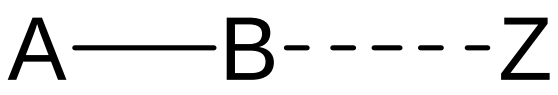
What is claimed is:

1. A compound having the structure:



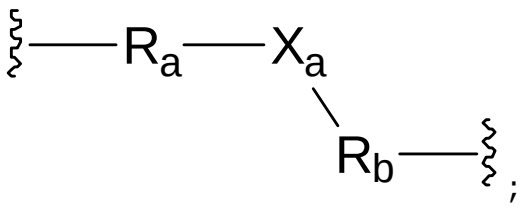
wherein A is a biologically active structure of the compound;

wherein Z is a protein component of the compound, which protein component comprises one or more polypeptides, wherein at least one of the one or more polypeptides comprises consecutive amino acids which (i) are identical to a stretch of consecutive amino acids present in a chain of an $F_c$ domain of an antibody; (ii) bind to an $F_c$ receptor; and (iii) have at their N-terminus a cysteine or a selenocysteine;

wherein B is a chemical structure linking A and Z;

wherein the dashed line between B and Z represents a peptidyl linkage between an N-terminal cysteine or selenocysteine of a polypeptide of Z and an amino acid residue or an organic acid residue of B; and

wherein the solid line between A and B represents a nonpeptidyl linkage comprising the structure:

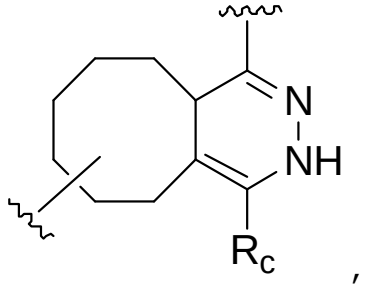


wherein $X_a$ is a chemical structure containing a cyclooctane fused to a dihydropyridazine;

wherein $R_a$ represents an organic structure which connects to one of A or B and $R_b$ represents an organic structure which connects to the other of A or B.

2. The compound according to claim 1 wherein $R_a$ is connected to the cyclooctane and $R_b$ is connected to the dihydropyridazine.

3. The compound according to claims 1 or 2, wherein $X_a$ has the structure:

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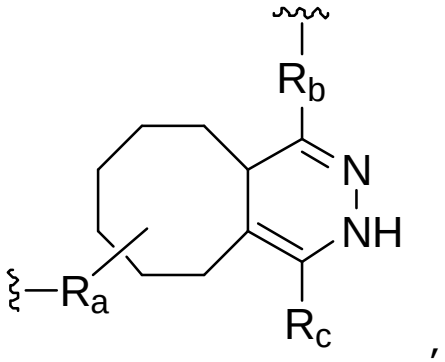
wherein $R_c$ is H, alkyl or aryl;
or a tautomer thereof.

4. The compound according to any one of claims 1-3, wherein the solid line between A and B represents a nonpeptidyl linkage comprising the structure:

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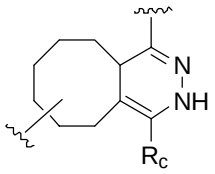
wherein $R_c$ is H, alkyl or aryl;
or a tautomer thereof.

5. The compound according to any one of claims 1-4, wherein $R_a$ and $R_b$ are independently an organic structure comprising or consisting of a chain of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or more moieties, wherein each moiety is independently selected from the group consisting of [PEG(y)]z, polyalkylene glycol, polyoxyalkylated polyol, polyvinyl alcohol, polyvinyl alkyl ether, poly(lactic acid), poly(lactic-glycolic acid), polysaccharide, a branched residue, $C_1$-$C_{10}$ alkyl, $C_3$-$C_{10}$ cycloalkane, $C_2$-$C_{10}$ alkene, $C_5$-$C_{10}$ cycloalkene, amine, sulfur, oxygen, succinimide, maleimide, glycerol, triazole, isoxazolidine, $C_2$-$C_5$ acyl, $C_2$-$C_5$ acylamino, $C_2$-$C_5$ acyloxy, succinyl, malonyl, glutaryl, phthalyl, adipoyl, an amino acid, an aryl group, a heteroaryl group, a carbamate, a chemical structure containing a cyclooctane fused to a dihydropyridazine, a chemical structure containing a cyclooctene fused to a triazole, a chemical structure containing a cyclooctene fused to a isoxazolidine, a dibenzocyclooctene, a dibenzoazacyclooctene, 

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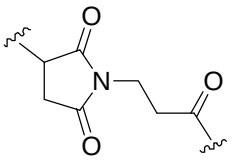

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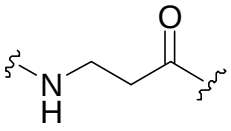

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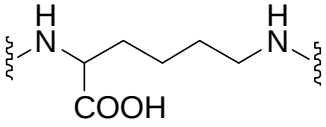

