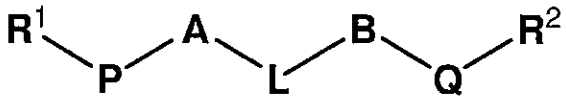
WE CLAIM:

1. A compound of formula (I)



(I)

or a tautomer thereof, prodrug thereof, N-oxide thereof, stereoisomer thereof, pharmaceutically acceptable ester thereof or pharmaceutically acceptable salt thereof, wherein

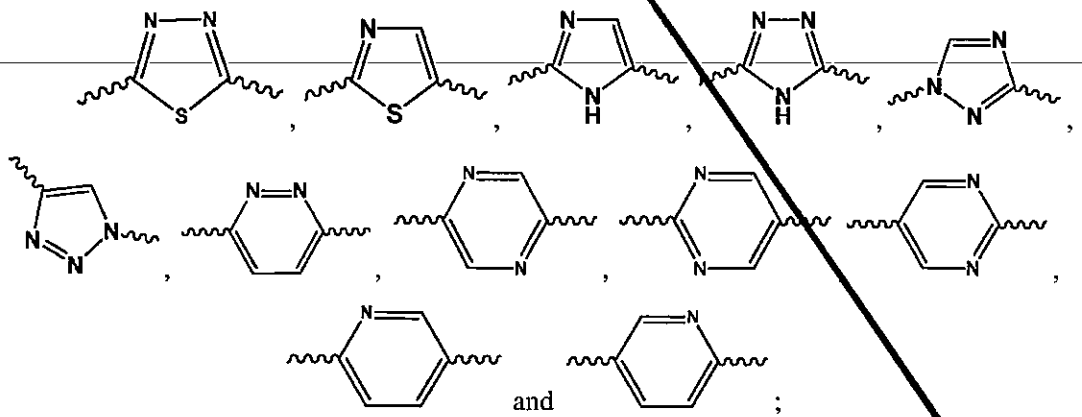
L is $-L_1-L_2-L_3-$;

L_1 is absent or independently selected from substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{2-6} alkenyl, substituted or unsubstituted C_{2-6} alkynyl, O, S, $-S(=O)_q-$, -C(=O)- or $-NR^x-$;

L_2 is substituted or unsubstituted 3 to 14 membered heterocyclyl;

L_3 is absent or independently selected from substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{2-6} alkenyl, substituted or unsubstituted C_{2-6} alkynyl, O, S, $-S(=O)_q-$, -C(=O)- or $-NR^x-$;

A and B are independently selected from



and ;

wherein each of A and B are optionally substituted with one or more R^3;

each occurrence of R^3 is, independently hydrogen, halogen, substituted or unsubstituted C_{1-3} alkyl, nitro, amino, substituted or unsubstituted C_{1-6} alkoxy, or substituted or unsubstituted C_{1-6} alkylamino;

P and Q are independently selected from substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkoxy, -NR^x-C(=O)-$(CR^xR^y)_r$-, -NH-C(=O)-$C(R^xR^y)$-, -$(CR^xR^y)_r$-C(=O)-NR^x-, -(CR^xR^y)-C(=O)-NH-, -C(=O)NR^x-$(CR^xR^y)_r$-, -C(=O)NH-$C(R^xR^y)$-, -$(CR^xR^y)_r$-NR^x-C(=O)-, -(CR^xR^y)-NH-C(=O)-, -NR^x-, -NR^xC(=O)-, -NR^xC(=S)-, -$NR^xS(=O)_q$-, -C(=O)NR^x-, -C(=S)NR^x-, -$S(=O)_qNR^x$-, -NR^xC(=O)NR^x-, -NR^xC(=S)NR^x-, -C(=O)-, -C(=S)-, -C(=O)ONR^x-, =N-$N(R^x)$-, -$N(R^x)$-N= or -NR^xC(=O)O-;

R^1 and R^2 are independently selected from hydrogen, hydroxy, halogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenylalkyl, substituted or unsubstituted heterocyclyl, substituted or unsubstituted heterocyclylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl , –C(=O)OR^z, -C(=O)R^z, -C(=S)R^z, -C(=O)NR^zR^z, -C(=O)ONR^zR^z, -NR^zR^z, -NR^zC(=O)NR^zR^z, -NR^zS(=O)R^z, -NR^zS(=O)$_2R^z$, -(=N-$N(R^z)R^z$), - NR^zC(=O)OR^z, -NR^zC(=O)R^z, -NR^xC(=S)R^y –NR^zC(=S)NR^zR^z, -SONR^zR^z, -$SO_2NR^zR^z$, -OR^z, -OR^zC(=O)NR^zR^z, -OR^zC(=O)OR^z, -OC(=O)R^z, -OC(=O)NR^zR^z, -R^zOR^z, -R^zC(=O)OR^z, -R^zC(=O)NR^zR^z, -R^zC(=O)R^z, -R^zOC(=O)R^z, -SR^z, -SOR^z, -SO_2R^z, -CR^xR^yC(=O)R^z or -CR^xR^yC(=S)R^z ;

