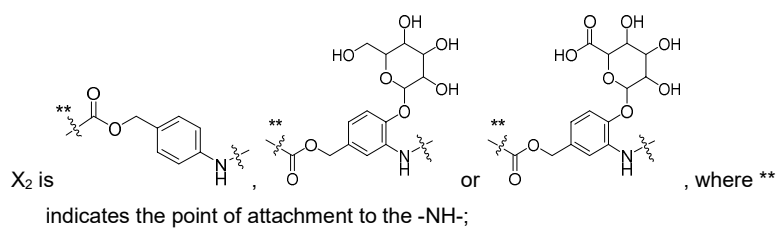
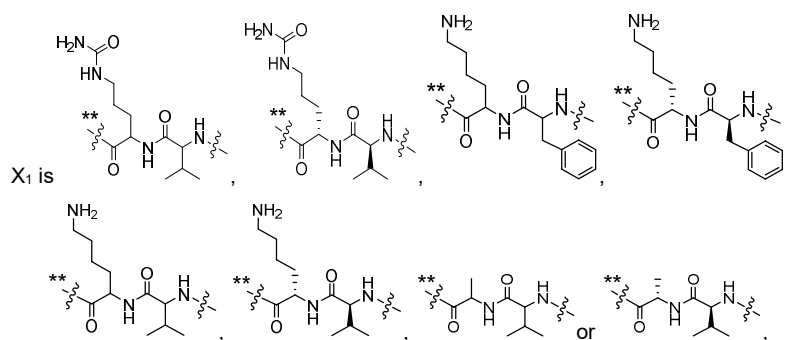
y is an integer from 1 to 10;

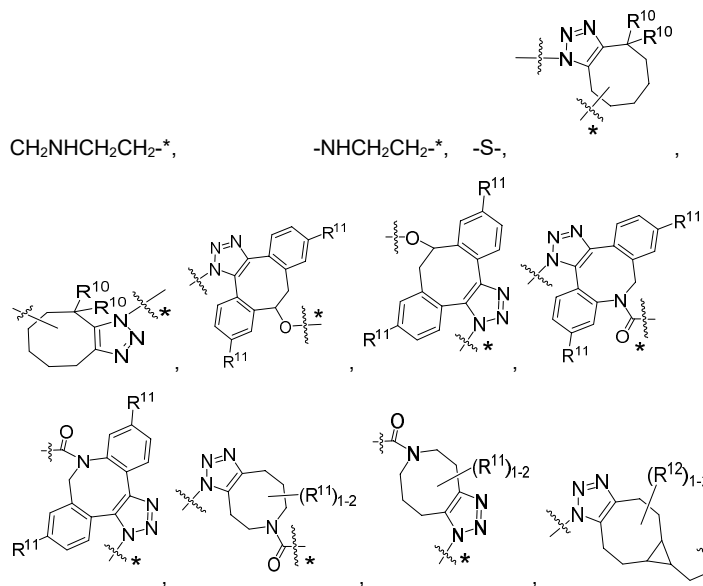
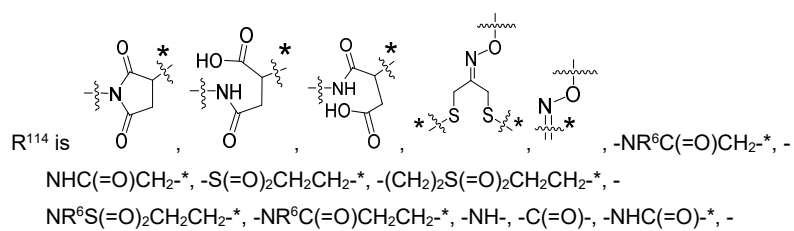
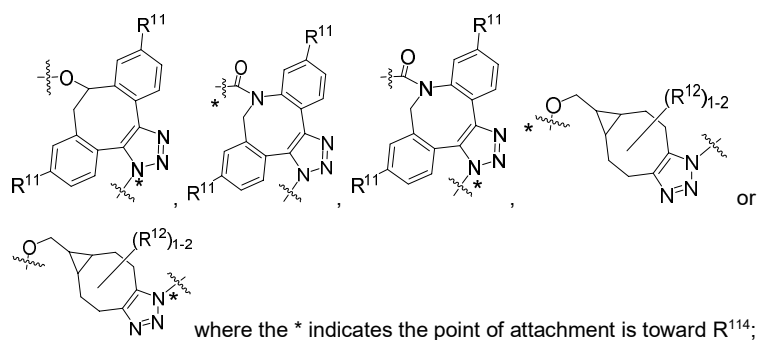
R^2 is H, C_1 - C_6 alkyl, $-C(=O)R^3$, $-(CH_2)_mOH$, $-C(=O)(CH_2)_mOH$, $-C(=O)((CH_2)_mO)_nR^4$, $-((CH_2)_mO)_nR^4$ or C_1 - C_6 alkyl which is optionally substituted with $-CN$, $-C(=O)NH_2$ or 1 to 5 hydroxy;