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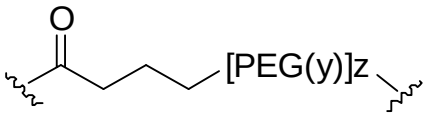

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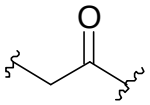

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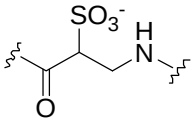

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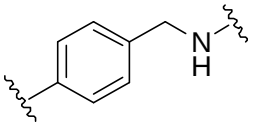

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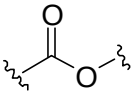

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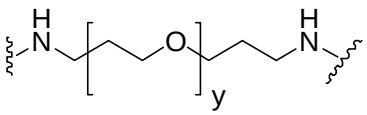

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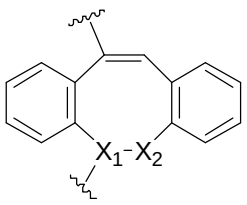

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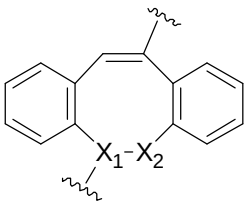

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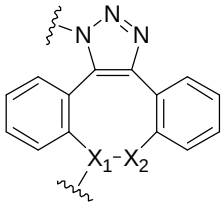

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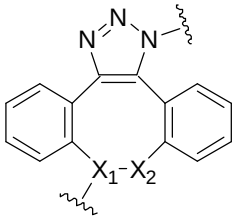

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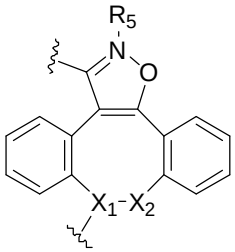

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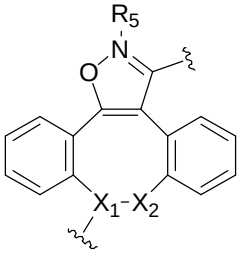
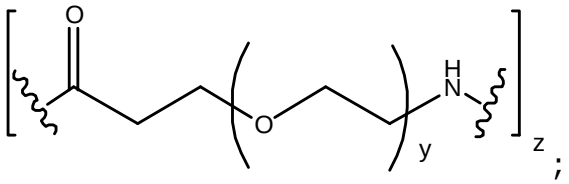


;

wherein $X_1$ is CH or N, $X_2$ is $CH_2$ or a carbonyl group, and $R_5$ is an aryl or alkyl group;

wherein [PEG(y)]z is:



;

wherein y = 1-100 and z = 1-10.

6. The compound according to any one of claims 1-5, wherein $R_a$ or $R_b$

i) is attached to A via a carbon-nitrogen bond or a carbon-sulfur bond;

ii) is attached to A via a carbon-nitrogen bond;

iii) is attached to A via a carbon-nitrogen bond, wherein the carbon-nitrogen bond is an amide bond;

iv) is attached to A via a biologically labile bond;

v) is attached to A via an amide bond between the C-terminal amino acid of A and an amino group in B;

vi) is attached to A via an amide bond between the C-terminal amino acid of A and an amino group in B, wherein the terminal amino acid is cysteine;

vii) is attached to A via a carbon-sulfur bond;

viii) is attached to A via a carbon-sulfur bond formed between $R_a$ or $R_b$ and a free thiol;

ix) comprises a branched residue; or

x) is attached to more than one A via a branched residue.

7. The compound according to any one of claims 1-6, wherein A

i) comprises the structure of a compound that is a drug approved for treating a subject afflicted with a disease;

ii) comprises the structure of an organic compound having a molecular weight less than 1000 Daltons, a DNA aptamer, an RNA aptamer, an oligonucleotide, or a protein that is biologically active;

iii) comprises a primary or a secondary amine;

iv) is linked to B via the primary or secondary amine;

v) is aripiprazole or oseltamivir;

vi) comprises a secondary amine;

vii) is a respiratory drug, an antiasthmatic agent, an analgesic agent, an antidepressant, an antianginal agent, an antiarrhythmic agent, an antihypertensive agent, an antidiabetic agent, an antihistamine, an anti-infective agent, an antibiotic, an antiinflamatory agent, an antiparkinsonism drug, an antipsychotics, an antipyretic agent, an antiulcer agent, an attention deficit hyperactivity disorder (ADHD) drug, a central nervous system stimulant, a decongestant, or a psychostimulant;

viii) is alprenolol, acebutolol, amidephrine, amineptine, amosulalol, amoxapine, amphetaminil, atenolol, atomoxetine, balofloxacin, bamethan, befunolol, benazepril, benfluorex, benzoctamine, betahistine, betaxolol, bevantolol, bifemelane, bisoprolol, brinzolamide, bufeniode, butethamine, camylofine,