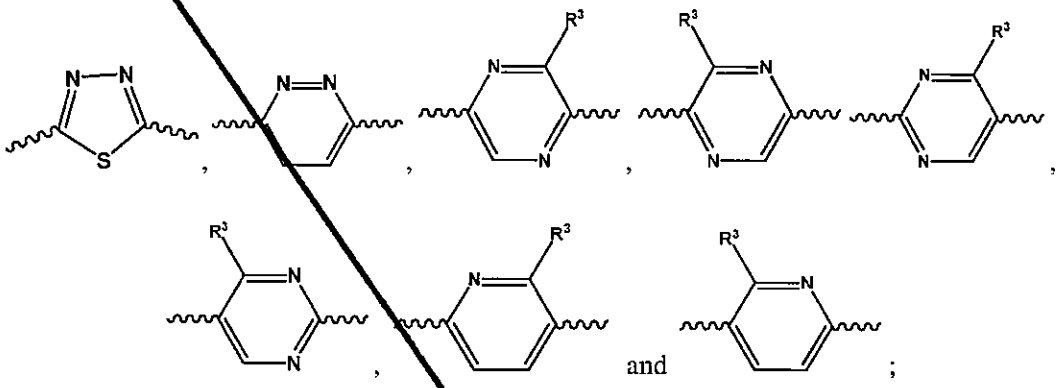
each occurrence of R^x, R^y and R^z is independently selected from hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heterocyclic ring, substituted heterocyclylalkyl ring, or substituted or unsubstituted amino, or any two of R^x and R^y when bound to a common atom may be joined to form (i) a substituted or unsubstituted saturated or unsaturated 3-14 membered ring, which may optionally include one or

more heteroatoms which may be the same or different and are selected from O, NR^z and S, or (ii) an oxo (=O), thio (=S) or imino (=NR^z) group wherein R^z is R^x;

each occurrence of q is independently 0,1 or 2; and

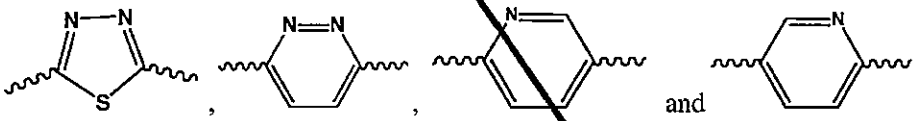
each occurrence of r is independently 0,1 or 2.

2. A compound of claim 1, wherein A and B are independently selected from

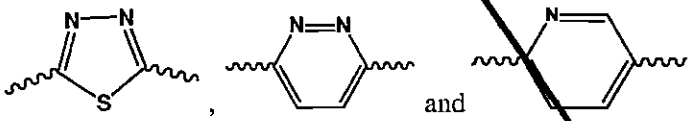


wherein R^3 is hydrogen, halogen or substituted or unsubstituted C_{1-3} alkyl.

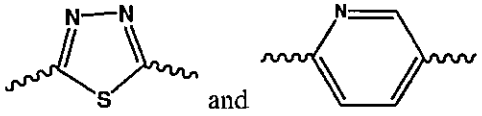
3. A compound of any one of claims 1 and 2, wherein A and B are independently selected from



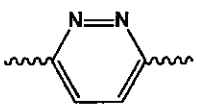
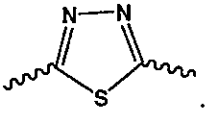
4. A compound of any one of claims 1-3, wherein A and B are independently selected from

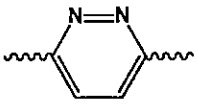
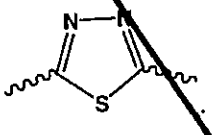


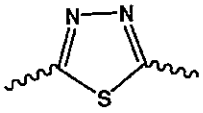
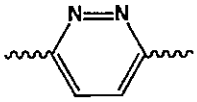
5. A compound of any one of claims 1-4, wherein A and B are independently selected from



6. A compound of any one of claims 1-4, wherein A and B are independently selected from

 and .

7. A compound of any one of claims 1-4, wherein A is  and B is .

8. A compound of any one of claims 1-4, wherein A is  and B is .

9. A compound of any one of claims 1-8, wherein P and Q are each independently selected from $-NR^xC(=O)-(CR^xR^y)_r-$, $-(CR^xR^y)_r-C(=O)-NR^x-$, $-C(=O)NR^x-(CR^xR^y)_r-$, $-(CR^xR^y)_r-NR^x-C(=O)-$, $-NH-C(=O)-C(R^xR^y)-$, $-(CR^xR^y)-C(=O)-NH-$, $-NR^xC(=O)-$, $-NR^xC(=S)-$, $-NR^xS(=O)_q-$, $-C(=O)NR^x-$, $-C(=S)NR^x-$, or $-NR^x-$.

10. A compound of any one of claims 1-9, wherein P and Q are each independently selected from $-NR^xC(=O)-(CR^xR^y)-$, $-(CR^xR^y)-C(=O)-NR^x-$, $-NR^xC(=O)-$ or $-NR^x-$, wherein R^x and R^y are independently selected from hydrogen, substituted or unsubstituted C_{1-3} alkyl, halogen, hydroxy and substituted or unsubstituted C_{1-3} alkoxy.

11. A compound of any one of claims 1-10, wherein P and Q are each independently selected from $-NH-C(=O)-(CR^xR^y)-$, $-(CR^xR^y)-C(=O)-NH-$, $-NH-C(=O)-$ or $-NH-$, wherein R^x and R^y are hydrogen.