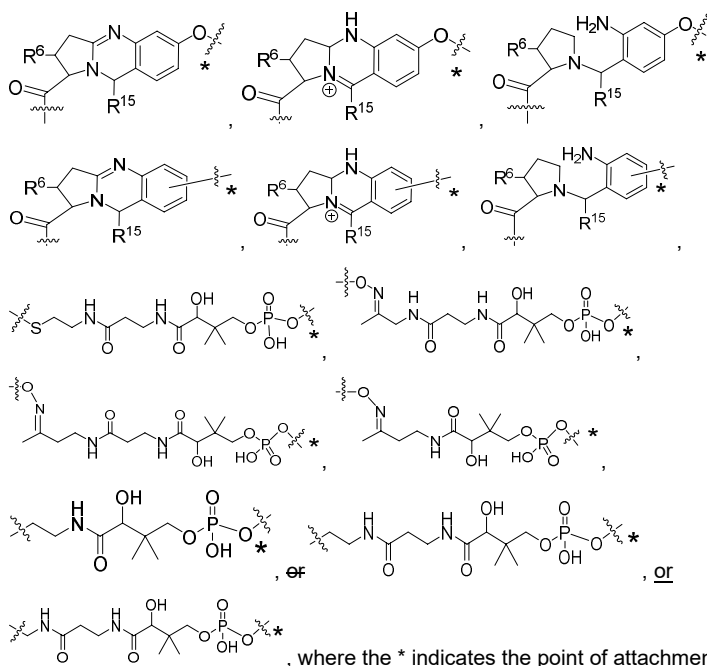
each R^3 is independently selected from C_1 - C_6 alkyl and C_1 - C_6 alkyl which is optionally substituted with 1 to 5 hydroxyl;

each R^4 is independently selected from H and C_1 - C_6 alkyl;

L_1 is $-X_1C(=O)((CH_2)_mO)_p(CH_2)_{m-^{**}}$, $-X_1C(=O)(CH_2)_{m-^{**}}$, $-X_2X_1C(=O)((CH_2)_mO)_p(CH_2)_{m-^{**}}$, $-X_2X_1C(=O)(CH_2)_{m-^{**}}$, $-X_3C(=O)((CH_2)_mO)_p(CH_2)_{m-^{**}}$, $-X_3C(=O)(CH_2)_{m-^{**}}$, $-X_3C(=O)(CH_2)_mNHC(=O)((CH_2)_mO)_p(CH_2)_{m-^{**}}$, $-X_3C(=O)(CH_2)_mNHC(=O)(CH_2)_{m-^{**}}$, $-X_3C(=O)(CH_2)_{m-^{**}}$, $-X_1C(=O)((CH_2)_mO)_p(CH_2)_mX_4(CH_2)_{m-^{**}}$, $-X_1C(=O)(CH_2)_mX_4(CH_2)_{m-^{**}}$, $-X_2X_1C(=O)((CH_2)_mO)_p(CH_2)_mX_4(CH_2)_{m-^{**}}$ or $-X_2X_1C(=O)(CH_2)_mX_4(CH_2)_{m-^{**}}$, where ** indicates the point of attachment to R^{114} .







