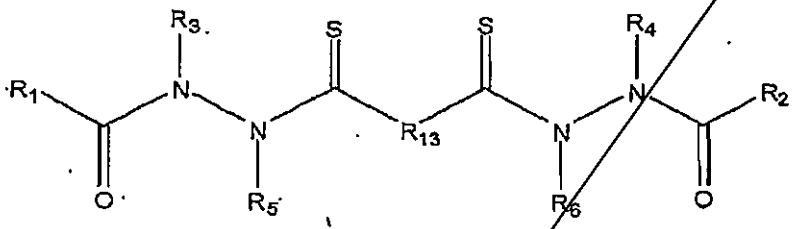
CLAIMS

What is claimed is:

1. A compound represented by formula (I):



(I)

or a tautomer, pharmaceutically acceptable salt, solvate, clathrate, or prodrug thereof, wherein:

R_1 and R_2 are independently an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, halo, nitro, cyano, guanadino, $-OR_{17}$, $-NR_{19}R_{20}$, $-C(O)R_{17}$, $-C(O)OR_{17}$, $-OC(O)R_{17}$, $-C(O)NR_{19}R_{20}$, $-NR_{18}C(O)R_{17}$, $-OP(O)(OR_{17})_2$, $-SP(O)(OR_{17})_2$, $-SR_{17}$, $-S(O)_pR_{17}$, $-OS(O)_pR_{17}$, $-S(O)_pOR_{17}$, $-NR_{18}S(O)_pR_{17}$, or $-S(O)_pNR_{19}R_{20}$;

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_5 and R_6 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_{13} is a covalent bond, or a substituted or unsubstituted C1-C6 alkylene group;

R_{17} and R_{18}, for each occurrence, are, independently, -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl;

R_{19} and R_{20}, for each occurrence, are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl; or R_{19} and R_{20}, taken together with the nitrogen to which they are attached, form an optionally substituted heterocyclyl or an optionally substituted heteroaryl; and

p is 1 or 2;

provided that when R_{13} is $-CH_2-$, R_3 and R_4 are both phenyl and R_5 and R_6 are both –H, then R_1 and R_2 are not both phenyl; and

provided that when R_{13} is $-CH_2-$, R_3 and R_4 are both phenyl and R_5 and R_6 are both –H, then R_1 and R_2 are not both methyl.

2. The compound of Claim 1, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

3. The compound of Claim 2, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

4. The compound of Claim 3, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

5. The compound of Claim 1, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

6. The compound of Claim 5, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

7. The compound of Claim 6, wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

8. The compound of Claim 1, wherein R_{13} is a covalent bond.

9 The compound of Claim 1, wherein R_{13} is $-CH_2CH_2CH_2-$ or $-CH_2CH_2$.

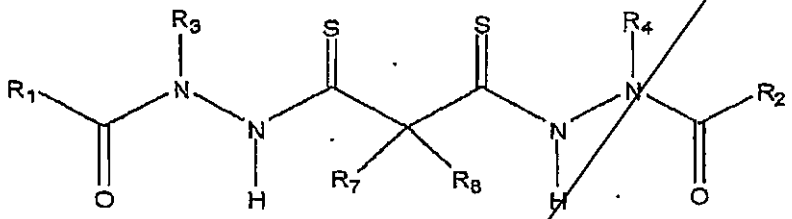
10. The compound of Claim 1, wherein

R_{13} is $-C(R_7)(R_8)-$;

R_7 and R_8 are each independently -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an

optionally substituted heterocyclyl, or R_7 is –H and R_8 is an optionally substituted aryl or an optionally substituted heteroaryl.

11. The compound of Claim 1, wherein the compound is represented by formula (II):



(II)

wherein:

R_7 and R_8 are each independently -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, or R_7 is –H and R_8 is an optionally substituted aryl or an optionally substituted heteroaryl.

12. The compound of Claim 11, wherein:

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 4-methoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 3-cyanophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 3-fluorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 4-chlorophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 3-methoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2,5-dichlorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethylphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is ethyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is *n*-propyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both methyl;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 is methyl, and R_4 is ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclobutyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopentyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

R_1 and R_2 are both methyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both methyl; R_3 and R_4 are both *t*-butyl; R_7 and R_8 are both -H;

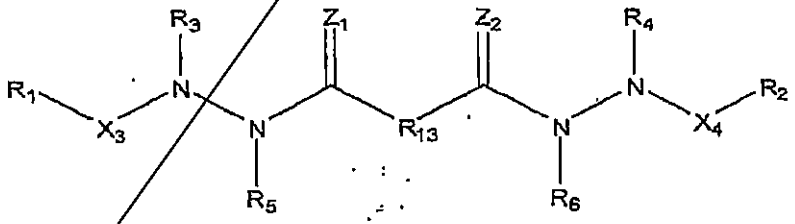
R_1 and R_2 are both methyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

R_1 and R_2 are both *t*-butyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are ethyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H; or

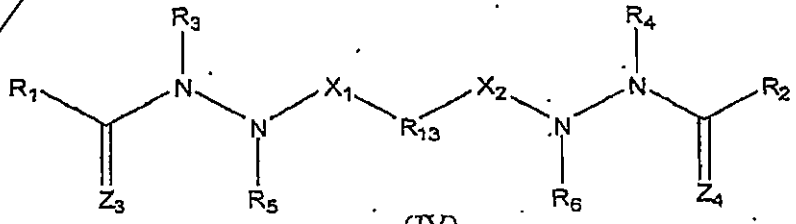
R_1 and R_2 are both *n*-propyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H.

13. A compound represented by formula (III) or (IV):



(III)

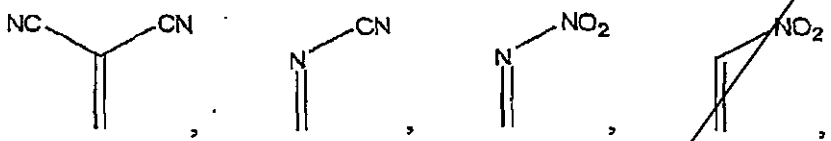
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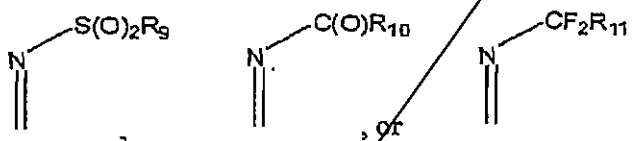


(IV)

or a tautomer, pharmaceutically acceptable salt, solvate, clathrate, or prodrug thereof, wherein:

X_1, X_2, X_3 and X_4 are independently selected from the group consisting of





, or ;

Z_1, Z_2, Z_3, and Z_4 are each independently O or S;

R_1 and R_2 are independently an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, halo, nitro, cyano, guanadino, $-OR_{17}$, $-NR_{19}R_{20}$, $-C(O)R_{17}$, $-C(O)OR_{17}$, $-OC(O)R_{17}$, $-C(O)NR_{19}R_{20}$, $-NR_{18}C(O)R_{17}$, $-OP(O)(OR_{17})_2$, $-SP(O)(OR_{17})_2$, $-SR_{17}$, $-S(O)_pR_{17}$, $-OS(O)_pR_{17}$, $-S(O)_pOR_{17}$, $-NR_{18}S(O)_pR_{17}$, or $-S(O)_pNR_{19}R_{20}$; provided that for formula (III), R_1 and R_2 are not –OH, -SH, or $–NH_2$;

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl; and

R_5 and R_6 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_9, R_{10}, and R_{11} are each independently -H, -$NR_{19}R_{20}$, halo, -OR_{17}, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_{13} is a covalent bond, or a substituted or unsubstituted C1-C6 alkylene group;

R_{17} and R_{18}, for each occurrence, are, independently, -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl;

R_{19} and R_{20}, for each occurrence, are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl; or R_{19} and R_{20}, taken together with the nitrogen to which they are attached, form an optionally substituted heterocyclyl or an optionally substituted heteroaryl; and

p is 1 or 2.