12. A compound of any one of claims 1-11, wherein

(i) each of P and Q are independently $-NH-C(=O)-(CH_2)-$, $-(CH_2)-C(=O)-NH-$, $-NH-C(=O)-$ or $-NH-$;

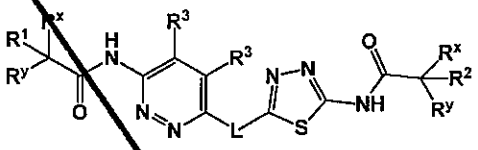
(ii) P is $-(CH_2)-C(=O)-NH-$ and Q is $-NH-C(=O)-CH_2-$, $-NH-C(=O)-$ or $-NH-$;

(iii) P is $-(CH_2)-C(=O)-NH-$, $-NH-C(=O)-$ or $-NH-$ and Q is $-NH-C(=O)-CH_2-$; or

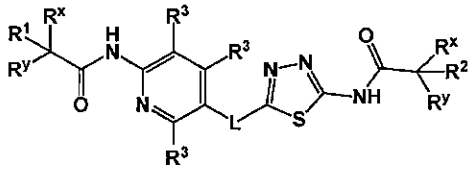
(iv) P is $-(CH_2)-C(=O)-NH-$ and Q is $-NH-C(=O)-CH_2-$.

13. A compound of any one of claims 1-12, wherein both P and Q are independently selected from –NH-C(=O)-CH_2- or -CH_2-C(=O)-NH-.

14. A compound of formula **(II)** or **(III)**



(II)



(III)

or a tautomer thereof, prodrug thereof, N-oxide thereof, stereoisomer thereof, pharmaceutically acceptable ester thereof or pharmaceutically acceptable salt thereof, wherein

L is –L_1-L_2-L_3-;

L_1 is absent or independently selected from substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{2-6} alkenyl, substituted or unsubstituted C_{2-6} alkynyl, O, S, -$S(=O)_q$-, -C(=O)- and -NR^x-;

L_2 is substituted or unsubstituted 3 to 14 membered heterocyclyl;

L_3 is absent or independently selected from substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{2-6} alkenyl, substituted or unsubstituted C_{2-6} alkynyl, O, S, -$S(=O)_q$-, -C(=O)- and -NR^x-;

R^1 and R^2 are independently selected from hydrogen, hydroxy, halogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenylalkyl, substituted or unsubstituted heterocyclyl, substituted or unsubstituted heterocyclylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl , –C(=O)OR^z, -C(=O)R^z, -C(=S)R^z, -C(=O)NR^zR^z, -C(=O)ONR^zR^z, -NR^zR^z, -$NR^zC(=O)NR^zR^z$, -$NR^zS(=O)R^z$, -$NR^zS(=O)_2R^z$, =N-NR^zR^z, - $NR^zC(=O)OR^z$, -$NR^zC(=O)R^z$, -$NR^xC(=S)R^y$ –$NR^zC(=S)NR^zR^z$, -$SONR^zR^z$, -$SO_2NR^zR^z$, -OR^z, -$OR^zC(=O)NR^zR^z$, -$OR^zC(=O)OR^z$ -

$OC(=O)R^z$, $-OC(=O)NR^zR^z$, $-R^zNR^zC(=O)R^z$, $-R^zOR^z$, $-R^zC(=O)OR^z$, $-R^zC(=O)NR^zR^z$, $-R^zC(=O)R^z$, $-R^zOC(=O)R^z$, $-SR^z$, $-SOR^z$, $-SO_2R^z$, $-CR^xR^yC(=O)R^z$ or $-CR^xR^yC(=S)R^z$;

each occurrence of R^x, R^y and R^z is independently selected from hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heterocyclic ring, substituted heterocyclylalkyl ring, or substituted or unsubstituted amino, or any two of R^x and R^y when bound to a common atom may be joined to form (i) a substituted or unsubstituted saturated or unsaturated 3-14 membered ring, which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^z and S, or (ii) an oxo (=O), thio (=S) or imino (=NR^z) group;

R^3 is hydrogen, halogen, substituted or unsubstituted C_{1-3}alkyl, nitro, amino, substituted or unsubstituted C_{1-6} alkoxy, or substituted or unsubstituted C_{1-6} alkylamino; and

each occurrence of q is independently 0,1 or 2.

15. A compound of any one of claims 1-14, wherein

L_1 is absent, substituted or unsubstituted C_{1-6} alkyl or NR^x, wherein R^x is hydrogen or C_{1-3} alkyl;

L_2 is substituted or unsubstituted 3 to 10 membered heterocyclyl; and

L_3 is absent, substituted or unsubstituted C_{1-6} alkyl or NR^x, wherein R^x is hydrogen or C_{1-3} alkyl.

16. A compound of any one of claims 1-15, wherein

L_1 is absent or substituted or unsubstituted C_{1-6} alkyl;

L_2 is substituted or unsubstituted 3 to 10 membered heterocyclyl; and

L_3 is absent or substituted or unsubstituted C_{1-6} alkyl.

17. A compound of any one of claims 1-16, wherein L_2 is substituted or unsubstituted 3 to 10 membered heterocyclyl, and

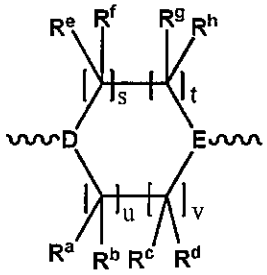
(i) L_1 and L_3 are absent;

(ii) L_1 and L_3 are $-CH_2-$;

(iii) L_1 is $-CH_2-$and L_3 is absent;or

(iv) L_1 is absent and L_3 is $-CH_2-$.

