CLAIMS

What is claimed is:

1. A compound comprising formula (III), or a pharmaceutically acceptable salt thereof:

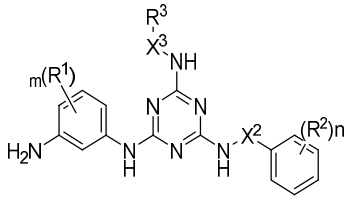
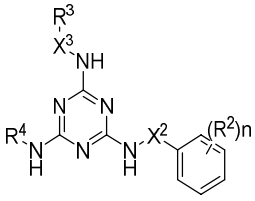
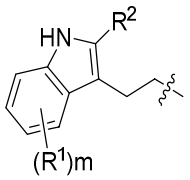
$$[AATM]_{k'}—[CON]_h—[Linker]_i—[CON]_{h'}—[CRBM]_{j'} \quad (III),$$

wherein:

AATM is an auto-antibody-binding moiety selected from the group consisting of:

rozanolixizumab,

efgartigimod,


(3a),

(3b), and

;

wherein in (3a) and (3b):

each occurrence of R^1 is independently selected from the group consisting of F, Cl, Br, I, CN, NO_2, R, OR, C_1-C_6 haloalkyl, C_3-C_8 halocycloalkyl, C_1-C_6 haloalkoxy, C_3-C_8 halocycloalkoxy, -$N(R)_2$, -SR, -S(=O)R, -$S(=O)_2$R, -$S(=O)_2N(R)_2$, -C(=O)R, -C(=O)OR, -OC(=O)R, -$C(=O)N(R)_2$, -$N(R)S(=O)_2$R, -N(R)C(=O)OR, -N(R)C(=O)R, and -$N(R)C(=O)N(R)_2$, wherein each occurrence of R is independently H, C_1-C_6 alkyl, or C_3-C_8 cycloalkyl;

each occurrence of m independently is 0, 1, 2, 3, or 4;

X^2 is a bond, optionally substituted C_1-C_6 alkylene, or optionally substituted C_1-C_6 heteroalkylene;

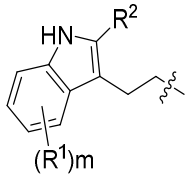
each occurrence of R^2 is independently selected from the group consisting of F, Cl, Br, I, CN, NO_2, R, OR, C_1-C_6 haloalkyl, C_3-C_8 halocycloalkyl, C_1-C_6 haloalkoxy, C_3-C_8 halocycloalkoxy, -$N(R)_2$, -SR, -S(=O)R, -$S(=O)_2$R, -$S(=O)_2N(R)_2$, -C(=O)R, -C(=O)OR, -OC(=O)R, -$C(=O)N(R)_2$, -$N(R)S(=O)_2$R, -N(R)C(=O)OR, -N(R)C(=O)R, and -$N(R)C(=O)N(R)_2$, wherein each occurrence of R is independently H, C_1-C_6 alkyl, or C_3-C_8 cycloalkyl;

each occurrence of n is independently 0, 1, 2, 3, or 4;

X^3 is a bond, optionally substituted C_1-C_6 alkyl, or optionally substituted C_1-C_6 heteroalkyl;

R^3 is H, R, -OH, $-NH_2$, -NHR, -C(=O)OH, or -SH, wherein each occurrence of R is independently C_1-C_6 alkyl or C_3-C_8 cycloalkyl;

R^4 is a cycloalkyl optionally substituted with 1-4 groups independently selected from the group consisting of F, Cl, Br, I, CN, NO_2, R, OR, C_1-C_6 haloalkyl, C_3-C_8 halocycloalkyl, C_1-C_6 haloalkoxy, C_3-C_8 halocycloalkoxy, $-N(R)_2$, -SR, -S(=O)R, $-S(=O)_2R$, $-S(=O)_2N(R)_2$, -C(=O)R, -C(=O)OR, -OC(=O)R, $-C(=O)N(R)_2$, $-N(R)S(=O)_2R$, -N(R)C(=O)OR, -N(R)C(=O)R, and $-N(R)C(=O)N(R)_2$, wherein each occurrence of R is independently H, C_1-C_6 alkyl, or C_3-C_8 cycloalkyl;