14. The compound of Claim 13, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

15. The compound of Claim 14, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

16. The compound of Claim 15, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

17. The compound of Claim 13, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

18. The compound of Claim 17, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

19. The compound of Claim 18, wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

20. The compound of Claim 13, wherein R_{13} is a covalent bond.

21 The compound of Claim 13, wherein R_{13} is $-CH_2CH_2CH_2-$ or $-CH_2CH_2$.

22. The compound of Claims 13, wherein

R_{13} is $-C(R_7)(R_8)-$;

R_7 and R_8 are each independently -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; or R_7 is –H and R_8 is an optionally substituted aryl or an optionally substituted heteroaryl.

23. The compound of Claim 13, wherein Z_1 and Z_2 are both O.

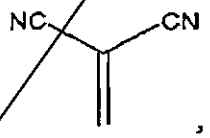
24. The compound of Claim 13, wherein Z_1 and Z_2 are both S.

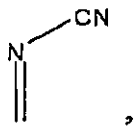
25. The compound of Claim 13, wherein Z_3 and Z_4 are both O.

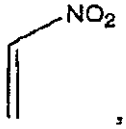
26. The compound of Claim 13, wherein Z_3 and Z_4 are both S.

27. The compound of Claim 13, wherein R_9, R_{10}, and R_{11} are each independently –H or an optionally substituted alkyl.

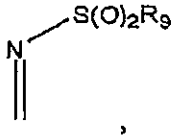
28. The compound of Claim 13, wherein X_1 and X_2 are both

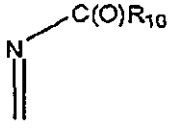


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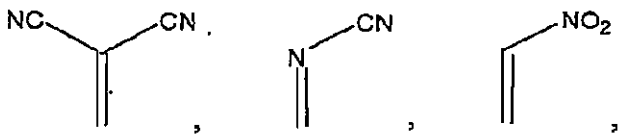
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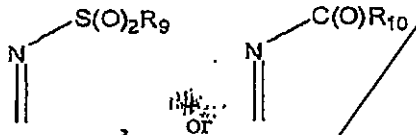
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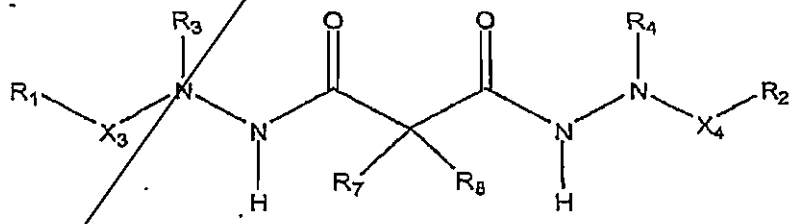
,
or


29. The compound of Claim 13, wherein X_3 and X_4 are both





30. The compound of Claim 13, wherein the compound is a compound of formula (V):

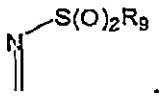


(V)

wherein:

R_7 and R_8 are each independently -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, or R_7 is –H and R_8 is an optionally substituted aryl or an optionally substituted heteroaryl.

31. The compound of Claim 30, wherein X_3 and X_4 are both



32. The compound of Claim 31, wherein R_9 is an optionally substituted alkyl.

33. The compound of Claim 32, wherein the alkyl group is optionally substituted with a lower alkyl, a lower alkenyl, a lower alkynyl, a C3-C8 cycloalkyl, a C3-C8 cycloalkenyl, a phenyl, a benzyl or a lower haloalkyl group.

34. The compound of Claim 32, wherein R_1 and R_2 are each an optionally substituted aryl group; and R_3 and R_4 are each an optionally substituted alkyl group.

35. The compound of Claim 34, wherein R_1 and R_2 are each an optionally substituted phenyl; and R_3 and R_4 are each a methyl or ethyl group.

36. The compound of Claim 35, wherein R_7 and R_8 are both -H.

37. The compound of Claim 30, wherein:

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 4-methoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 3-cyanophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 3-fluorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 4-chlorophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 3-methoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2,5-dichlorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethylphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is ethyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is *n*-propyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both methyl;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 is methyl, and R_4 is ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclobutyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopentyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

R_1 and R_2 are both methyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both methyl; R_3 and R_4 are both *t*-butyl; R_7 and R_8 are both -H;

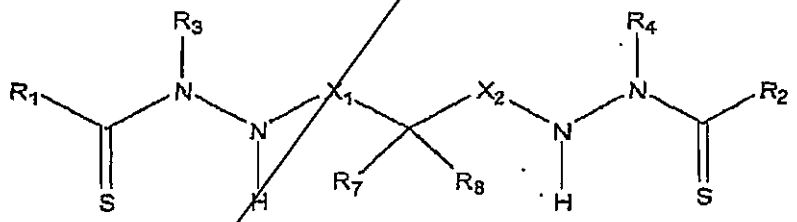
R_1 and R_2 are both methyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

R_1 and R_2 are both *t*-butyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are ethyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H; or

R_1 and R_2 are both *n*-propyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H.

38. The compound of Claim 13, wherein the compound is a compound of formula (VI):



(VI)

wherein:

R_7 and R_8 are each independently -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, or R_7 is –H and R_8 is an optionally substituted aryl or an optionally substituted heteroaryl.

39. The compound of Claim 38, wherein:

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 4-methoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 3-cyanophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 3-fluorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 4-chlorophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 3-methoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2,5-dichlorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethylphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is ethyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is *n*-propyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both methyl;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 is methyl, and R_4 is ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclobutyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopentyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

R_1 and R_2 are both methyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both methyl; R_3 and R_4 are both *t*-butyl; R_7 and R_8 are both -H;

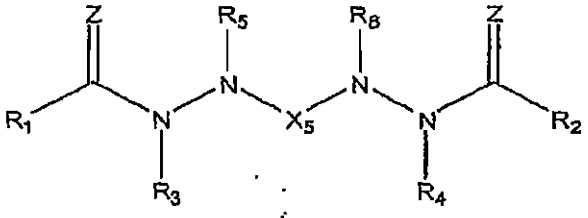
R_1 and R_2 are both methyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

R_1 and R_2 are both *t*-butyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are ethyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H; or

R_1 and R_2 are both *n*-propyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H.