18. A compound of any one of claims 1-17, wherein L_2 is selected from



wherein

D and E are independently selected from CR" or N, wherein R" is hydrogen, hydroxyl, halogen or substituted or unsubstituted C_{1-3} alkyl;

each occurrence of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h is independently selected from hydrogen, nitro, hydroxy, cyano, halogen, substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{2-6} alkenyl, substituted or unsubstituted C_{2-6} alkynyl, substituted or unsubstituted C_{3-6} cycloalkyl, substituted or unsubstituted C_{3-6} cycloalkylalkyl, and substituted or unsubstituted C_{3-6} cycloalkenyl; or any two of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h may be joined to form (i) a substituted or unsubstituted, saturated or unsaturated 3-14 membered ring, which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR' (where R' is H or C_{1-3} alkyl) and S, or (ii) an oxo (=O), thio (=S) or imino (=NR') group; and

each of s, t, u and v is independently 0, 1 or 2 with the proviso that the sum of s, t, u and v is not 0.

19. A compound of claim 18, wherein each occurrence of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h is independently selected from hydrogen, hydroxy, substituted or unsubstituted C_{1-3} alkyl or any two of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h when bound to a common atom form an oxo (=O) or substituted or unsubstituted cycloalkyl.

20. A compound of claim 19, wherein

each of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h is hydrogen and the sum of s, t, u and v is 1, 2, 3 or 4.

21. A compound of claim 20, wherein

(i) each of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h is hydrogen, s is 0, t is 1 and u+v = 3;

(ii) each of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h is hydrogen and s, t, u and v are each 1;

(iii) each of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h is hydrogen, s is 0 and t, u and v are each 1; or

(iv) each of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h is hydrogen and the sum of s, t, u and v is 2;or

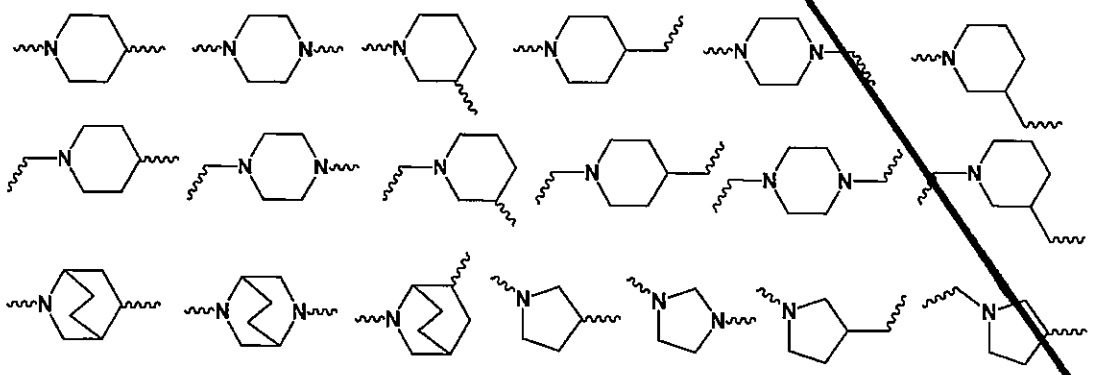
(v) each of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h is hydrogen and the sum of s, t, u and v is 1.

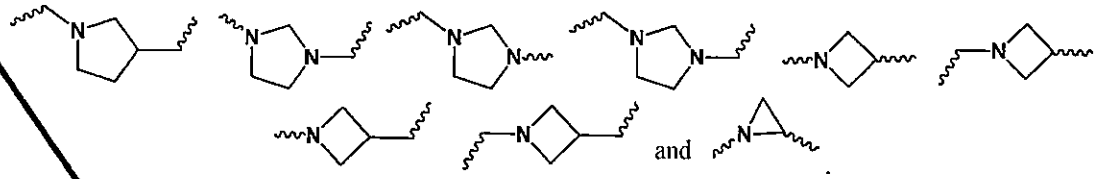
22. A compound of any one of claims 18-21, wherein D and E are independently selected from CH and N.

23. A compound of any one of claims 18-22, wherein (i) D is CH and E is N or (ii) D is N and E is CH.

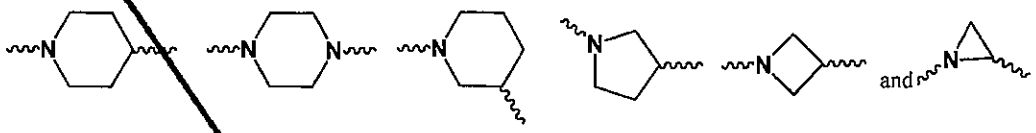
24. A compound of any one of claims 1-23, wherein each of L_1 and L_3 is absent or selected from substituted or unsubstituted C_{1-3} alkyl.

25. A compound of any one of claims 1-24, wherein L (L_1-L_2-L_3) is selected from

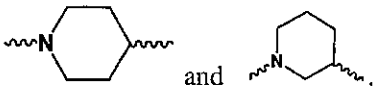




26. A compound of any one of claims 1-25, wherein L_2 is selected from



27. A compound of any one of claims 1-26, wherein L_2 is selected from



28. A compound of any one of claims 1-27, wherein each of L_1 and L_3 is, independently, absent or $-CH_2-$.

29. A compound of any one of claims 1-28, wherein R^3 is hydrogen, halogen or substituted or unsubstituted C_{1-3} alkyl.