carazolol, carticaine, carvedilol, cephaeline, ciprofloxacin, cloZapine, clobenZorex, clorprenaline, cyclopentamine, delapril, demexiptiline, denopamine, desipramine, desloratadine, diclofenac, dimetofrine, dioxadrol, dobutamine, dopexamine, doripenem, dorzolamide, droprenilamine, duloxetine, eltopraZine, enalapril, enoxacin, epinephrine, ertapenem, esapraZole, esmolol, etoxadrol, fasudil, fendiline, fenethylline, fenfluramine, fenoldopam, fenoterol, fenproporex, flecamide, fluoxetine, formoterol, frovatriptan, gaboxadol, garenoxacin, gatifloxacin, grepafloxacin, hexoprenaline, imidapril, indalpine, indecainide, indeloxazine hydrochloride, isoxsuprine, ispronicline, labetalol, landiolol, lapatinib, levophacetoperane, lisinopril, lomefloxacin, lotrafiban, maprotiline, mecamylamine, mefloquine, mepindolol, meropenem, metapramine, metaproterenol, methoxyphenamine, dextrorotary methylphenidate, methylphenidate, metipranolol, metoprolol, mitoxantrone, mivazerol, moexipril, moprolol, moxifloxacin, nebivolol, nifenalol, nipradilol, norfloxacin, nortriptyline, nylidrin, olanZapine, oxamniquine, oxprenolol, oxyfedrine, paroxetine, perhexyline, phenmetrazine, phenylephrine, phenylpropylmethylamine, pholedrine, picilorex, pimethylline, pindolol, pipemidic acid, piridocaine, practolol, pradofloxacin, pramipexole, pramiverin, prenalterol, prenylamine, prilocalne, procaterol, pronethalol, propafenone, propranolol, propylhexedrine, protokylol, protriptyline, pseudoephedrine, reboxetine, rasagiline, (r)-rasagiline, repinotan, reproterol, rimiterol, ritodrine, safinamide, salbutamol/albuterol, salmeterol, sarizotan, sertraline, silodosin, sotalol, soterenol, sparfloxacin, spirapril, sulfinalol, synephrine, tamsulosin, tebanicline,

tianeptine, tirofiban, tretoquinol, trimetazidine, troxipide, varenicline, vildagliptin, viloxazine, viquidil or xamoterol;

ix) comprises a protein that is biologically active;

x) comprises a secreted protein;

xi) comprises an extracellular domain of a protein

xii) is biologically active such that it has target-binding activity;

xiii) is an independently-folding protein or a portion thereof;

xiv) is a glycosylated protein;

xv) comprises intra-chain disulfide bonds;

xvi) binds a cytokine;

xvii) binds to a cytokine, wherein the cytokine is TNFα;

xviii) comprises Atrial Natriuretic Peptide (ANP), Calcitonin, Corticotropin Releasing Hormone (CRH), Endothelin, Exenatide, Gastric Inhibitory Peptide (GIP), Glucagon-Like Peptide-1 (GLP-1), Glucagon-Like Peptide-2 (GLP-2), an analog of GLP-1 or GLP-2, Glucagon Vasoactive Intestinal Peptide (GVIP), Ghrelin, Peptide YY or Secretin, or a portion thereof;

ixx) comprises a stretch of consecutive amino acids in the sequence HGEGTFTSDVSSYLEEQAAKEFIAWLVKGRG;

xx) comprises at least one stretch of consecutive amino acids which are identical to a stretch of consecutive amino acids present in the heavy chain of a Fab or a Fab’ of an antibody;

xxi) comprises at least one at least one stretch of consecutive amino acids which are identical to a stretch of consecutive amino acids present in the light chain of a Fab or a Fab’ of an antibody;

xxii) comprises at least one Fab or Fab’ of an antibody, or a portion of at least one Fab or Fab’;

xxiii) comprises Fab-1 or Fab’1, or a portion thereof of an antibody;

xxiv) comprises Fab-2 or Fab’2, or a portion thereof of an antibody;

xxv) comprises two Fab or Fab’ hands of an antibody;

xxvi) comprises at least one stretch of consecutive amino acids which are identical to a stretch of consecutive amino acids present in a single chain antibody; or

xxvii) comprises at least one stretch of consecutive amino acids which are identical to a stretch of consecutive amino acids present in a TNFα receptor.