40. A compound represented by formula (VII):



(VII)

or a tautomer, pharmaceutically acceptable salt, solvate, clathrate, or prodrug thereof, wherein:

each Z is independently O or S;

X_5 is -S(O)-, –$S(O)_2$-, -P(O)(OR_{12})-, -$S(O)_2R_{13}S(O)_2$-, -$S(O)_2OS(O)_2$-, -$S(O)_2SS(O)_2$-, -$S(O)_2N(R_5)S(O)_2$-,-P(O)(OR_{12})R_{13}P(O)(OR_{12})-, P(O)(OR_{12})OP(O)(OR_{12})-, -P(O)(OR_{12})SP(O)(OR_{12})-, or -P(O)(OR_{12})N(R_5)P(O)(OR_{12})-;

R_1 and R_2 are independently an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, halo, nitro, cyano, guanadino, -OR_{17}, -$NR_{19}R_{20}$, -$C(O)R_{17}$, -$C(O)OR_{17}$, -$OC(O)R_{17}$, -$C(O)NR_{19}R_{20}$, -$NR_{18}C(O)R_{17}$, -$OP(O)(OR_{17})_2$, -$SP(O)(OR_{17})_2$, -SR_{17}, -$S(O)_pR_{17}$, -$OS(O)_pR_{17}$, -$S(O)_pOR_{17}$, -$NR_{18}S(O)_pR_{17}$, or -$S(O)_pNR_{19}R_{20}$; provided that when either Z_3 or Z_4 is O, then R_1 or R_2 is not -OR_{17}, provided that when Z is O, then R_1 or R_2 is not -OR_{17} or-$NR_{19}R_{20}$;

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_5 and R_6 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_{12} is independently –H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, or halo;

R_{13} is a covalent bond, or a substituted or unsubstituted C1-C6 alkylene group;

R_{17} and R_{18}, for each occurrence, are, independently, -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl;

R_{19} and R_{20}, for each occurrence, are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl, or R_{19} and R_{20}, taken together with the nitrogen to which they are attached, form an optionally substituted heterocyclyl or an optionally substituted heteroaryl; and

p is 1 or 2.

41. The compound of Claim 40, wherein both Z groups are S.

42. The compound of Claim 40, wherein both Z groups are O.

43. The compound of Claim 40, wherein X_5 is -S(O)-, $-S(O)_2-$, or $-P(O)(OR_{12})-$.

44. The compound of Claim 40, wherein X_5 is $-S(O)_2R_{13}S(O)_2-$ or $-P(O)(OR_{12})R_{13}P(O)(OR_{12})-$.

45. The compound of Claim 40, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

46. The compound of Claim 45, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

47. The compound of Claim 46, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

48. The compound of Claim 40, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

49. The compound of Claim 48, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

50. The compound of Claim 49; wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

51. The compound of Claim 40, wherein R_{13} is a covalent bond.

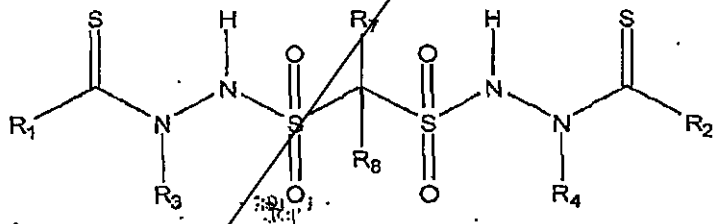
52. The compound of Claim 40, wherein R_{13} is $-CH_2CH_2CH_2-$ or $-CH_2CH_2-$.

53. The compound of Claim 40, wherein

R_{13} is $-C(R_7)(R_8)-$;

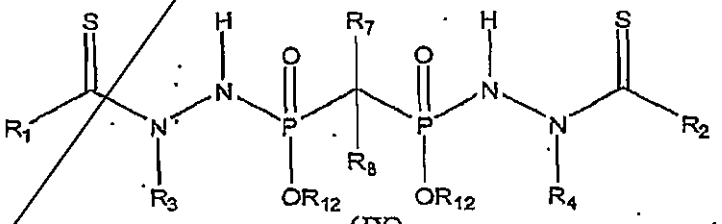
R_7 and R_8 are each independently -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, or R_7 is –H and R_8 is an optionally substituted aryl or an optionally substituted heteroaryl.

54. The compound of Claim 40, wherein the compound is represented by formula (VIII) or (IX):



(VIII)

or



(IX)

wherein:

R_7 and R_8 are each independently -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, or R_7 is –H and R_8 is an optionally substituted aryl or an optionally substituted heteroaryl.

55. The compound of Claim 54, wherein:

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 4-methoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 3-cyanophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 3-fluorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 4-chlorophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 3-methoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2,5-dichlorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethylphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is ethyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is *n*-propyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both methyl;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 is methyl, and R_4 is ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclobutyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopentyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

R_1 and R_2 are both methyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both methyl; R_3 and R_4 are both *t*-butyl; R_7 and R_8 are both -H;

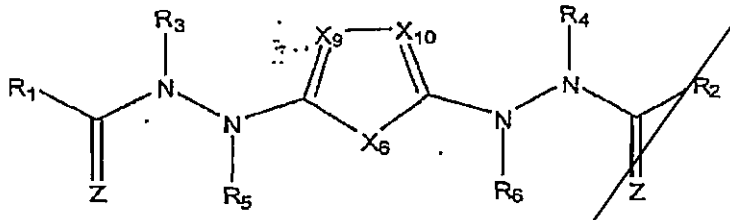
R_1 and R_2 are both methyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

R_1 and R_2 are both *t*-butyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are ethyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H; or

R_1 and R_2 are both *n*-propyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H.

56. A compound represented by formula (X):



(X)

or a tautomer, pharmaceutically acceptable salt, solvate, clathrate, or prodrug thereof, wherein:

X_6 is –O-, –S-, -$N(R_5)$-, or –$C(R_5)_2$-;

X_9 and X_{10} are independently –$C(R_5)$-;

each Z is independently O or S;

R_1 and R_2 are independently an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, halo, nitro, cyano, guanadino, -OR_{17}, -$NR_{19}R_{20}$, -$C(O)R_{17}$, -$C(O)OR_{17}$, -$OC(O)R_{17}$, -$C(O)NR_{19}R_{20}$, -$NR_{18}C(O)R_{17}$, -$OP(O)(OR_{17})_2$, -$SP(O)(OR_{17})_2$, -SR_{17}, -$S(O)_pR_{17}$, -$OS(O)_pR_{17}$, -$S(O)_pOR_{17}$, -$NR_{18}S(O)_pR_{17}$, or -$S(O)_pNR_{19}R_{20}$; provided that when Z is O, R_1 or R_2 is not -OR_{17};

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_5 and R_6 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_{17} and R_{18}, for each occurrence, are, independently, -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted

aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl;

R_{19} and R_{20}, for each occurrence, are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl; or R_{19} and R_{20}, taken together with the nitrogen to which they are attached, form an optionally substituted heterocyclyl or an optionally substituted heteroaryl; and

p is 1 or 2.