30. A compound of any one of claims 1-29, wherein R^3 is hydrogen, fluorine or methyl.

31. A compound of any one of claims 1-30, wherein R^1 and R^2 are each independently selected from hydrogen, halogen, substituted or unsubstituted alkyl, $-NR^zR^z$, substituted or unsubstituted heterocyclyl, substituted or unsubstituted heterocyclylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted heteroaryl, and substituted or unsubstituted heteroarylalkyl.

32. A compound of any one of claims 1-31, wherein R^1 and R^2 are each independently selected from $-NR^zR^z$, substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl.

33. A compound of any one of claims 1-32, wherein R^1 and R^2 are each independently selected from substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl.

34. A compound of any one of claims 1-33, wherein

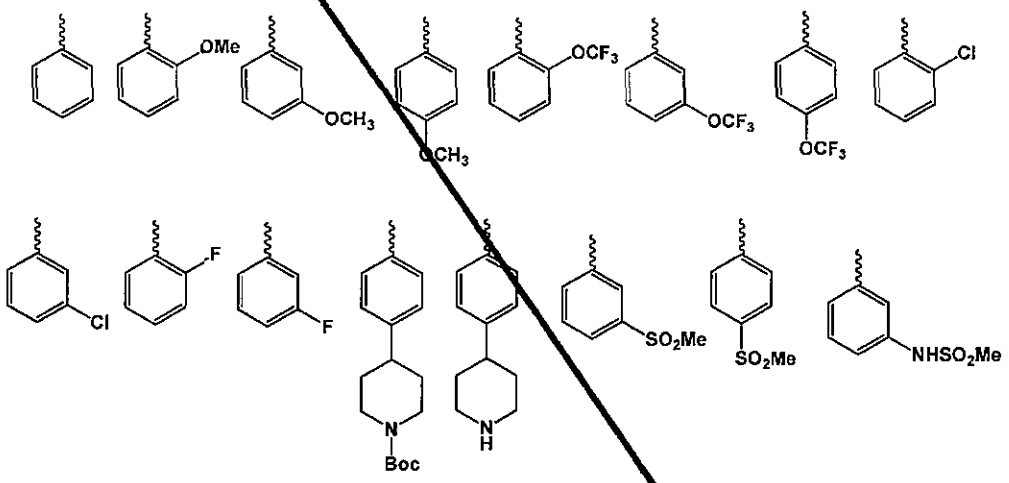
(i) R^1 is substituted or unsubstituted aryl and R^2 is substituted or unsubstituted heteroaryl;

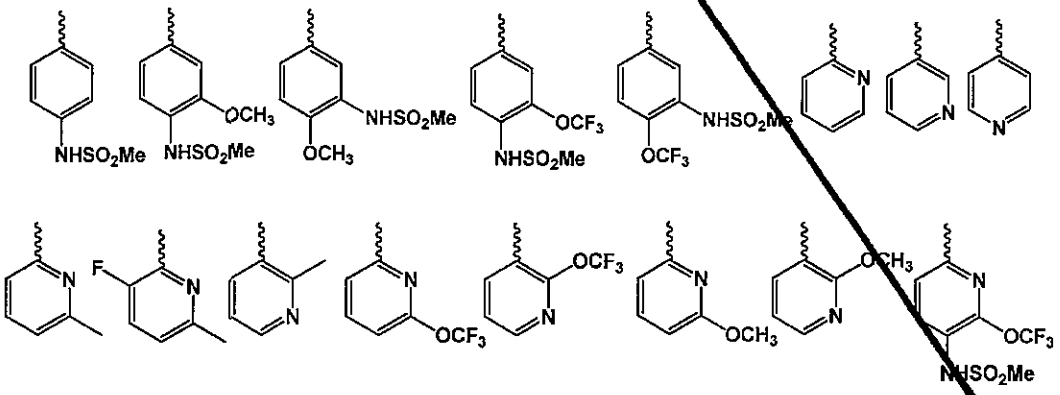
(ii) R^1 is substituted or unsubstituted heteroaryl and R^2 is substituted or unsubstituted aryl;

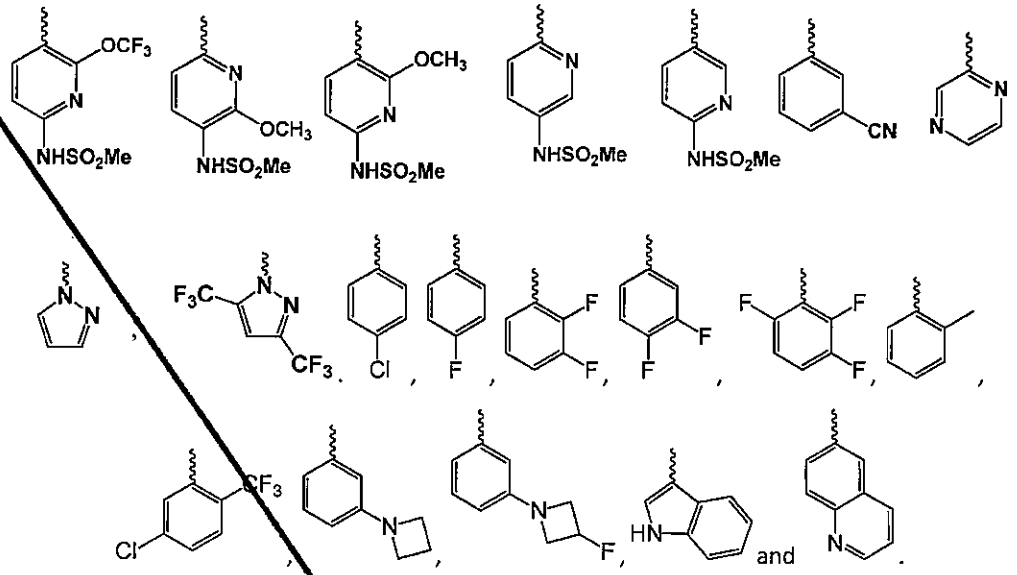
(iii) both R^1 and R^2 are substituted or unsubstituted aryl or