8. The compound according to any one of claims 1-7, wherein $R_a$ or $R_b$

i) is an organic structure comprising a [PEG(y)]z group;

ii) is an organic structure comprising a polyalkylene glycol, polyoxyalkylated polyol, polyvinyl alcohol, polyvinyl alkyl ether, poly(lactic acid), poly(lactic-glycolic acid), or polysaccharide group;

iii) is an organic structure comprising a $C_1$-$C_4$ alkyl group

iv) is an organic structure comprising a succinimide

v) is an organic structure comprising an amine;

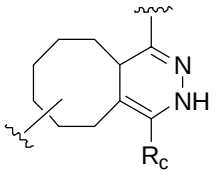
vi) is an organic structure comprising a succinyl, malonyl, glutaryl, phthalyl or adipoyl;

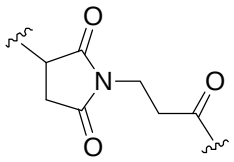
vii) is an organic structure comprising a malonyl;

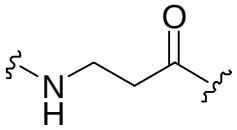
viii) is an organic structure comprising an amino acid;

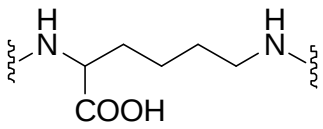
ix) is an organic structure comprising a cysteine;

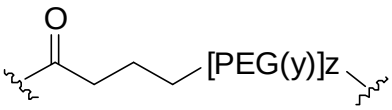
x) is an organic structure comprising a lysine;

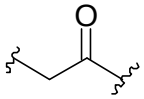
xi) is an organic structure consisting of a chain of 3 moieties selected from the group consisting of [PEG(y)]z, polyalkylene glycol, polyoxyalkylated polyol, polyvinyl alcohol, polyvinyl alkyl ether, poly(lactic acid), poly(lactic-glycolic acid), polysaccharide, a branched residue, $C_1$-$C_{10}$ alkyl, $C_3$-$C_{10}$ cycloalkane, $C_2$-$C_{10}$ alkene, $C_5$-$C_{10}$ cycloalkene, amine, sulfur, oxygen, succinimide, maleimide, glycerol, triazole, isoxazolidine, $C_2$-$C_5$ acyl, $C_2$-$C_5$ acylamino, $C_2$-$C_5$ acyloxy, succinyl, malonyl, glutaryl, phthalyl, adipoyl, an amino acid, an aryl group, a heteroaryl group, a carbamate, a chemical structure containing a cyclooctane fused to a dihydropyridazine, a chemical structure containing a cyclooctene fused to a triazole, a chemical structure containing a cyclooctene fused to a isoxazolidine, a dibenzocyclooctene, a dibenzoazacyclooctene, 

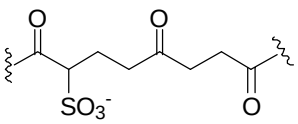
, 

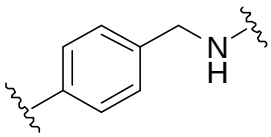
, 

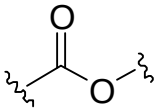
, 

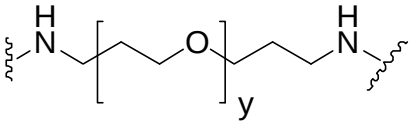
, 

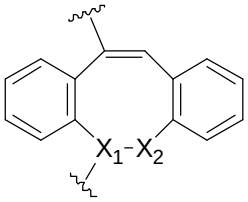
, 

, 

, 

, 

, 

, 

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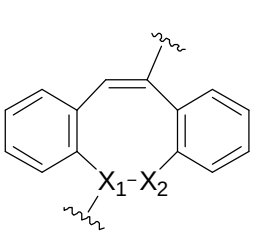

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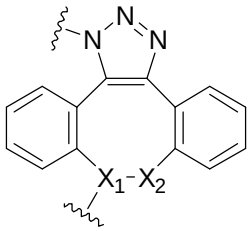

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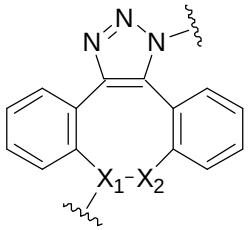

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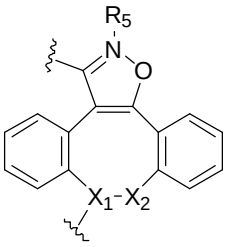

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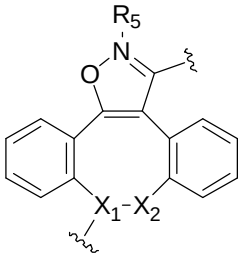

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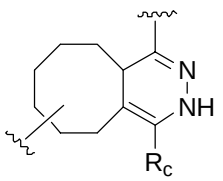
xii) is an organic structure consisting of a chain of four moieties selected from the group consisting of [PEG(y)]z, polyalkylene glycol, polyoxyalkylated polyol, polyvinyl alcohol, polyvinyl alkyl ether, poly(lactic acid), poly(lactic-glycolic acid), polysaccharide, a branched residue, $C_1$-$C_{10}$ alkyl, $C_3$-$C_{10}$ cycloalkane, $C_2$-$C_{10}$ alkene, $C_5$-$C_{10}$ cycloalkene, amine, sulfur, oxygen, succinimide, maleimide, glycerol, triazole, isoxazolidine, $C_2$-$C_5$ acyl, $C_2$-$C_5$ acylamino, $C_2$-$C_5$ acyloxy, succinyl, malonyl, glutaryl, phthalyl, adipoyl, an amino acid, an aryl group, a heteroaryl group, a carbamate, a chemical structure containing a cyclooctane fused to a dihydropyridazine, a chemical structure containing a cyclooctene fused to a triazole, a chemical structure containing a cyclooctene fused to a isoxazolidine, a dibenzocyclooctene, a dibenzoazacyclooctene, 