and wherein in 

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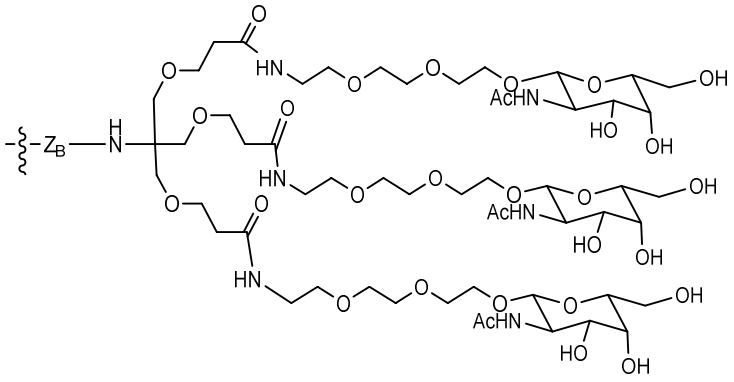
each occurrence of R^1 is independently selected from the group consisting of F, Cl, Br, I, CN, NO_2, R, OR, C_1-C_6 haloalkyl, C_3-C_8 halocycloalkyl, C_1-C_6 haloalkoxy, C_3-C_8 halocycloalkoxy, $-N(R)_2$, -SR, -S(=O)R, $-S(=O)_2R$, $-S(=O)_2N(R)_2$, -C(=O)R, -C(=O)OR, -OC(=O)R, $-C(=O)N(R)_2$, $-N(R)S(=O)_2R$, -N(R)C(=O)OR, -N(R)C(=O)R, and $-N(R)C(=O)N(R)_2$, wherein each occurrence of R is independently H, C_1-C_6 alkyl, or C_3-C_8 cycloalkyl;

m is 0, 1, 2, 3, or 4;

each occurrence of R^2 is independently selected from the group consisting of H, F, Cl, Br, I, CN, NO_2, R, OR, C_1-C_6 haloalkyl, C_3-C_8 halocycloalkyl, C_1-C_6 haloalkoxy, C_3-C_8 halocycloalkoxy, $-N(R)_2$, -SR, -S(=O)R, $-S(=O)_2R$, $-S(=O)_2N(R)_2$, -C(=O)R, -C(=O)OR, -OC(=O)R, $-C(=O)N(R)_2$, $-N(R)S(=O)_2R$, -N(R)C(=O)OR, -N(R)C(=O)R, and $-N(R)C(=O)N(R)_2$, wherein each occurrence of

R is independently H, C_1-C_6 alkyl, or C_3-C_8 cycloalkyl;

CRBM has the structure



;

wherein:

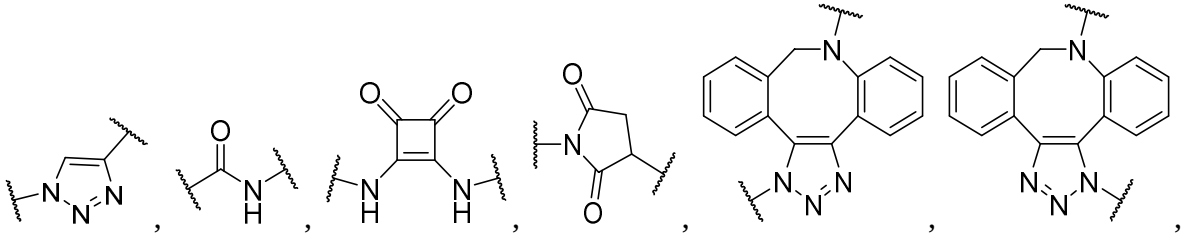
Z_B is absent, -$(CH_2)_{IM}$-, -C(=O)-$(CH_2)_{IM}$-, or -C(=O)$(CH_2)_{IM}$-NR^M-;

R^M is H or C_1-C_3 alkyl optionally substituted with 1-2 hydroxyl groups; and

each occurrence of IM is independently 0, 1, 2, 3, 4, 5, or 6;

each CON is independently at each occurrence selected from the group consisting of