(iv) both R^1 and R^2 are substituted or unsubstituted heteroaryl.

35. A compound of any one of claims 1-34, wherein R^1 and R^2 are each independently selected from







36. A compound of any one of claims 1-35, wherein R^x and R^y are hydrogen, hydroxyl or $-CH_2OH$.

37. A compound selected from:

2-(Pyridin-2-yl)-*N*-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

(RS)-2-(Pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

(R)-2-(Pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido) pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

(S)-2-(Pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido) pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

(RS)-2-(Pyridin-3-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

(R)-2-(Pyridin-3-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido) pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

(S)-2-(Pyridin-3-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido) pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-3-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3-Cyanophenyl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-(4-(5-(2-(3-(trifluoromethoxy)phenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridin-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-(3-(5-(2-(3-(trifluoromethoxy)phenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridin-2-yl)acetamide;

2-(pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl) piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-3-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3-(Methylsulfonamido)phenyl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl) acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(2-Chlorophenyl)-N-(6-(4-(5-(2-(pyridin-2-yl)acetamido)-1,3,4-thiadiazol-2-yl) piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(2-Chlorophenyl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(2-Fluorophenyl)-N-(6-(4-(5-(2-(pyridin-2-yl)acetamido)-1,3,4-thiadiazol-2-yl) piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(Pyrazin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide dihydrochloride;

2-(Pyridin-2-yl)-N-(6-(4-(5-(2-(3-(trifluoromethoxy)phenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(Pyridin-3-yl)-N-(6-(4-(5-(2-(3-(trifluoromethoxy)phenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(Pyridin-3-yl)-N-(6-(4-(5-(2-(2,3,6-trifluorophenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(Pyridin-2-yl)-N-(6-(4-(5-(2-(2,3,6-trifluorophenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(2,3-Difluorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3,4-Difluorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(2-Fluorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3-Fluorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)p;yridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(4-Fluorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3-Chlorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

3-Hydroxy-2-phenyl-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido) pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)propanamide;

(R)-2-hydroxy-2-phenyl-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido) pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3-(3-Fluoroazetidin-1-yl)phenyl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl) acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-((1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-4-yl)methyl)-1,3,4-thiadiazol-2-yl)acetamide;
and pharmaceutically acceptable salts thereof.

38. A pharmaceutical composition comprising a compound of any one of claims 1-37 and a pharmaceutically acceptable carrier.

39. The pharmaceutical composition of claim 38, further comprising one or more additional therapeutic agents selected from anti-cancer agents, anti-inflammatory agents, immunosuppressive agents, steroids, non-steroidal anti-inflammatory agents, antihistamines, analgesics, and mixtures thereof.

40. A method of inhibiting a catalytic activity of a glutaminase present in a cell, comprising contacting the cell with an effective amount of a compound of any of claims 1-37.

41. The method of claim 40, wherein the inhibition takes place in a subject suffering from a disease or disorder selected from cancer, a neurological disorder or immunological disease, a bone disorder, an inflammatory disease, an immune disease, a nervous system disease, a metabolic disease, a respiratory disease, thrombosis, or a cardiac disease.

42. Use of a compound of any one of claims 1-37 in the manufacture of a medicament for the treatment of a disease, disorder, or condition that would benefit from inhibiting catalytic activity of glutaminase.

43. A method for the treatment of a glutaminase associated disease or disorder, comprising the step of administering to a subject in need thereof an effective amount of compound of any one of claims 1-37.

44. A method of claim 43, further comprising the step of administering simultaneously or sequentially to a subject in need thereof at least one other anti-cancer agent, anti-inflammatory agent, immunosuppressive agent, steroid, non-steroidal anti-inflammatory agent, antihistamine, analgesic, or a mixture thereof.

