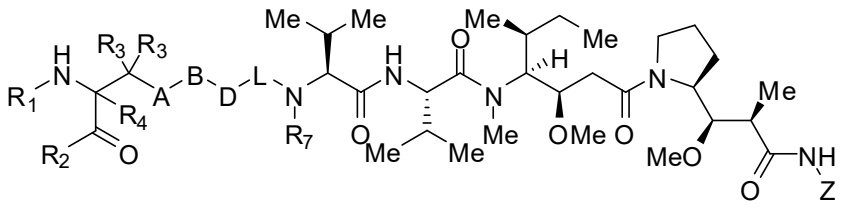
CLAIMS

1. A compound comprising Formula (XXXI):

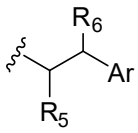


(XXXI)

;

wherein:

Z has the structure of:



;

R_5 is H, CO_2H, C_1-C_6alkyl, or thiazole;

R_6 is OH or H;

Ar is phenyl or pyridine;

A is optional, and when present is lower alkylene, substituted lower alkylene, lower cycloalkylene, substituted lower cycloalkylene, lower alkenylene, substituted lower alkenylene, alkenylene, lower heteroalkylene, substituted heteroalkylene, lower heterocycloalkylene, substituted lower heterocycloalkylene, arylene, substituted arylene, heteroarylene, substituted heteroarylene, alkarylene, substituted alkarylene, aralkylene, or substituted aralkylene;

B is optional, and when present is a linker selected from the group consisting of lower alkylene, substituted lower alkylene, lower alkenylene, substituted lower alkenylene, lower heteroalkylene, substituted lower heteroalkylene, -O-(alkylene or substituted alkylene)-, -S-(alkylene or substituted alkylene)-, -C(O)R"-, -$S(O)_k$(alkylene or substituted alkylene)-, where k is 1, 2, or 3, -C(O)-(alkylene or substituted alkylene)-, -C(S)-alkylene or substituted alkylene)-, -NR"-(alkylene or substituted alkylene)-, -CON(R")-(alkylene or substituted alkylene)-, -CSN(R")-(alkylene or substituted alkylene)-, and –N(R")CO-(alkylene or substituted alkylene)-, where each R" is independently H, alkyl or substituted alkyl;

R_1 is H, an amino protecting group, resin, at least one amino acid, polypeptide, or polynucleotide;

R_2 is OH, an ester protecting group, resin, at least one amino acid, polypeptide, or polynucleotide;

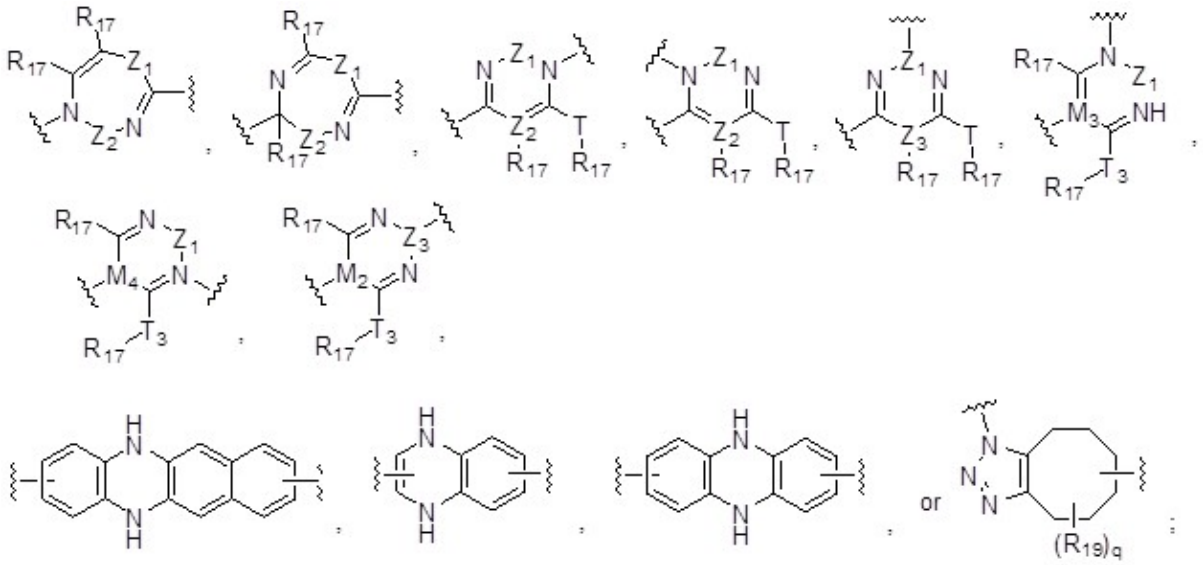
R_3 and R_4 are each independently H, halogen, lower alkyl, or substituted lower alkyl;