A;

each R^6 is independently selected from H and C_1 - C_6 alkyl;

each R^{10} is independently selected from H, C_1 - C_6 alkyl, F, Cl, and $-OH$;

each R^{11} is independently selected from H, C_1 - C_6 alkyl, F, Cl, $-NH_2$, $-OCH_3$, -

OCH_2CH_3 , $-N(CH_3)_2$, $-CN$, $-NO_2$ and $-OH$;

each R^{12} is independently selected from H, C_1 - C_6 alkyl, fluoro, benzyloxy substituted

with $-C(=O)OH$, benzyl substituted with $-C(=O)OH$, C_{1-4} alkoxy substituted with

$-C(=O)OH$ and C_{1-4} alkyl substituted with $-C(=O)OH$;

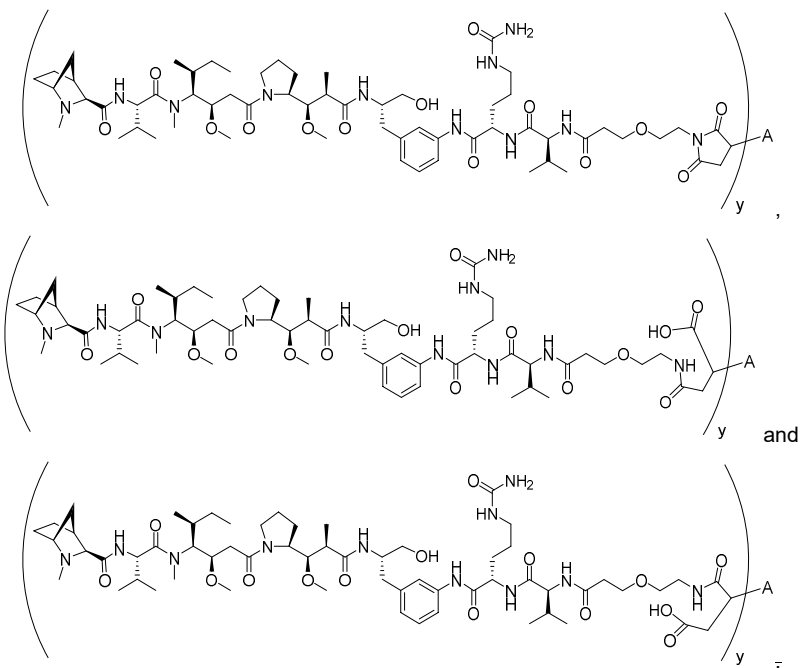
each R^{15} is independently selected from H, $-CH_3$ and phenyl;

each n is independently selected from 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12:

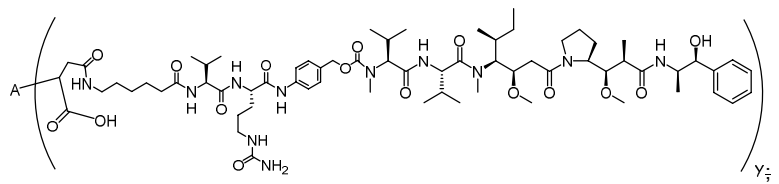
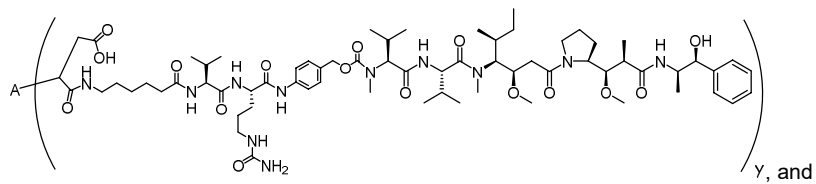
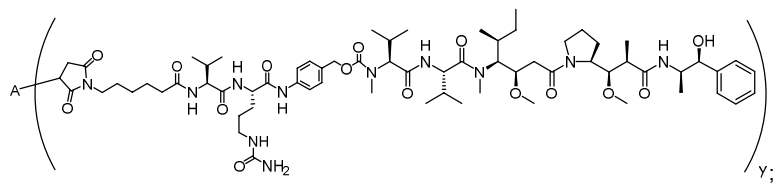
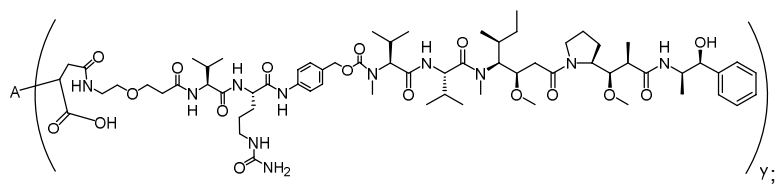
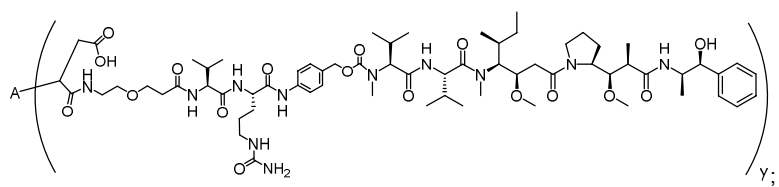
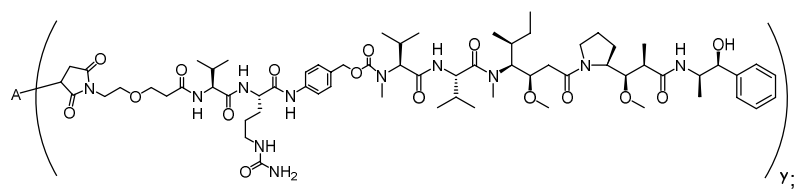
each m is independently selected from 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10, and

each p is independently selected from 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14.

2416. The antibody drug conjugate of claim 2315 selected from



2517. An antibody drug conjugate of claim 1410, selected from



wherein:

~~A represents an antibody or antigen binding fragment thereof that specifically binds to human CD48, and~~

~~y is an integer from 1 to 10.~~

~~2618.~~ The antibody drug conjugate of any one of claims ~~24-25~~10-17, wherein the CD48 antibody or antigen binding fragment thereof is an antibody or antigen binding fragment of any one of claims ~~1-3 or 104~~.

~~2719.~~ A pharmaceutical composition comprising the antibody, or antigen binding fragment thereof, of any one of claims ~~1-3 or 104~~, or the antibody drug conjugate of any one of claims ~~11-10-24-18~~, and a pharmaceutically acceptable carrier.

~~2820.~~ The pharmaceutical composition of claim ~~27-19~~, further comprising one or more additional therapeutic agents.

~~2921.~~ The pharmaceutical composition of claim ~~27-19~~ or ~~2820~~, wherein the composition is a lyophilisate.

~~30.~~ ~~A method of treating cancer in a subject, comprising administering to the subject a therapeutically effective amount of the antibody, or antigen binding fragment thereof, of claims 1-3 or 10, the antibody drug conjugate of any one of claims 11-25, or the pharmaceutical composition of claim 27.~~

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~~3422.~~ Use of the antibody or antigen binding fragment thereof of any one of claims ~~1-3 or 104~~, ~~or the antibody drug conjugate of any one of claims 11-25~~10-18, or the pharmaceutical composition of claim ~~27-19~~ in the manufacture of a medicament for ~~to treating~~ cancer in a patient in need thereof, wherein a therapeutically effective amount of the antibody or antigen binding fragment thereof, the antibody drug conjugate, or the pharmaceutical composition is to be administered to the subject in need thereof.

~~32. The pharmaceutical composition of claim 27, for use in the treatment of cancer in a patient in need thereof.~~

~~33. The method of claim 30, use of claim 31, or the pharmaceutical composition of claim 32, preferably wherein:~~

~~(1) the cancer expresses CD48;~~

~~(2)~~

~~34. The method of claim 30, use of claim 31, or the pharmaceutical composition of claim 32, wherein the cancer is a tumor or a hematological cancer, preferably, the cancer is a breast cancer, multiple myeloma, B-cell lymphoma, plasma cell myeloma, leukemia, lymphoma, gastric cancer, acute myeloid leukemia, bladder cancer, brain cancer, bone marrow cancer, cervical cancer, chronic lymphocytic leukemia, colorectal cancer, esophageal cancer, hepatocellular cancer, lymphoblastic leukemia, follicular lymphoma, lymphoid malignancies of T-cell or B-cell origin, melanoma, myelogenous leukemia, myeloma, oral cancer, ovarian cancer, non-small cell lung cancer, chronic lymphocytic leukemia, prostate cancer, small cell lung cancer, or spleen cancer; and/or-~~