57. The compound of Claim 56, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

58. The compound of Claim 57, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

59. The compound of Claim 58, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

60. The compound of Claim 56, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally

substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

61. The compound of Claim 60, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

62. The compound of Claim 61, wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

63. The compound of Claim 56, wherein both Z groups are O.

64. The compound of Claim 56, wherein both Z groups are S.

65. The compound of Claim 56, wherein X_6 is –O- or -N(R_5)-.

66. The compound of Claim 65, wherein X_6 is –O- or –NH-.

67. The compound of Claim 56, wherein R_5 and R_6 are both –H.

68. The compound of Claim 67, wherein:

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl;

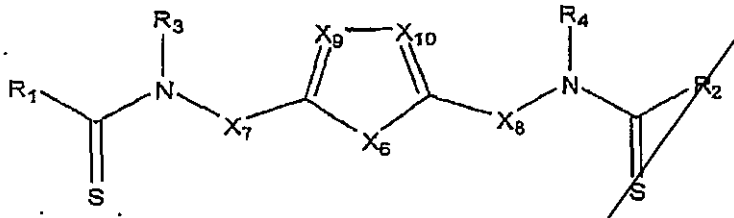
R_1 and R_2 are both 4-methoxyphenyl; R_3 and R_4 are both methyl;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl;

R_1 and R_2 are both 3-cyanophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 3-fluorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 4-chlorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2-dimethoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 3-methoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,5-dichlorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,5-dimethylphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both ethyl;
R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl;
R_1 and R_2 are both 1-methylcyclopropyl; R_3 is methyl, and R_4 is ethyl;
R_1 and R_2 are both 2-methylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2-phenylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 1-phenylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclobutyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclopentyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both phenyl;
R_1 and R_2 are both methyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both methyl; R_3 and R_4 are both *t*-butyl;
R_1 and R_2 are both methyl; R_3 and R_4 are both phenyl;
R_1 and R_2 are both *t*-butyl; R_3 and R_4 are both methyl;
R_1 and R_2 are ethyl; R_3 and R_4 are both methyl; or
R_1 and R_2 are both *n*-propyl; R_3 and R_4 are both methyl.

69. A compound represented by formula (XI):



(XI)

or a tautomer, pharmaceutically acceptable salt, solvate, clathrate, or prodrug thereof, wherein:

X_6 is –O-, –S-, -N(R_5)-, or –C(R_5)$_2$-;

X_7 and X_8 are independently –O-, –S-, -N(R_5)-, or –C(R_5)$_2$-;

X_9 and X_{10} are independently –C(R_5)-;

R_1 and R_2 are independently an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, halo, nitro, cyano, guanadino, -OR_{17}, -$NR_{19}R_{20}$, -C(O)R_{17}, -C(O)OR_{17}, -OC(O)R_{17}, -C(O)$NR_{19}R_{20}$, -NR_{18}C(O)R_{17}, -OP(O)(OR_{17})$_2$, -SP(O)(OR_{17})$_2$, -SR_{17}, -S(O)$_p$$R_{17}$, -OS(O)$_p$$R_{17}$, -S(O)$_p$$OR_{17}$, -$NR_{18}$S(O)$_p$$R_{17}$, or -S(O)$_p$$NR_{19}R_{20}$;

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_5 and R_6 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_{17} and R_{18}, for each occurrence, are, independently, -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted

aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl;

R_{19} and R_{20}, for each occurrence, are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl; or R_{19} and R_{20}, taken together with the nitrogen to which they are attached, form an optionally substituted heterocyclyl or an optionally substituted heteroaryl; and

p is 1 or 2.

70. The compound of Claim 69, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

71. The compound of Claim 70, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

72. The compound of Claim 71, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

73. The compound of Claim 69, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally

substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

74. The compound of Claim 73, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

75. The compound of Claim 74, wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

76. The compound of Claim 69, wherein X_6 is –O- or -N(R_5)-.

77. The compound of Claim 76, wherein X_6 is –O- or –NH-.

78. The compound of Claim 69, wherein X_7 and X_8 are both –O- or -N(R_5)-.

79. The compound of Claim 78, wherein X_7 and X_8 are both –N(H)-.

80. The compound of Claim 69, wherein:

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl;

R_1 and R_2 are both 4-methoxyphenyl; R_3 and R_4 are both methyl;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl;

R_1 and R_2 are both 3-cyanophenyl; R_3 and R_4 are both methyl;

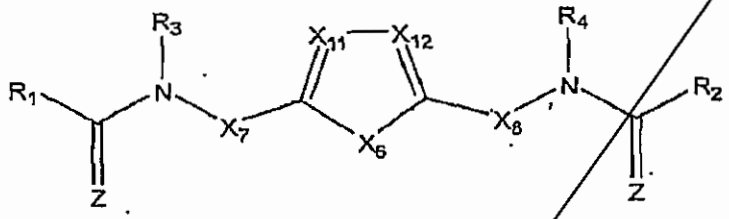
R_1 and R_2 are both 3-fluorophenyl; R_3 and R_4 are both methyl;

R_1 and R_2 are both 4-chlorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2-dimethoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 3-methoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,5-dichlorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,5-dimethylphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both ethyl;
R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl;
R_1 and R_2 are both 1-methylcyclopropyl; R_3 is methyl, and R_4 is ethyl;
R_1 and R_2 are both 2-methylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2-phenylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 1-phenylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclobutyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclopentyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both phenyl;
R_1 and R_2 are both methyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both methyl; R_3 and R_4 are both *t*-butyl;
R_1 and R_2 are both methyl; R_3 and R_4 are both phenyl;
R_1 and R_2 are both *t*-butyl; R_3 and R_4 are both methyl;
R_1 and R_2 are ethyl; R_3 and R_4 are both methyl; or
R_1 and R_2 are both *n*-propyl; R_3 and R_4 are both methyl.

81. The compound of Claim 80, wherein X_7 and X_8 are both –N(H)-.

82. The compound of Claim 81, wherein X_6 is –O- or –NH-.

83. A compound represented by formula (XII):



(XII)

or a tautomer, pharmaceutically acceptable salt, solvate, clathrate, or prodrug thereof, wherein:

X_6 is –O-, –S-, -N(R_5)-, or –C(R_5)$_2$-;

X_7 and X_8 are independently –O-, –S-, -N(R_5)-, or –C(R_5)$_2$-;

X_{11} and X_{12} are independently –C(R_5)- or –N-, provided that at least one of X_{11} or X_{12} is -N-;

each Z is independently O or S;

R_1 and R_2 are independently an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, halo, nitro, cyano, guanadino, -OR_{17}, -$NR_{19}R_{20}$, -C(O)R_{17}, -C(O)OR_{17}, -OC(O)R_{17}, -C(O)$NR_{19}R_{20}$, -NR_{18}C(O)R_{17}, -OP(O)(OR_{17})$_2$, -SP(O)(OR_{17})$_2$, -SR_{17}, -S(O)$_p$$R_{17}$, -OS(O)$_p$$R_{17}$, -S(O)$_p$$OR_{17}$, -$NR_{18}$S(O)$_p$$R_{17}$, or -S(O)$_p$$NR_{19}R_{20}$;

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_5 and R_6 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_{17} and R_{18}, for each occurrence, are, independently, -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted

alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl;

R_{19} and R_{20}, for each occurrence, are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl; or R_{19} and R_{20}, taken together with the nitrogen to which they are attached, form an optionally substituted heterocyclyl or an optionally substituted heteroaryl; and

p is 1 or 2;

provided that when both Z groups are O, then neither R_1 or R_2 is $-OR_{17}$; and

provided that when both Z groups are O and X_7 and X_8 are both $-CH_2-$, then neither R_1 or R_2 is $-NR_{19}R_{20}$, or phenyl.