R_7 is C_1-C_6alkyl or hydrogen;

L is–alkylene– or –(alkylene–$O)_n$–alkylene–;

n is an integer greater than or equal to one;

D has the structure of:



each R_{17} is independently selected from the group consisting of H, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, alkoxy, substituted alkoxy, alkylalkoxy, substituted alkylalkoxy, polyalkylene oxide, substituted polyalkylene oxide, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkaryl, substituted alkaryl, aralkyl, substituted aralkyl, -(alkylene or substituted alkylene)-$ON(R")_2$, -(alkylene or substituted alkylene)-C(O)SR", -(alkylene or substituted alkylene)-S-S-(aryl or substituted aryl), -C(O)R", -$C(O)_2$R", or -C(O)$N(R")_2$, wherein each R" is independently hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkoxy, substituted alkoxy, aryl, substituted aryl, heteroaryl, alkaryl, substituted alkaryl, aralkyl, or substituted aralkyl;

each Z_1 is a bond, $CR_{17}R_{17}$, O, S, NR', $CR_{17}R_{17}$-$CR_{17}R_{17}$, $CR_{17}R_{17}$-O, O-$CR_{17}R_{17}$, $CR_{17}R_{17}$-S, S-$CR_{17}R_{17}$, $CR_{17}R_{17}$-NR', or NR'-$CR_{17}R_{17}$;

each R' is H, alkyl, or substituted alkyl;

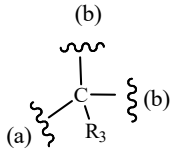
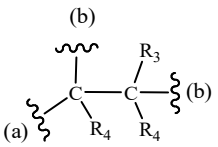
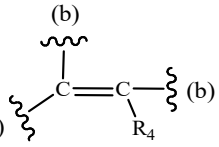
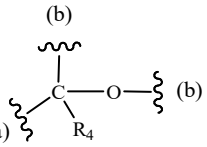
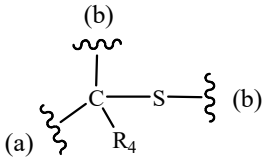
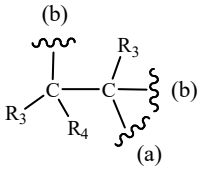
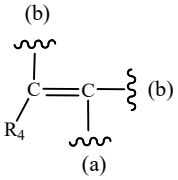
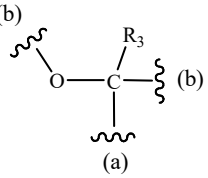
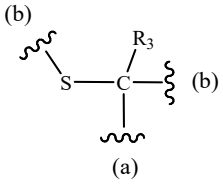
each Z_2 is selected from the group consisting of a bond, -C(O)-, -C(S)-, optionally substituted C_1-C_3 alkylene, optionally substituted C_1-C_3 alkenylene, and optionally substituted heteroalkyl;

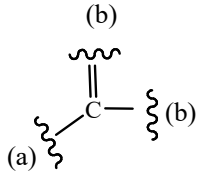
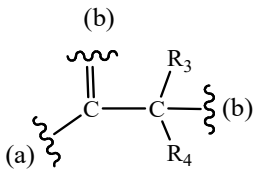
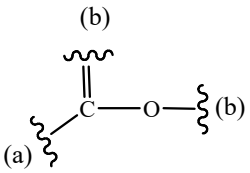
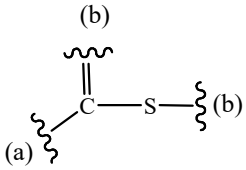
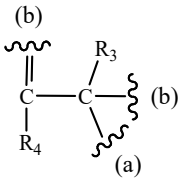
each Z_3 are independently selected from the group consisting of a bond, optionally substituted C_1-C_4 alkylene, optionally substituted C_1-C_4 alkenylene, optionally substituted heteroalkyl, -O-, -S-, -C(O)-, -C(S)-, and -N(R')-;