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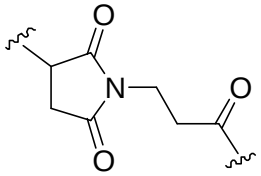

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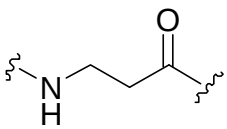

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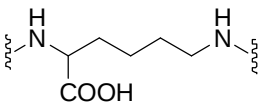

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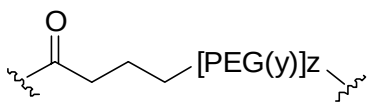

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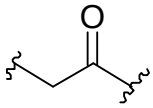

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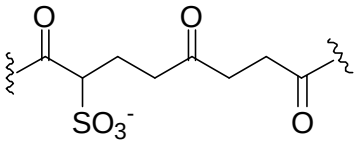

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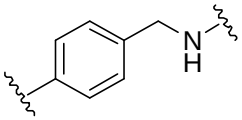

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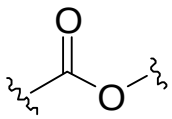

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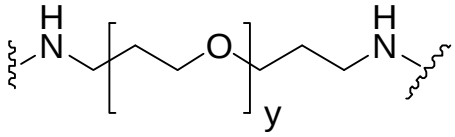

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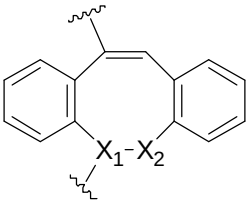

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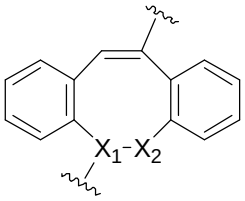

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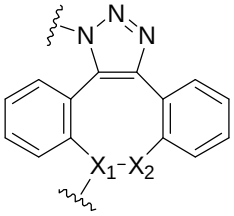

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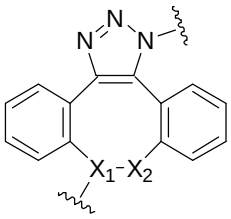

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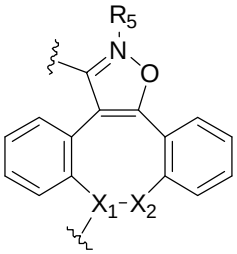

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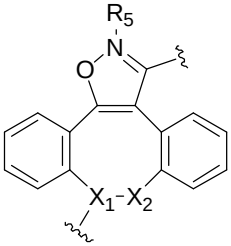
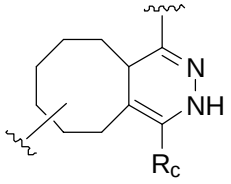
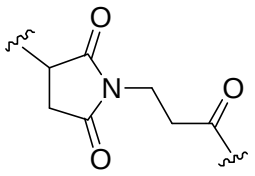
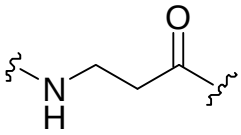


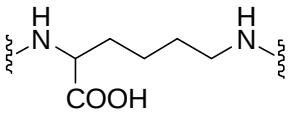
;

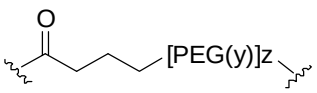
xiii) is an organic structure consisting of a chain of five moieties selected from the group consisting of [PEG(y)]z, polyalkylene glycol, polyoxyalkylated polyol, polyvinyl alcohol, polyvinyl alkyl ether, poly(lactic acid), poly(lactic-glycolic acid), polysaccharide, a branched residue, $C_1$-$C_{10}$ alkyl, $C_3$-$C_{10}$ cycloalkane, $C_2$-$C_{10}$ alkene, $C_5$-$C_{10}$ cycloalkene, amine, sulfur, oxygen, succinimide, maleimide, glycerol, triazole, isoxazolidine, $C_2$-$C_5$ acyl, $C_2$-$C_5$ acylamino, $C_2$-$C_5$ acyloxy, succinyl, malonyl, glutaryl, phthalyl, adipoyl, an amino acid, an aryl group, a heteroaryl group, a carbamate, a chemical structure containing a cyclooctane fused to a dihydropyridazine, a chemical structure containing a

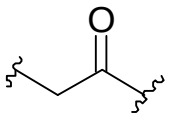
cyclooctene fused to a triazole, a chemical structure containing a cyclooctene fused to a isoxazolidine, a dibenzocyclooctene, a dibenzoazacyclooctene, 