~~(3) at least~~

~~35. The method of claim 30, use of claim 31, or pharmaceutical composition of claim 32, further comprising administering or using one or more additional therapeutic agent is to be administered to the subject in need thereof.~~

~~36. A method of reducing or inhibiting the growth of a tumor in a subject, comprising administering to the subject a therapeutically effective amount of the antibody of claims 1-3 or 10, the antibody drug conjugate of any one of claims 11-25, or the pharmaceutical composition of claim 27.~~

~~37. Use of the antibody, or antigen binding fragment thereof, of any one of claims 1-3 or 10, the antibody drug conjugate of any one of claims 11-25, or the pharmaceutical composition of claim 27 in the manufacture of a medicament to for reducing or inhibiting the growth of a tumor or reducing or slowing the expansion of a cancer cell population in a subject in need thereof, wherein a therapeutically effective amount of the antibody or antigen binding fragment thereof,~~

the antibody drug conjugate, or the pharmaceutical composition is to be administered to the subject in need thereof; preferably wherein:

(1)-

38. The pharmaceutical composition of claim 27, for use in reducing or inhibiting the growth of a tumor in a subject in need thereof.

~~39. The method of claim 36, use of claim 37, or pharmaceutical composition of claim 38, wherein the tumor expresses CD48.~~

(2) administration of the antibody or antigen binding fragment thereof, the antibody drug conjugate, or the pharmaceutical composition

~~40. The method of claim 36, use of claim 37, or pharmaceutical composition of claim 38, wherein administration or use of the antibody or antigen binding fragment thereof, antibody drug conjugate, or pharmaceutical composition reduces or inhibits the growth of the tumor or reduces or slows the expansion of the cancer cell population by at least about 10%, at least about 20%, at least about 30%, at least about 40%, at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, at least about 95%, or at least about 99%.~~

~~41. A method of reducing or slowing the expansion of a cancer cell population in a subject, comprising administering to the subject a therapeutically effective amount of the antibody or antigen binding fragment thereof of claims 1-3 or 10, the antibody drug conjugate of any one of claims 11-24, or the pharmaceutical composition of claim 27.~~

~~42. Use of the antibody, or antigen binding fragment thereof, of any one of claims 1-3 or 10, the antibody drug conjugate of any one of claims 11-25, or the pharmaceutical composition of claim 27 to reduce or inhibit the growth of a tumor in a subject in need thereof.~~

~~43. The pharmaceutical composition of claim 27, for use in reducing or inhibiting the growth of a tumor in a subject in need thereof.~~

~~44. The method of claim 41, use of claim 42, or pharmaceutical composition of claim 43, wherein the cancer cell population expresses CD48.~~

45. ~~The method of claim 41, use of claim 42, or pharmaceutical composition of claim 43, wherein:~~

~~(3) the tumor is cancer cell population is from a tumor or a hematological cancer, preferably the cancer cell population is from a breast cancer, gastric cancer, bladder cancer, brain cancer, cervical cancer, colorectal cancer, esophageal cancer, hepatocellular cancer, melanoma, oral cancer, ovarian cancer, non-small cell lung cancer, prostate cancer, small cell lung cancer, or spleen cancer, or the cancer cell population is from a tumor or a hematological cancer, preferably the cancer cell population is from a breast cancer, multiple myeloma, B-cell lymphoma, plasma cell myeloma, leukemia, lymphoma, gastric cancer, acute myeloid leukemia, bladder cancer, brain cancer, bone marrow cancer, cervical cancer, chronic lymphocytic leukemia, colorectal cancer, esophageal cancer, hepatocellular cancer, lymphoblastic leukemia, follicular lymphoma, lymphoid malignancies of T-cell or B-cell origin, melanoma, myelogenous leukemia, myeloma, oral cancer, ovarian cancer, non-small cell lung cancer, chronic lymphocytic leukemia, prostate cancer, small cell lung cancer, or spleen cancer~~ multiple myeloma, B-cell lymphoma, plasma cell myeloma, leukemia, lymphoma, gastric cancer, acute myeloid leukemia, bladder cancer, brain cancer, bone marrow cancer, cervical cancer, chronic lymphocytic leukemia, colorectal cancer, esophageal cancer, hepatocellular cancer, lymphoblastic leukemia, follicular lymphoma, lymphoid malignancies of T-cell or B-cell origin, melanoma, myelogenous leukemia, myeloma, oral cancer, ovarian cancer, non-small cell lung cancer, chronic lymphocytic leukemia, prostate cancer, small cell lung cancer, or spleen cancer; and/or