84. The compound of Claim 83, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

85. The compound of Claim 84, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

86. The compound of Claim 85, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

87. The compound of Claim 83, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

88. The compound of Claim 87, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

89. The compound of Claim 88, wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

90. The compound of Claim 83, wherein X_6 is –O- or -N(R_5)-.

91. The compound of Claim 90, wherein X_6 is –O- or –NH-.

92. The compound of Claim 83, wherein X_7 and X_8 are both –O- or -N(R_5)-.

93. The compound of Claim 92, wherein X_7 and X_8 are both –N(H)-.

94. The compound of Claim 83, wherein X_{11} and X_{12} are both -N-.

95. The compound of Claim 83, wherein:

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl;

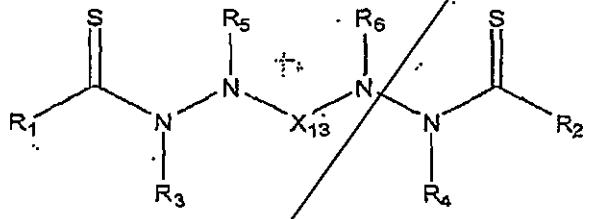
R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl;
R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 4-methoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 3-cyanophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 3-fluorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 4-chlorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2-dimethoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 3-methoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,5-dichlorophenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2,5-dimethylphenyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both ethyl;
R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl;
R_1 and R_2 are both 1-methylcyclopropyl; R_3 is methyl, and R_4 is ethyl;
R_1 and R_2 are both 2-methylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 2-phenylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both 1-phenylcyclopropyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclobutyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclopentyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both phenyl;
R_1 and R_2 are both methyl; R_3 and R_4 are both methyl;
R_1 and R_2 are both methyl; R_3 and R_4 are both *t*-butyl;
R_1 and R_2 are both methyl; R_3 and R_4 are both phenyl;
R_1 and R_2 are both *t*-butyl; R_3 and R_4 are both methyl;
R_1 and R_2 are ethyl; R_3 and R_4 are both methyl; or
R_1 and R_2 are both *n*-propyl; R_3 and R_4 are both methyl.

96. The compound of Claim 95, wherein X_7 and X_8 are both –N(H)-.

97. The compound of Claim 96, wherein X_6 is –O- or –NH-.

98. The compound of Claim 95, wherein X_{11} and X_{12} are both -N(R_5)-.

99. A compound represented by formula (XIII):



(XIII)

or a tautomer, pharmaceutically acceptable salt, solvate, clathrate, or prodrug thereof, wherein:

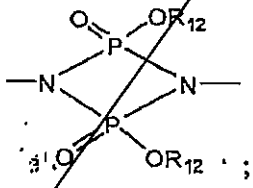
X_{13} is –C(O)-; -S(O)-, –$S(O)_2$-, -P(O)(OR_{12})-, -$S(O)_2R_{13}S(O)_2$-, -$S(O)_2OS(O)_2$-, -$S(O)_2SS(O)_2$-, -$S(O)_2N(R_5)S(O)_2$-,-P(O)(OR_{12})R_{13}P(O)(OR_{12})-, P(O)(OR_{12})OP(O)(OR_{12})-, -P(O)(OR_{12})SP(O)(OR_{12})-, -C(O)$R_{13}S(O)_2$-, -C(O)C(=NNHR_{26})C(O)-, -$S(O)_2NR_{27}$C(O)- or -P(O)(OR_{12})N(R_5)P(O)(OR_{12})-;

R_1 and R_2 are independently an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, halo, nitro, cyano, guanadino, -OR_{17}, -$NR_{19}R_{20}$, -C(O)R_{17}, -C(O)OR_{17}, -OC(O)R_{17}, -C(O)$NR_{19}R_{20}$, -NR_{18}C(O)R_{17}, -OP(O)(OR_{17})$_2$, -SP(O)(OR_{17})$_2$, -SR_{17}, -$S(O)_pR_{17}$, -$OS(O)_pR_{17}$, -$S(O)_pOR_{17}$, -$NR_{18}S(O)_pR_{17}$, or -$S(O)_pNR_{19}R_{20}$; provided that when R_3, R_4, R_5, and R_6 are all –H, then neither R_1 or R_2 is -OR_{17}, -$NR_{19}R_{20}$, -NR_{18}C(O)R_{17}, or phenyl;

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally

substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_5 and R_6 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl, or R_5 and R_6, taken together with the nitrogen atoms to which they are bonded and X_{13}, form the following ring structure:



;

R_{12} is independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, or halo;

R_{13} is a covalent bond, or a substituted or unsubstituted C1-C6 alkylene group;

R_{17} and R_{18}, for each occurrence, are, independently, -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl;

R_{19} and R_{20}, for each occurrence, are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl; or R_{19} and R_{20}, taken together with the

nitrogen to which they are attached, form an optionally substituted heterocyclyl or an optionally substituted heteroaryl;

R_{26} is an optionally substituted alkyl or an optionally substituted phenyl group;

R_{27} is –H or an optionally substituted alkyl group; and

p is 1 or 2.

100. The compound of Claim 99, wherein X_{13} is –C(O)-.

101. The compound of Claim 100, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

102. The compound of Claim 101, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

103. The compound of Claim 102, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

104. The compound of Claim 103; wherein R_5 and R_6 are both –H.

105. The compound of Claim 100, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally

substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl;

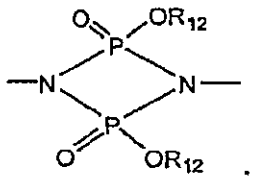
R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

106. The compound of Claim 105, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

107. The compound of Claim 106, wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

108. The compound of Claim 99, wherein X_{13} is $-C(O)R_{13}S(O)_2-$, $-C(O)C(=NNHR_{26})C(O)-$, $-S(O)_2NR_{27}C(O)-$, or R_5 and R_6, taken together with the nitrogen atoms to which they are bonded and X_{13}, form the following ring structure:



109. The compound of Claim 108, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

110. The compound of Claim 109, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

111. The compound of Claim 110, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

112. The compound of Claim 111, wherein R_5 and R_6 are both –H.

113. The compound of Claim 108, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl;

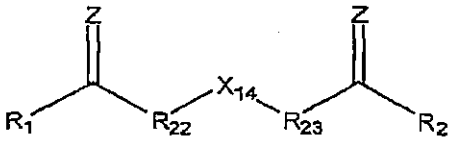
R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

114. The compound of Claim 113, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

115. The compound of Claim 114, wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

116. A compound represented by formula (XIV):



(XIV)

or a tautomer, pharmaceutically acceptable salt, solvate, clathrate, or prodrug thereof, wherein:

each Z is independently O or S;