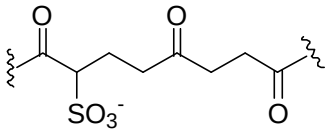
, 

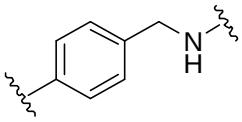
, 

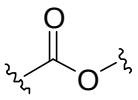
, 

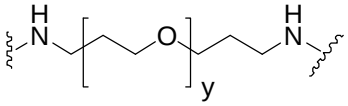
, 

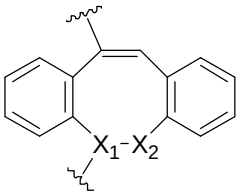
, 

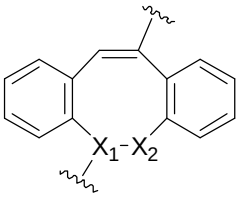
, 

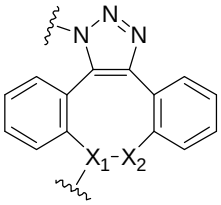
, 

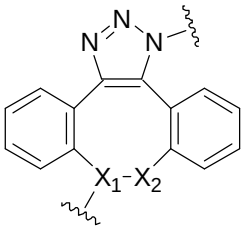
, 

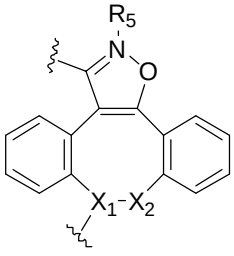
, 

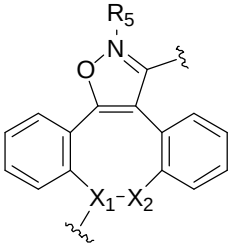
, 

, 

, 

, 

, 

, and 

;

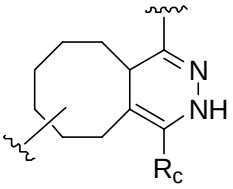
xiv) comprises a [PEG(y)]z group bonded to a lysine;

xv) comprises a $C_1$-$C_4$ acyl group bonded to a succinimide group;

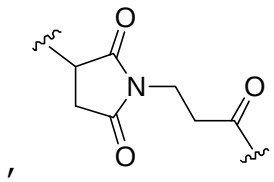
xvi) comprises a lysine bonded to a $C_1$-$C_4$ acyl

xvii) comprises a [PEG(y)]z group, which is bonded to a glutaryl;

xviii) is an organic structure consisting of a chain of three, four or five moieties selected from the group consisting of [PEG(y)]z, $C_2$-$C_5$ acyl, succinyl, malonyl, glutaryl, an amino acid, a chemical structure containing a cyclooctane fused to a dihydropyridazine, a chemical structure containing a cyclooctene fused to a triazole, a chemical structure containing a cyclooctene fused to a isoxazolidine, a dibenzocyclooctene, a




dibenzoazacyclooctene,

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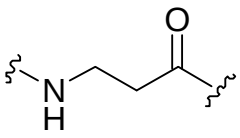


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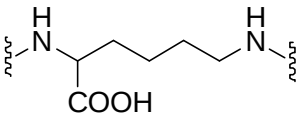


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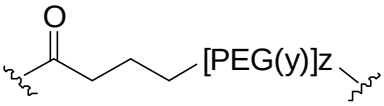


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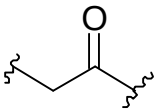


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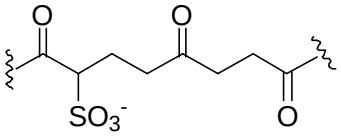


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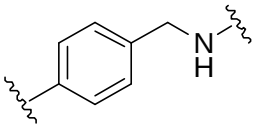


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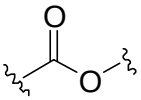


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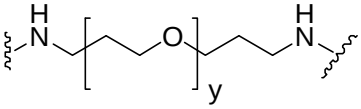


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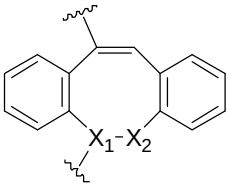


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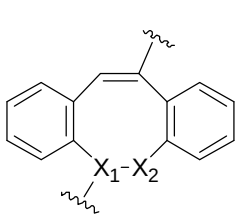

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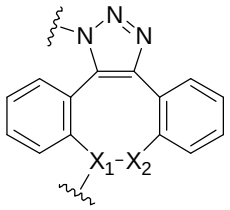

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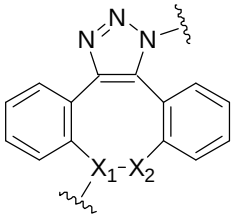

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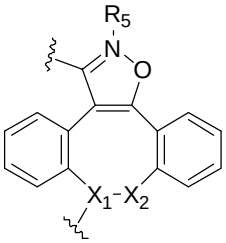