(4) at least one or more additional therapeutic agent is to be administered to the subject in need thereof.

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46. ~~The method of claim 41, use of claim 42, or pharmaceutical composition of claim 43, wherein administration or use of the antibody drug conjugate, composition, or pharmaceutical composition reduces the cancer cell population or slows the expansion of the cancer cell population by at least about 10%, at least about 20%, at least about 30%, at least about 40%, at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, at least about 95%, or at least about 99%.~~

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4724. An antibody that competes with NY920 or NY938 for binding to human CD48; preferably,
wherein the antibody binds to the same or overlapping epitope of human CD48 as NY920
or NY938; preferably wherein:

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(1) the antibody binds to one or more amino acids within residues 54-64 or 105-121 of
human CD48 (SEQ ID NO:53); or

(2) the antibody binds to one or more amino acids selected from residues 54, 58, 60, 61,
62, 64, 105, 107, 119, 111, 114, 115, 117, 119, or 121 of human CD48 (SEQ ID NO:53); preferably
wherein the antibody contacts the one or more amino acids within 4.0Å.

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4825. An antibody that competes with the antibody, or antigen binding fragment thereof, of any
 one of claims 1-~~3~~ or 104 for binding to human CD48; preferably,
wherein the antibody binds to the same or overlapping epitope of human CD48 as NY920
or NY938; preferably wherein:

(1) the antibody binds to one or more amino acids within residues 54-64 or 105-121 of
human CD48 (SEQ ID NO:53); or

(2) the antibody binds to one or more amino acids selected from residues 54, 58, 60, 61,
62, 64, 105, 107, 119, 111, 114, 115, 117, 119, or 121 of human CD48 (SEQ ID NO:53); preferably
wherein the antibody contacts the one or more amino acids within 4.0Å.

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~~49. The antibody of claim 47 or 48, wherein the antibody binds to the same or overlapping~~
~~epitope of human CD48 as NY920 or NY938.~~

~~50. The antibody of claim 49, wherein the antibody binds to one or more amino acids within~~
~~residues 54-64 or 105-121 of human CD48 (SEQ ID NO:53).~~

~~51. The antibody of claim 49, wherein the antibody binds to one or more amino acids selected~~
~~from residues 54, 58, 60, 61, 62, 64, 105, 107, 119, 111, 114, 115, 117, 119, or 121 of human~~
~~CD48 (SEQ ID NO:53).~~

~~52. The antibody of claim 51, wherein the antibody contacts the one or more amino acids~~
~~within 4.0Å.~~

~~53~~26. A diagnostic agent comprising the antibody or antigen binding fragment thereof of any one of claims ~~1-3 or 10~~4, or the antibody drug conjugate of any one of claims 10-18~~claim 14~~; preferably

~~54~~. ~~The diagnostic reagent of claim 53,~~ wherein the antibody or antigen binding fragment thereof, or the antibody drug conjugate, is labeled with ~~a~~ radiolabel, a fluorophore, a chromophore, an imaging agent, or a metal ion.

~~55~~27. A method of detecting human CD48 in a tissue or cell comprising contacting the diagnostic agent of claim ~~53 or 54~~26 to the tissue or cell and detecting binding of the diagnostic agent to the tissue or cell.