X_{14} is –C(O)-; -S(O)-, –$S(O)_2$-, -P(O)(OR_{12})-;

R_1 and R_2 are independently an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, halo, nitro, cyano, guanadino, $-OR_{17}$, $-NR_{19}R_{20}$, $-C(O)R_{17}$, $-C(O)OR_{17}$, $-OC(O)R_{17}$, $-C(O)NR_{19}R_{20}$, $-NR_{18}C(O)R_{17}$, $-OP(O)(OR_{17})_2$, $-SP(O)(OR_{17})_2$, $-SR_{17}$, $-S(O)_pR_{17}$, $-OS(O)_pR_{17}$, $-S(O)_pOR_{17}$, $-NR_{18}S(O)_pR_{17}$, or $-S(O)_pNR_{19}R_{20}$; provided that when both Z groups are O and X_{14} is –C(O)-, then neither R_1 or R_2 is $-OR_{17}$;

each R_5 is independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_{12} is independently –H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, or halo;

R_{17} and R_{18}, for each occurrence, are, independently, -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl;

R_{19} and R_{20}, for each occurrence, are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl; or R_{19} and R_{20}, taken together with the nitrogen to which they are attached, form an optionally substituted heterocyclyl or an optionally substituted heteroaryl;

R_{22} and R_{23} are each independently $-N(R_5)-N(R_5)-C(R_5)_2-$ or $-C(R_5)_2-N(R_5)-N(R_5)-$; and

p is 1 or 2.

117. The compound of Claim 116, wherein R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl.

118. The compound of Claim 117, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group.

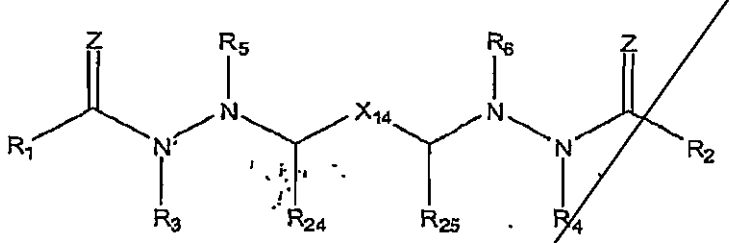
119. The compound of Claim 116, wherein R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

120. The compound of Claim 119, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group.

121. The compound of Claim 120, wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

122. The compound of Claim 116, wherein both Z groups are S.

123. The compound of Claim 116, wherein the compound is represented by formula (XV):



(XV)

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl; and

R_{24} and R_{25} are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl.

124. The compound of Claim 123, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

125. The compound of Claim 124, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

126. The compound of Claim 125, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

127. The compound of Claim 123, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl..

128. The compound of Claim 127, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

129. The compound of Claim 128, wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

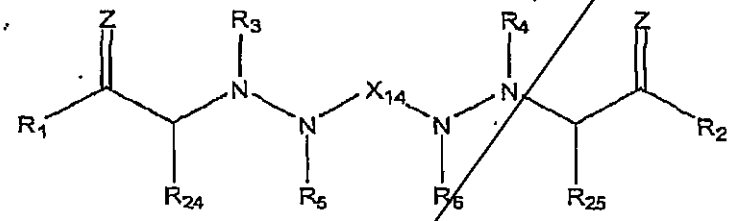
130. The compound of Claim 123, wherein R_{24} and R_{25} are each an alkyl group.

131. The compound of Claim 130, wherein R_{24} and R_{25} are each methyl or ethyl.

132. The compound of Claim 123, wherein R_{24} and R_{25} are -H.

133. The compound of Claim 123, wherein both Z groups are S.

134. The compound of Claim 116, wherein the compound is represented by formula (XVI):



(XVI)

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl; and

R_{24} and R_{25} are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl.

135. The compound of Claim 134, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally

substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

136. The compound of Claim 135, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

137. The compound of Claim 136, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

138. The compound of Claim 134, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl.

139. The compound of Claim 138, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

140. The compound of Claim 139, wherein R_1 and R_2 are both cyclopropyl or 1-methylcyclopropyl.

141. The compound of Claim 134, wherein R_{24} and R_{25} are each an alkyl group.

142. The compound of Claim 141, wherein R_{24} and R_{25} are each methyl or ethyl.

143. The compound of Claim 134, wherein R_{24} and R_{25} are -H.

144. The compound of Claim 134, wherein both Z groups are S.

145. A pharmaceutical composition comprising a pharmaceutically acceptable carrier or diluent and a compound of any one of Claims 1 through 144.

146. The pharmaceutical composition of Claim 145, further comprising one or more additional therapeutic agents.

147. A method of treating a subject having a proliferative disorder, said method comprising administering to the subject an effective amount of a compound of any one of Claims 1 through 144.

148. The method of Claim 147, wherein the proliferative disorder is psoriasis, Reiter's syndrome, pityriasis rubra pilaris, and hyperproliferative variants of disorders of keratinization (e.g., actinic keratosis, senile keratosis), or scleroderma.

149. The method of Claim 148, wherein the proliferative disorder is smooth muscle cell proliferation, systemic sclerosis, cirrhosis of the liver, adult respiratory distress syndrome, idiopathic cardiomyopathy, lupus erythematosus, retinopathy, diabetic retinopathy, cardiac hyperplasia, benign prostatic hyperplasia, ovarian cysts, pulmonary fibrosis, endometriosis, fibromatosis, harmatomas, lymphangiomatosis, sarcoidosis, or desmoid tumors.

150. A method of treating a subject with a cancer, said method comprising administering to the subject an effective amount of a compound of any one of Claims 1 through 144.

151. The method of Claim 150, wherein the cancer is a multidrug resistant cancer.

152. The method of Claim 150, further comprising administering to the subject an additional anticancer agent.

153. The method of Claim 152, wherein the additional anticancer agent is a microtubule stabilizer.

154. The method of Claim 153, wherein the microtubule stabilizer is selected from the group consisting of Taxol®, Taxol® analogues, Discodermolide, Epothilone A, Epothilone B, Epothilone C, Epothilone D, Epothilone E, Epothilone F, Epothilone B N-oxide, Epothilone A N-oxide, 16-aza-epothilone B, 21-aminoepothilone B, 21-hydroxyepothilone D, FR-182877, BSF-223651, AC-7739, AC-7700, Fijianolide B, Laulimalide, Caribaeoside, Caribaeolin, Taccalonolide, Eleutherobin, Sarcodictyin; Laulimalide, Dictyostatin-1, Jatrophane esters, or analogs and derivatives thereof.

155. A method of treating a subject with a cancer, said method comprising administering to the subject an effective amount of Taxol or a Taxol analog and a compound of any one of Claims 1 through 144.

156. The method of Claim 155, wherein the cancer is a cancer that is sensitive to immunotherapy.

157. The method of Claim 156, wherein the cancer that is sensitive to immunotherapy is renal cell carcinoma, melanoma, multiple myeloma, myeloma, lymphoma, non-small-cell lung cancer, squamous cell carcinoma, basal cell carcinoma, fibrosarcoma and malignant brain tumors.