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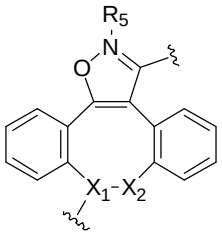
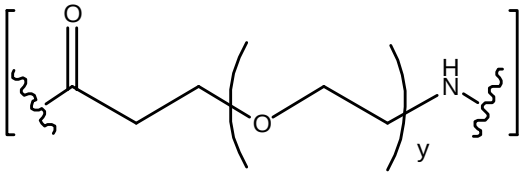


;

wherein $X_1$ is CH or N, $X_2$ is $CH_2$ or a carbonyl group, and $R_5$ is an aryl or alkyl group;

wherein [PEG(y)]z is:



;

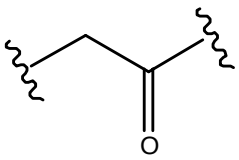
wherein y = 1-100 and z = 1-10;

ixx) is a bond;

xx) is a cysteine;

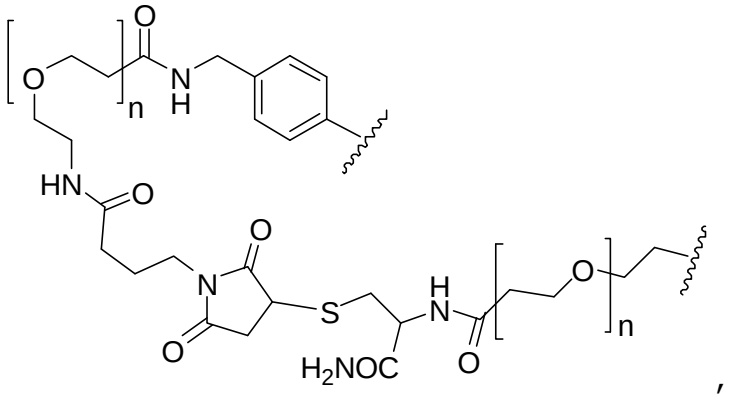
xxi) has a linear structure; or

xxii) has a branched structure;

xxiii) has the structure: 

;

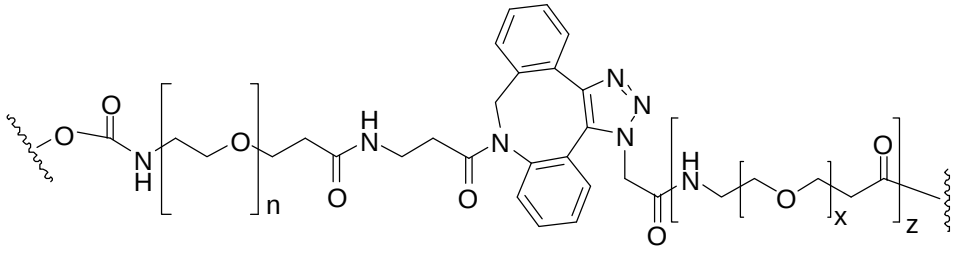
xxiv) is:



,

wherein n is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 1-30, 1-40, or 1-50;

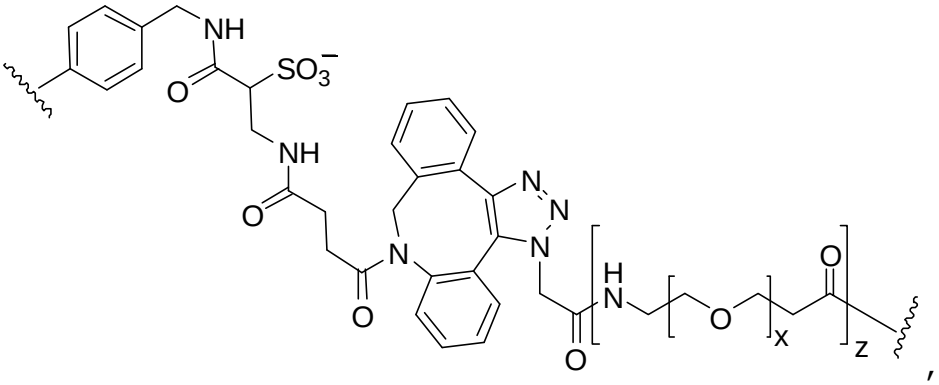
xxv) is:



,

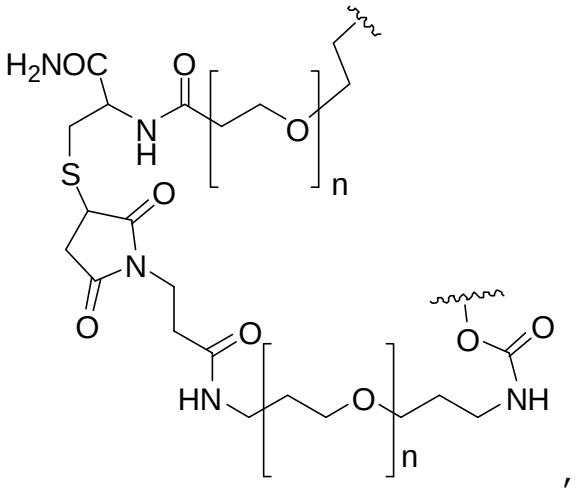
wherein n is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 1-30, 1-40, or 1-50, x is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 1-30, 1-40, or 1-50 and z is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 1-30, 1-40, or 1-50.

xxvi) is:



wherein x is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 1-30, 1-40, or 1-50 and z is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 1-30, 1-40, or 1-50; or

xxvii) is:



wherein n is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 1-30, 1-40, or 1-50.