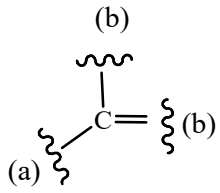
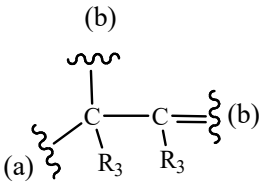
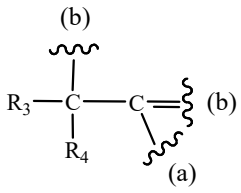
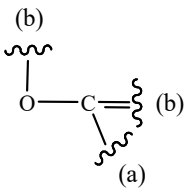
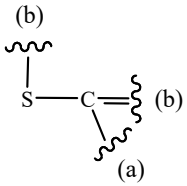
each T_3 is a bond, C(R'')(R''), O, or S; with the proviso that when T_3 is O or S, R'' cannot be halogen;

each R'' is H, halogen, alkyl, substituted alkyl, cycloalkyl, or substituted cycloalkyl;

m and p are 0, 1, 2, or 3, provided that at least one of m or p is not 0;

M_2 is , , , , , , , , , or , where (a) indicates bonding to the B group and (b) indicates bonding to respective positions within the heterocycle group;

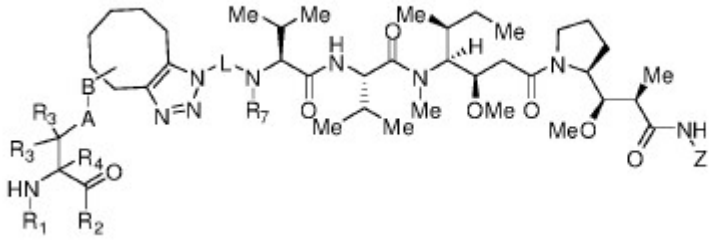
M_3 is , , , , or , where (a) indicates bonding to the B group and (b) indicates bonding to respective positions within the heterocycle group;

M_4 is , , , , , or , where (a) indicates bonding to the B group and (b) indicates bonding to respective positions within the heterocycle group;

each R_{19} is independently selected from the group consisting of C_1-C_6 alkyl, C_1-C_6 alkoxy, ester, ether, thioether, aminoalkyl, halogen, alkyl ester, aryl ester, amide, aryl amide, alkyl halide, alkyl amine, alkyl sulfonic acid, alkyl nitro, thioester, sulfonyl ester, halosulfonyl, nitrile, alkyl nitrile, and nitro;

q is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or 11.

2. The compound of claim 1, wherein R_1 is a polypeptide.
3. The compound of claim 2, wherein the polypeptide is an antibody.
4. The compound of claim 3, wherein the antibody is trastuzumab.
5. The compound of claim 1 or claim 2, wherein R_2 is a polypeptide.
6. The compound of claim 5, wherein the polypeptide is an antibody.
7. The compound of claim 6, wherein the antibody is trastuzumab.
8. The compound of any one of claim 1-7 wherein R_1 and R_2 together with the connecting atoms between them are a polypeptide contained within trastuzumab.
9. The compound of any one of claims 1-8 wherein R_1 and/or R_2 is an antibody, wherein the antibody is an antibody fragment.
10. The compound of claim 9 wherein the antibody fragment is Fv, Fe, Fab, (Fab')2, single chain Fv (scFv), diabodies, triabodies, tetrabodies, bifunctional hybrid antibodies, CDR1, CDR2, CDR3, combinations of CDR's, variable regions, framework regions, constant regions, heavy chains, light chains, variable regions, alternative scaffold non-antibody molecules or bispecific antibodies.
11. The compound of claim 1, comprising Formula (XXXI-A):



(XXXI-A)

12. The compound of any one of claims 1-11 wherein R_5 is thiazole, carboxylic acid, methyl, ethyl, propyl, iso-propyl, butyl, iso-butyl, sec-butyl, tert-butyl, pentyl or hexyl.
13. The compound of any one of claims 1-12 wherein R_7 is methyl.
14. The compound of any one of claims 1-13 wherein n is an interger from 1 to 20.
15. The compound of any one of claims 1-13 wherein n is an integer from 1 to 10.
16. The compound of any one of claims 1-13 wherein n is an integer from 1 to 5.
17. The compound of any one of claims 1-16 wherein each alkylene is independently $–CH_2-$, $-CH_2CH_2-$, $-CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2-$, or $-CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2-$.
18. A pharmaceutical composition comprising a compound of any one of claims 1-17 and a phermeceutically acceptable carrier, excipient, or binder.