158. The method of Claim 157, wherein the cancer is melanoma.

159. The method of Claim 157, wherein the cancer is renal cell carcinoma.

160. A method of treating a subject with a cancer, said method comprising administering to the subject an effective amount of an immunotherapy and a compound of any one of Claims 1 through 144.

161. A method of treating a subject with a cancer, said method comprising administering to the subject an effective amount of Taxol® or a Taxol® analog, an immunotherapy, and a compound of any one of Claims 1 through 144.

162. A method of preventing the reoccurrence of cancer in a subject, said method comprising administering to the subject an effective amount of a compound of any one of Claims 1 through 144.

163. A method of preventing the reoccurrence of cancer in a subject, said method comprising administering to the subject an effective amount of Taxol® or a Taxol® analog and a compound of any one of Claims 1 through 144.

164. The method of Claim 160, 161, 162, or 163, wherein the cancer is renal cell carcinoma, melanoma, multiple myeloma, myeloma, lymphoma, non-small-cell lung cancer, squamous cell carcinoma, basal cell carcinoma, fibrosarcoma or malignant brain tumors.

165. The method of Claim 164, wherein the cancer is melanoma.

166. The method of Claim 165, wherein the cancer is renal cell carcinoma.

167. The method of Claim 162 or 163, further comprising administering to the subject an immunotherapy.

168. The method of Claim 167, wherein the cancer is renal cell carcinoma, melanoma, multiple myeloma, myeloma, lymphoma, non-small-cell lung

cancer, squamous cell carcinoma, basal cell carcinoma, fibrosarcoma or malignant brain tumors.

169. The method of Claim 168, wherein the cancer is melanoma.

170. The method of Claim 168, wherein the cancer is renal cell carcinoma.

171. A method of treating or inhibiting angiogenesis in a subject in need thereof, comprising administering to the subject an effective amount of a compound of any one of Claims 1 through 144.

172. A method of treating or preventing an Hsp70 responsive disorder, comprising administering to a subject an effective amount of a compound of any one of Claims 1 through 144.

173. The method of Claim 172, wherein the Hsp70 responsive disorder is Alzheimers' disease, Huntington's disease, Parkinson's disease, spongiform encelphalopathies, spinal/bulbar muscular atrophy, familial amyotrophic lateral sclerosis, atherosclerosis, cerebral trauma or spinal trauma.

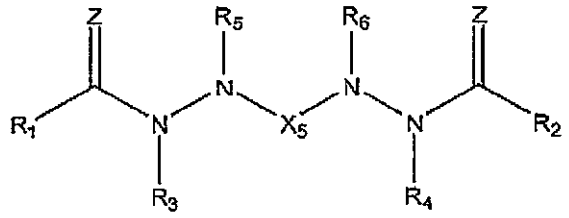
174. The method of Claim 172, wherein the Hsp70 responsive disorder is nerve damage caused by chemotherapy.

175. A method of treating a natural killer cell responsive disorder, comprising administering to a subject an effective amount of a compound of any one of Claims 1 through 144.

176. The method of Claim 175, wherein the natural killer cell responsive disorder is a bacteria infection, viral infection, fungus infection, a parasitic infection, combinations thereof.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A compound represented by formula (VII):



(VII)

or a tautomer, pharmaceutically acceptable salt, solvate, clathrate, or prodrug thereof, wherein:

each Z is independently O or S;

X_5 is -S(O)-, –$S(O)_2$-, -P(O)(OR_{12})-, -$S(O)_2R_{13}S(O)_2$-, -$S(O)_2OS(O)_2$-, -$S(O)_2SS(O)_2$-, -$S(O)_2N(R_5)S(O)_2$-,-P(O)(OR_{12})R_{13}P(O)(OR_{12})-, P(O)(OR_{12})OP(O)(OR_{12})-, -P(O)(OR_{12})SP(O)(OR_{12})-, or -P(O)(OR_{12})$N(R_5)$P(O)(OR_{12})-;

R_1 and R_2 are independently an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, halo, nitro, cyano, guanadino, -OR_{17}, -$NR_{19}R_{20}$, -C(O)R_{17}, -C(O)OR_{17}, -OC(O)R_{17}, -C(O)$NR_{19}R_{20}$, -NR_{18}C(O)R_{17}, -OP(O)(OR_{17})$_2$, -SP(O)(OR_{17})$_2$, -SR_{17}, -$S(O)_pR_{17}$, -$OS(O)_pR_{17}$, -$S(O)_pOR_{17}$, -$NR_{18}S(O)_pR_{17}$, or -$S(O)_pNR_{19}R_{20}$; provided that when either Z_3 or Z_4 is O, then R_1 or R_2 is not -OR_{17}, provided that when Z is O, then R_1 or R_2 is not -OR_{17} or-$NR_{19}R_{20}$;

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_5 and R_6 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally

substituted aryl or an optionally substituted heteroaryl;

R_{12} is independently –H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, or halo;

R_{13} is a covalent bond, or a substituted or unsubstituted C1-C6 alkylene group;

R_{17} and R_{18}, for each occurrence, are, independently, -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl;

R_{19} and R_{20}, for each occurrence, are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl; or R_{19} and R_{20}, taken together with the nitrogen to which they are attached, form an optionally substituted heterocyclyl or an optionally substituted heteroaryl; and

p is 1 or 2.

2. A compound according to Claim 1, wherein both Z groups are both S or both O.

3. A compound according to Claim 1 or 2, wherein X_5 is -S(O)-, $–S(O)_2$-, -P(O)(OR_{12})-, -$S(O)_2R_{13}S(O)_2$- or -P(O)(OR_{12})R_{13}P(O)(OR_{12})-.

4. A compound according to Claim 1, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an alkyl group; and

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted

alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, or an optionally substituted heterocyclyl.

5. A compound according to Claim 4, wherein R_1 and R_2 are each a substituted or unsubstituted phenyl group and R_3 and R_4 are each methyl or ethyl.

6. A compound according to Claim 1, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, or an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, or an optionally substituted heterocyclyl.

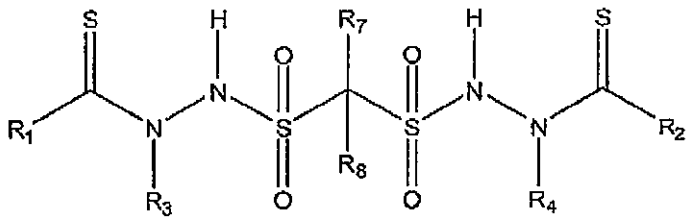
7. A compound according to Claim 6, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

8. A compound according to Claim 1, wherein

R_{13} is $-C(R_7)(R_8)-$;

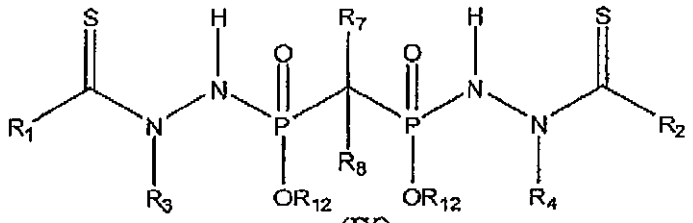
R_7 and R_8 are each independently -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, or R_7 is –H and R_8 is an optionally substituted aryl or an optionally substituted heteroaryl.