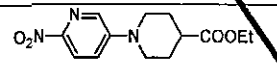
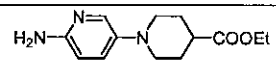
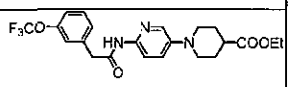
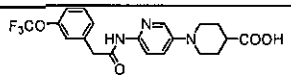
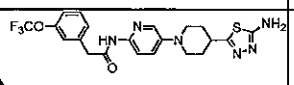
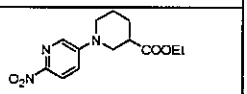
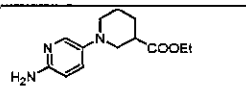
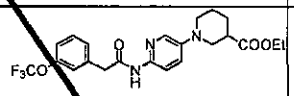
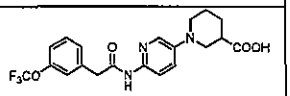
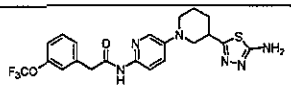
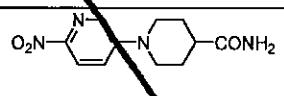
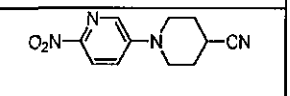
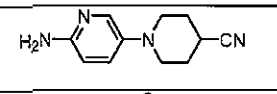
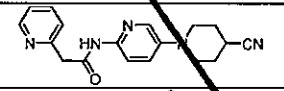
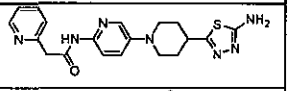
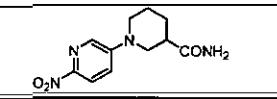
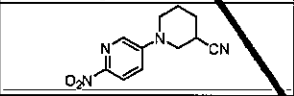
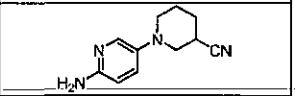
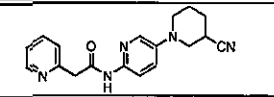
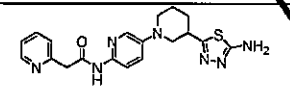
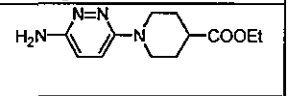
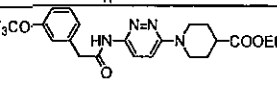
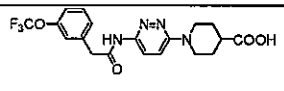
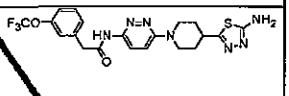
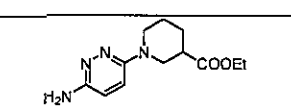
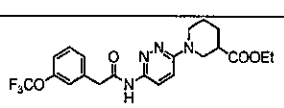
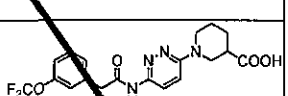
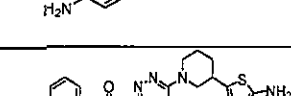
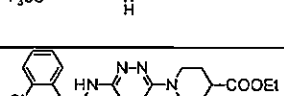
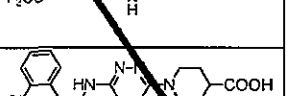
45. A method of claim 43 or 44, wherein the glutaminase associated disease, disorder or condition is an immune system-related disease, a disease or disorder involving inflammation, cancer or other proliferative disease, a hepatic disease or disorder, or a renal disease or disorder.

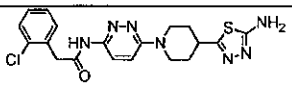
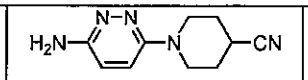
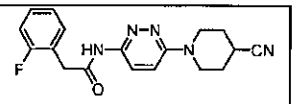
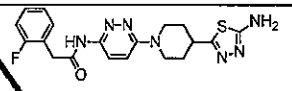
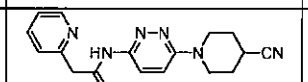
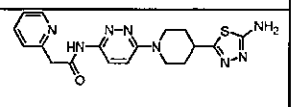
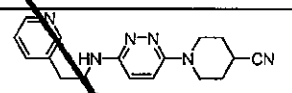
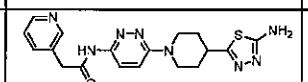
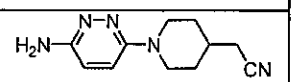
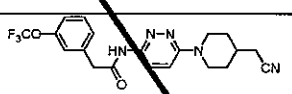
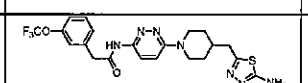
46. A method of claim 43 or 44, wherein the glutaminase associated disease, disorder or condition is selected from inflammation, glomerulonephritis, uveitis, hepatic diseases or disorders, renal diseases or disorders, chronic obstructive pulmonary disease, rheumatoid arthritis, inflammatory bowel disease, vasculitis, dermatitis, osteoarthritis, inflammatory muscle disease, allergic rhinitis, vaginitis, interstitial cystitis, scleroderma, osteoporosis, eczema, allogeneic or xenogeneic transplantation, graft rejection, graft-versus-host disease, lupus erythematosus, pulmonary fibrosis, dermatomyositis, thyroiditis, myasthenia gravis, autoimmune hemolytic anemia, cystic fibrosis, chronic relapsing hepatitis, primary biliary cirrhosis, allergic conjunctivitis, hepatitis, atopic dermatitis, asthm , Sjogren's syndrome, organ transplant rejection, multiple sclerosis, Guillain-Barre, autoimmune uveitis, autoimmune hemolytic anemia, pernicious anemia, autoimmune thrombocytopenia, temporal arteritis, anti-phospholipid syndrome, vasculitides such as Wegener's granulomatosis, Behcet's disease, psoriasis, dermatitis herpetiformis, pemphigus vulgaris, vitiligo, Crohn's disease, colitis, ulcerative colitis, primary biliary cirrhosis, autoimmune hepatitis, Type 1 or immune-mediated diabetes mellitus, Grave's disease. Hashimoto's thyroiditis, autoimmune oophoritis and orchitis, autoimmune disorder of the adrenal gland, systemic lupus erythematosus, polymyositis, dermatomyositis, ankylosing spondylitis, transplant rejection, skin graft rejection, arthritis, bone diseases associated with increased bone resorption;, ileitis, Barrett's syndrome, adult respiratory distress syndrome, chronic obstructive airway disease; corneal dystrophy, trachoma, onchocerciasis, sympathetic ophthalmitis, endophthalmitis; gingivitis, periodontitis; tuberculosis; leprosy; uremic complications, nephrosis; sclerodermatitis, psoriasis, chronic demyelinating diseases of the nervous system, AIDS-related neurodegeneration, Alzheimer's disease, infectious meningitis, encephalomyelitis, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis viral or autoimmune encephalitis; autoimmune disorders, immune-complex vasculitis, systemic lupus and erythematodes; systemic lupus erythematosus (SLE); cardiomyopathy, ischemic heart disease hypercholesterolemia, atherosclerosis, preeclampsia; chronic liver failure, brain and spinal cord trauma, and cancer.