9. The compound according to any one of claims 1-8, wherein Z comprises one C, wherein C is a first polypeptide, which first popyleptide comprises consecutive amino acids which (i) are identical to a stretch of consecutive amino acids present in a chain of an $F_c$ domain of an antibody; (ii) bind to an $F_c$ receptor; and (iii) have at their N-terminus a sequence selected from the group consisting of

a cysteine, selenocysteine, CP, CPXCP (where X = P, R, or S), CDKTHTCPPCP, CVECPPCP, CCVECPPCP and CDTPPPCPRCP.

10. The compound according to claim 9, wherein C

i) comprises consecutive amino acids which (i) are identical to a stretch of consecutive amino acids present in a chain of an $F_c$ domain of an antibody; (ii) bind to an $F_c$ receptor; and (iii) have at their N-terminus a sequence comprising a naturally occurring cysteine selected from the group consisting of CP, CPXCP (where X = P, R, or S), CDKTHTCPPCP, CVECPPCP, CCVECPPCP and CDTPPPCPRCP;

ii) is a polypeptide component of the compound, which polypeptide component comprises consecutive amino acids which (i) are identical to a stretch of consecutive amino acids present in a chain of an $F_c$ domain of an antibody; (ii) bind to an $F_c$ receptor; and (iii) have at their N-terminus a sequence comprising a non-naturally occurring cysteine or selenocysteine;

iii) comprises consecutive amino acids which are identical to a stretch of consecutive amino acids present in the chain of an Fc domain of an antibody selected from the group consisting of IgG, IgM, IgA, IgD, and IgE;

iv) comprises consecutive amino acids which are identical to a stretch of consecutive amino acids present in the chain of an Fc6 domain of an antibody

v) comprises consecutive amino acids which are identical to a stretch of consecutive amino acids present in a chain of an antibody other than a chain of a Fc domain of the antibody;

vi) consecutive amino acids which are identical to a stretch of consecutive amino acids present in a heavy chain of a Fab or a Fab’ of an antibody; or

vii) comprises consecutive amino acids which are identical to a stretch of consecutive amino acids present in the light chain of a Fab or a Fab’ of an antibody.

11. The compound according to claim 9 or 10, wherein Z further comprises a second polypeptide, which second popyleptide comprises consecutive amino acids which are identical to a stretch of consecutive amino acids present in a chain of an antibody other than a chain of a Fc domain of the antibody.

12. The compound according to claim 11, wherein the second popypeptide comprises

i) consecutive amino acids which are identical to a stretch of consecutive amino acids present in a heavy chain of a Fab or a Fab’ of an antibody; or

ii) consecutive amino acids which are identical to a stretch of consecutive amino acids present in the light chain of a Fab or a Fab’ of an antibody.

13. The compound according to any one of claims 1-12, wherein Z

i) comprises an antibody or a portion thereof;

ii) comprises at least one Fab or Fab’ of an antibody, or a portion of the at least one Fab or Fab’

iii) comprises Fab-1 or Fab’1, or a portion thereof of an antibody;

iv) comprises Fab-2 or Fab’2, or a portion thereof of an antibody;

v) comprises two Fab or Fab’ hands of an antibody;

vi) comprises at least one stretch of consecutive amino acids which are identical to a stretch of consecutive amino acids present in a single chain antibody; or

vii) comprises a second polypeptide, and B is linked to Z via a peptidyl linkage between the N-terminal cysteine or selenocysteine of the second polypeptide of Z and an amino acid residue or an organic acid residue of B.

14. The compound according to any one of claims 9-13, wherein the C-terminus of C

i) comprises a stretch of consecutive amino acids present in a chain of an $F_c$ domain of an antibody that has been modified; or

ii) is a cysteine, selenocysteine, homocysteine, or homoselenosysteine, or a derivative of cysteine, selenocysteine, homocysteine, or homoselenosysteine.

15. A homodimer or a heterodimer comprising the compound of any one of claims 1-14.

16. The homodimer or heterodimer of claim 15, wherein each compound of the homodimer or heterodimer

i) is capable of binding to the other by at least one disulfide bond;

ii) is capable of binding to the other by at least one disulfide bond between the C or the second polypeptide of each compound;

iii) is bound to the other by at least one disulfide bond;

iv) is bound to the other by at least one disulfide bond between the C or the second polypeptide of each compound.