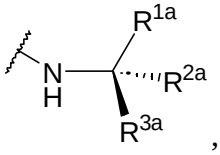
a) a group selected from the group consisting of:



, and ;

wherein one of R" and R' is a bond, and the other is H or methyl;

b) a group according to the structure:



,

wherein:

R^{1a}, R^{2a}, and R^{3a} are each independently H, -$(CH_2)_{M1}$-, -$(CH_2)_{M2}C(=O)_{M3}(NR^4)_{M3}$-$(CH_2)_{M2}$-, -$(CH_2)_{M2}(NR^4)_{M3}C(O)_{M3}$-$(CH_2)_{M2}$-, or -$(CH_2)_{M2}O$-$(CH_2)_{M1}$-$C(O)NR^4$-,

with the proviso that R^{1a}, R^{2a}, and R^{3a} are not simultaneously H;

each occurrence of M1 is independently 1, 2, 3, or 4;

each occurrence of M2 is independently 0, 1, 2, 3, or 4;

each occurrence of M3 is independently 0 or 1; and

each occurrence of R^4 is independently H, C_1-C_3 alkyl, C_1-C_6 alkanol, or -C(O)(C_1-C_3 alkyl),

with the proviso that M2 and M3 within the same R^{1a}, R^{2a} and R^{3a} are not simultaneously 0;

each Linker is independently at each occurrence selected from the group consisting of:

i) a polyethyleneglycol linker having from 2 to 12 ethylene glycol residues,

ii) a polypropylene glycol or polypropylene-co-polyethylene glycol linker containing 1 to 100 alkylene glycol units,

iii) a group according to the structure:

$-CH_2CH_2(OCH_2CH_2)_mOCH_2-$, $-(CH_2)_mCH_2-$, or $-[N(R^a)-CH(R^b)(C=O)]_m-$,

wherein:

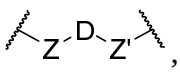
each occurrence of m is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15;

R^a is independently H, C_1-C_3 alkyl, or C_1-C_6 alkanol, or

R^a, together with nitrogen atom to which it is attached, combines with R^b to form a pyrrolidine or hydroxypyrrolidine group; and

R^b is independently selected from the group consisting of hydrogen, methyl, isopropyl, $-CH(CH_3)CH_2CH_3$, $-CH_2CH(CH_3)_2$, $-(CH_2)_3$-guanidine, $-CH_2C(=O)NH_2$, $-CH_2C(=O)OH$, $-CH_2SH$, $-(CH_2)_2C(=O)NH_2$, $-(CH_2)_2C(=O)OH$, $-(CH_2)$imidazole, $-(CH_2)_4NH_2$, $-CH_2CH_2SCH_3$, benzyl, $-CH_2OH$, $-CH(OH)CH_3$, and $-(CH_2)$phenol;

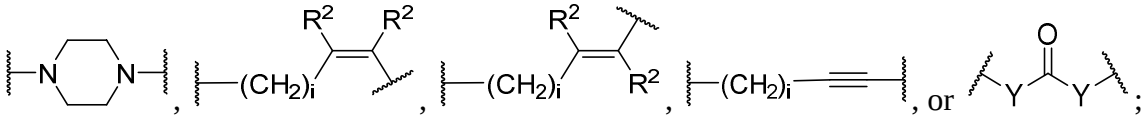
iv) a group according to the formula:



,

wherein:

Z and Z' are each independently a bond, -$(CH_2)_i$-O-, -$(CH_2)_i$-S-, -$(CH_2)_i$-N(R)-,

, or ;

each occurrence of R^2 is independently H or C_1-C_3 alkyl;

each occurrence of Y is independently a bond, -O-, -S-, or -N(R)-;

D is a bond, –$(CH_2)_i$-Y-C(O)-Y-$(CH_2)_i$-, -$(CH_2)_{m'}$-, or -[$(CH_2)_n$-X^1]$_j$-,

with the proviso that Z, Z', and D are not each simultaneously bonds;

each occurrence of X^1 is independently -O-, -S-, or -N(R)-;

each occurrence of R is independently H, C_1-C_3 alkyl, or C_1-C_6 alkanol;

each occurrence of i is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

each occurrence of j is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

each occurrence of m' is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

each occurrence of n is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

v) a group according to the structure:

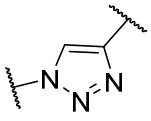
-CH_2-$(OCH_2CH_2)_n$-CH_2-, -$(CH_2CH_2O)_{n'}CH_2CH_2$-, or -$(CH_2CH_2CH_2O)_n$-,

wherein:

each occurrence of n is independently an integer from 1 to 25;

n' is an integer from 1 to 25;

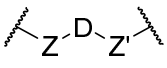
vi) a group of formula: PEG-[CON]-PEG,

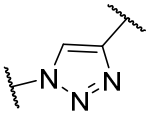
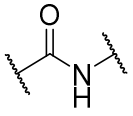
wherein each PEG is independently at each occurrence 1 to 12 ethylene glycol residues and [CON] is ;

each occurrence of m' is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

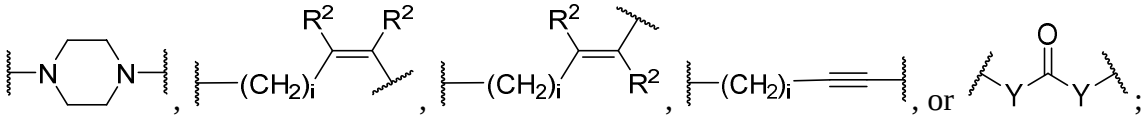
each occurrence of j is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; and

each occurrence of m' is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; and

vii) two independently selected groups of formula  connected through a CON group, wherein:

CON is selected the group consisting of  and ,

Z and Z’ are each independently a bond, -$(CH_2)_i$-O-, -$(CH_2)_i$-S-, -$(CH_2)_i$-N(R)-,

, or ;

each occurrence of R^2 is independently H or C_1-C_3 alkyl;

each occurrence of Y is independently a bond, -O-, -S-, or -N(R)-;

D is a bond, –$(CH_2)_i$-Y-C(O)-Y-$(CH_2)_i$-, -$(CH_2)_{m'}$-, or -[$(CH_2)_n$-X^1]$_j$-,

with the proviso that Z, Z', and D are not each simultaneously bonds;

each occurrence of X^1 is independently -O-, -S-, or -N(R)-;

each occurrence of R is independently H, C_1-C_3 alkyl, or C_1-C_6 alkanol;

each occurrence of i is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

each occurrence of j is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

each occurrence of m' is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

each occurrence of n is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

k’ is 1, 2, 3, 4, 5, or 6;

h is 0, 1, 2, 3, 4, 5, or 6;

i is 1, 2, 3, 4, 5, or 6;

h’ is 0, 1, 2, 3, 4, 5, or 6;

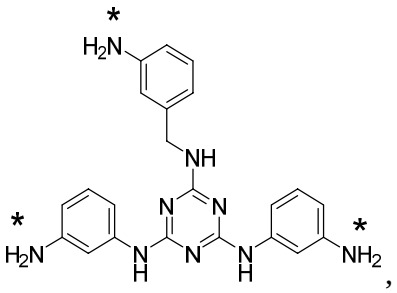
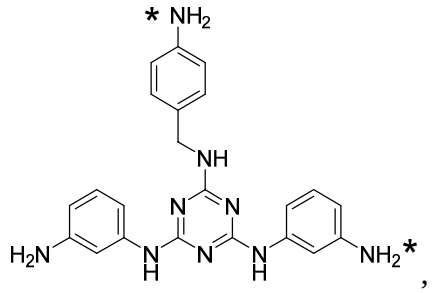
j is 1, 2, 3, 4, 5, or 6, with the proviso that both h and h' are not simultaneously 0.