9. A compound according to Claim 1, wherein the compound is represented by formula (VIII) or (IX):



(VIII)

or



(IX)

wherein:

R_7 and R_8 are each independently -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, or R_7 is –H and R_8 is an optionally substituted aryl or an optionally substituted heteroaryl.

10. A compound according to Claim 9, wherein:

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 4-methoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both ethyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 4-cyanophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl;

R_8 is -H;

R_1 and R_2 are both 3-cyanophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 3-fluorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 4-chlorophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 3-methoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,3-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-difluorophenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 2,5-dichlorophenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethylphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both phenyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2,5-dimethoxyphenyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is ethyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is *n*-propyl and R_8 is -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both methyl;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-methylcyclopropyl; R_3 is methyl, and R_4 is ethyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 2-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both 1-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclobutyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclopentyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

R_1 and R_2 are both methyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are both methyl; R_3 and R_4 are both *t*-butyl; R_7 and R_8 are both -H;

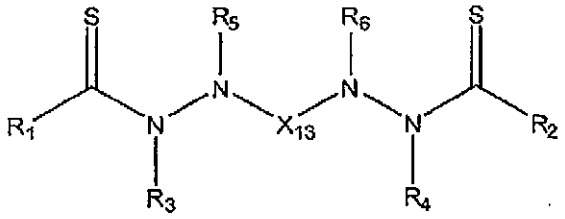
R_1 and R_2 are both methyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

R_1 and R_2 are both *t*-butyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

R_1 and R_2 are ethyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H; or

R_1 and R_2 are both *n*-propyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H.

11. A compound represented by formula (XIII):



(XIII)

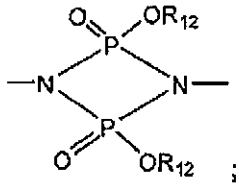
or a tautomer, pharmaceutically acceptable salt, solvate, clathrate, or prodrug thereof, wherein:

X_{13} is –C(O)-; -S(O)-, –$S(O)_2$-, -P(O)(OR_{12})-, -$S(O)_2R_{13}S(O)_2$-, -$S(O)_2OS(O)_2$-, -$S(O)_2SS(O)_2$-, -$S(O)_2N(R_5)S(O)_2$-,-P(O)(OR_{12})R_{13}P(O)(OR_{12})-, P(O)(OR_{12})OP(O)(OR_{12})-, -P(O)(OR_{12})SP(O)(OR_{12})-, -C(O)$R_{13}S(O)_2$-, -C(O)C(=NNHR_{26})C(O)-, -$S(O)_2NR_{27}C(O)$- or -P(O)(OR_{12})N(R_5)P(O)(OR_{12})-;

R_1 and R_2 are independently an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, halo, nitro, cyano, guanadino, -OR_{17}, -$NR_{19}R_{20}$, -C(O)R_{17}, -C(O)OR_{17}, -OC(O)R_{17}, -C(O)$NR_{19}R_{20}$, -$NR_{18}C(O)R_{17}$, -OP(O)(OR_{17})$_2$, -SP(O)(OR_{17})$_2$, -SR_{17}, -$S(O)_pR_{17}$, -$OS(O)_pR_{17}$, -$S(O)_pOR_{17}$, -$NR_{18}S(O)_pR_{17}$, or -$S(O)_pNR_{19}R_{20}$; provided that when R_3, R_4, R_5, and R_6 are all –H, then neither R_1 or R_2 is -OR_{17}, -$NR_{19}R_{20}$, -$NR_{18}C(O)R_{17}$, or phenyl;

R_3 and R_4 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl;

R_5 and R_6 are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl or an optionally substituted heteroaryl, or R_5 and R_6, taken together with the nitrogen atoms to which they are bonded and X_{13}, form the following ring structure:



;

R_{12} is independently –H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, or halo;

R_{13} is a covalent bond, or a substituted or unsubstituted C1-C6 alkylene group;

R_{17} and R_{18}, for each occurrence, are, independently, -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl;

R_{19} and R_{20}, for each occurrence, are independently -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, an optionally substituted heterocyclyl, an optionally substituted aryl, an optionally substituted heteroaryl, an optionally substituted aralkyl, or an optionally substituted heteraralkyl; or R_{19} and R_{20}, taken together with the nitrogen to which they are attached, form an optionally substituted heterocyclyl or an optionally substituted heteroaryl;

R_{26} is an optionally substituted alkyl or an optionally substituted phenyl group;

R_{27} is –H or an optionally substituted alkyl group; and

p is 1 or 2.

12. A compound according to Claim 11, wherein

X_{13} is –C(O)-.

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted heteroaryl; and

R_3 and R_4 are each an alkyl group; and

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted

alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, or an optionally substituted heterocyclyl.

13. A compound according to Claim 12, wherein

R_1 and R_2 are each a substituted or unsubstituted phenyl group;

R_3 and R_4 are each methyl or ethyl; and

R_5 and R_6 are both –H.

14. A compound according to Claim 12, wherein

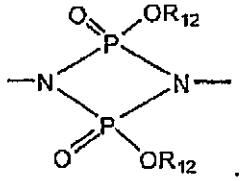
R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, or an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, or an optionally substituted heterocyclyl.

15. A compound according to Claim 14, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

16. A compound according to Claim 11, wherein X_{13} is $-C(O)R_{13}S(O)_2-$, $-C(O)C(=NNHR_{26})C(O)-$, $-S(O)_2NR_{27}C(O)-$, or R_5 and R_6, taken together with the nitrogen atoms to which they are bonded and X_{13}, form the following ring structure:



17. A compound according to Claim 16, wherein:

R_1 and R_2 are each an optionally substituted aryl or an optionally substituted

heteroaryl; and

R_3 and R_4 are each an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, or an optionally substituted heterocyclyl.

18. A compound according to Claim 17, wherein

R_5 is -H and R_6 is -H, an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, or an optionally substituted heterocyclyl; and

R_3 and R_4 are each an alkyl group.

19. A compound according to Claim 18, wherein:

R_1 and R_2 are each a substituted or unsubstituted phenyl group;

R_3 and R_4 are each methyl or ethyl; and

R_5 and R_6 are both -H.

20. A compound according to Claim 16, wherein

R_1 and R_2 are both an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, or an optionally substituted heterocyclyl;

R_5 is -H; and

R_6 is -H or an optionally substituted alkyl, an optionally substituted alkenyl, an optionally substituted alkynyl, an optionally substituted cycloalkyl, an optionally substituted cycloalkenyl, or an optionally substituted heterocyclyl.

21. A compound according to Claim 20, wherein R_1 and R_2 are both a C3-C8 cycloalkyl group optionally substituted with at least one alkyl group; R_3 and R_4 are both an alkyl group; and R_6 is -H or methyl.

22. A pharmaceutical composition comprising a pharmaceutically acceptable carrier or diluent and a compound of any one of Claims 1 to 21.

23. Use of a compound according to any one of claims 1 to 21 in the manufacture of a medicament for the treatment of cancer.