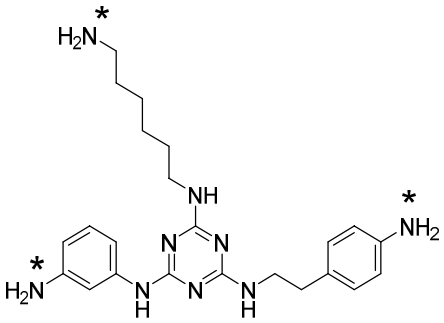
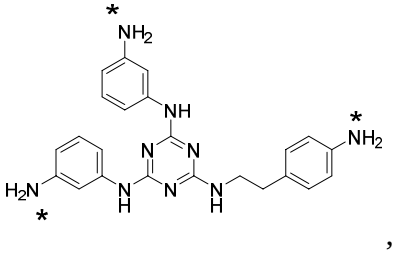
2. The compound of claim 1, which is:

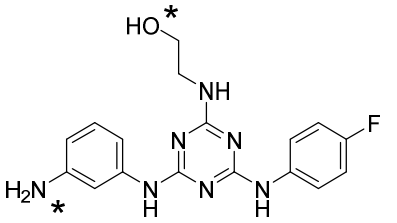
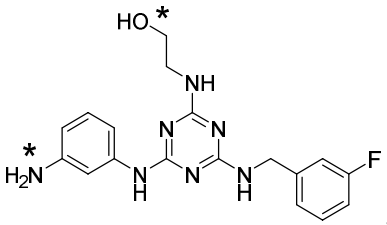
[AATM]—[CON]$_{0-1}$—[Linker]—[CON]$_{0-1}$—[CRBM] (IIIa).

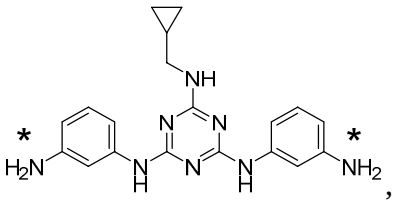
3. The compound of claim 1, wherein the Linker is a polyethylene glycol containing linker comprising 2-12 ethylene glycol residues.

4. The compound of claim 1, wherein the AATM is selected from the group consisting of:

, ,

, ,

, , and

,

wherein the * indicates a point of attachment to the Linker or CON.

5. The compound of claim 1, wherein the AATM is rozanolixizumab or efgartigimod.

6. A pharmaceutical composition comprising at least one pharmaceutically acceptable excipient and a therapeutically effective amount of at least one compound of claim 1.

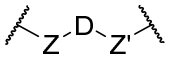
7. A pharmaceutic composition for use as a medicament for treating, ameliorating, and/or preventing an autoimmune disease or disorder in a human subject in need thereof, wherein the pharmaceutic composition comprises a therapeutically effective amount of at

least one compound of claim 1 and at least one pharmaceutically acceptable excipient.

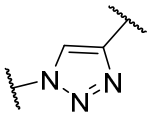
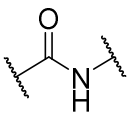
8. The composition of claim 7, wherein the autoimmune disease is Addison's Disease, Autoimmune polyendocrine syndrome (APS) types 1, 2 and 3, autoimmune pancreatitis (AIP), diabetes mellitus type 1, autoimmune thyroiditis, Ord's thyroiditis, Grave's disease, autoimmune oophoritis, endometriosis, autoimmune orchitis, Sjogren's syndrome, autoimmune enteropathy, coeliac disease, Crohn's disease, microscopic colitis, ulcerative colitis, autophospholipid syndrome (APlS), aplastic anemia, autoimmune hemolytica anemia, autoimmune lymphoproliferative syndrome, autoimmune neutropenia, autoimmune thrombocytopenic purpura, cold agglutinin disease, essential mixed cryoglobulinemia, Evans syndrome, pernicious anemia, pure red cell aplasia, thrombocytopenia, adiposis dolorosa, adult-onset Still's disease, ankylosing spondylitis, CREST syndrome, drug-induced lupus, enthesitis-related arthritis, eosinophilic fasciitis, Felty syndrome, AgG4-related disease, juvenile arthritis, Lyme disease (chronic), mixed connective tissue disease (MCTD), palindromic rheumatism, Parry Romberg syndrome, Parsonage-Turner syndrome, psoriatic arthritis, reactive arthritis, relapsing polychondritis, retroperitoneal fibrosis, rheumatic fever, rheumatoid arthritis, sarcoidosis, Schnitzler syndrome, systemic lupus erythematosus, undifferentiated connective tissue disease (UCTD), dermatomyositis, fibromyalgia, myositis, inclusion body myositis, myasthenia gravis, neuromyotonia, paraneoplastic cerebellar degeneration, polymyositis, acute disseminated encephalomyelitis (ADEM), acute motor axonic neuropathy, anti-NMDA receptor encephalitis, Balo concentric sclerosis, Bickerstaff's encephalitis, chronic inflammatory demyelinating polyneuropathy, Guillain-Barré syndrome, Hashimoto's encephalopathy, idiopathic inflammatory demyelinating diseases, Lambert-Eaton myasthenic syndrome, multiple sclerosis, pattern II, Oshtoran Syndrome, Pediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococcus (PANDAS), progressive inflammatory neuropathy, restless leg syndrome, stiff person syndrome, Syndenham chorea, transverse myelitis, autoimmune retinopathy, autoimmune uveitis, Cogan syndrome, Graves ophthalmopathy, intermediate uveitis, ligneous conjunctivitis, Mooren's ulcer, neuromyelitis optica, opsoclonus myoclonus syndrome, optic neuritis, scleritis, Susac's syndrome, sympathetic ophthalmia, Tolosa-Hunt syndrome,

autoimmune inner ear disease (AIED), Méniére's disease, Behçet's disease, Eosinophilic granulomatosis with polyangiitis (EGPA), giant cell arteritis, granulomatosis with polyangiitis (GPA), IgA vasculitis (IgAV), IgA nephropathy, Kawasaki's disease, leukocytoclastic vasculitis, lupus vasculitis, rheumatoid vasculitis, microscopic polyangiitis (MPA), polyarteritis nodosa (PAN), polymyalgia rheumatica, urticarial vasculitis, vasculitis, primary immune deficiency, chronic fatigue syndrome, complex regional pain syndrome, eosinophilic esophagitis, gastritis, interstitial lung disease, POEMS syndrome, Raynaud's syndrome, primary immunodeficiency, or pyoderma gangrenosum.

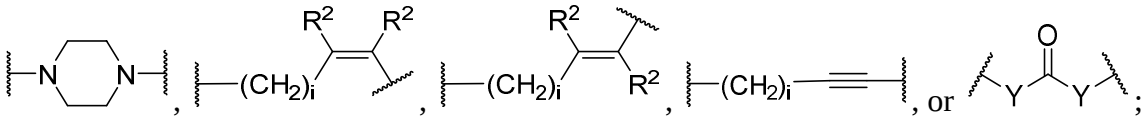
9. The composition of claim 7, wherein the autoimmune disease or disorder is selected from the group consisting of arthritis, systemic lupus erythematosus, immune thrombocytopenic purpura, glomerulonephritis, and vasculitis.

10. The compound of claim 1, wherein Linker is two independently selected groups of formula  connected through a CON group, wherein:

CON is at each occurrence selected the group consisting of

 and ,

Z and Z' are each independently a bond, -$(CH_2)_i$-O-, -$(CH_2)_i$-S-, -$(CH_2)_i$-N(R)-,

;

each occurrence of R^2 is independently H or C_1-C_3 alkyl;

each occurrence of Y is independently a bond, -O-, -S-, or -N(R)-;

D is a bond, –$(CH_2)_i$-Y-C(O)-Y-$(CH_2)_i$-, -$(CH_2)_{m'}$-, or -[$(CH_2)_n$-X^1]$_j$-,

with the proviso that Z, Z', and D are not each simultaneously bonds;

each occurrence of X^1 is independently -O-, -S-, or -N(R)-;

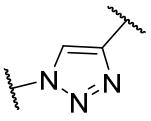
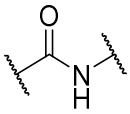
each occurrence of R is independently H, C_1-C_3 alkyl, or C_1-C_6 alkanol;

each occurrence of i is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

each occurrence of j is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

each occurrence of m' is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

each occurrence of n is independently 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10.

11. The compound of claim 1, wherein each CON is independently at each occurrence  or .