47. A method of claim 43 or 44, wherein the glutamine associated disease, disorder or condition is selected from hematopoietic tumors of lymphoid lineage, leukemia, acute lymphocytic leukemia, acute lymphoblastic leukemia, B-cell lymphoma, T-cell lymphoma, Hodgkin's lymphoma, non-Hodgkins lymphoma, hairy cell lymphoma and Burkett's lymphoma; hematopoietic tumors of myeloid lineage, acute myelogenous leukemias, chronic myelogenous leukemias, myelodysplastic syndrome, promyelocytic leukemia; carcinoma of the bladder,

carcinoma of the breast, carcinoma of the colon, carcinoma of the kidney, carcinoma of the liver, carcinoma of the lung, small cell lung cancer, esophageal cancer, gall bladdercancer, ovarian cancer, pancreatic cancer, stomach cancer, cervical cancer, thyroid cancer, prostate cancer, skin cancer; squamous cell carcinoma; tumors of mesenchymal origin, fibrosarcoma, rhabdomyosarcoma; tumors of the central and peripheral nervous system, astrocytoma, neuroblastoma, glioma, schwannoma; melanoma, seminoma, teratocarcinoma, osteosarcoma, xenoderoma pigmentosum, keratoctanthoma, thyroid follicular cancer and Kaposi's sarcoma.

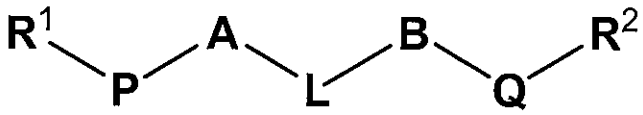
48. A compound selected from

	Structure		Structure		Structure
					
					
					
					
					
					
					
					
					
					

CLAIMS

1. A compound of formula **(I)**



(I)

or a tautomer thereof, N-oxide thereof, stereoisomer thereof, pharmaceutically acceptable ester thereof or pharmaceutically acceptable salt thereof, wherein

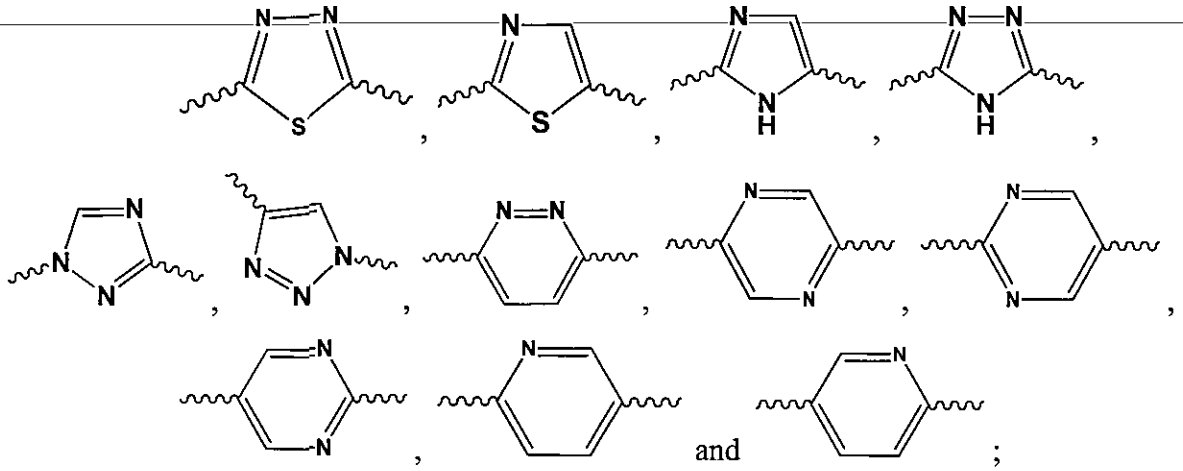
L is $-L_1-L_2-L_3-$;

L_1 is absent or independently selected from substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{2-6} alkenyl, substituted or unsubstituted C_{2-6} alkynyl, O, S, $-S(=O)_q-$, -C(=O)- or $-NR^x-$;

L_2 is substituted or unsubstituted 3 to 14 membered heterocyclyl;

L_3 is absent or independently selected from substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{2-6} alkenyl, substituted or unsubstituted C_{2-6} alkynyl, O, S, $-S(=O)_q-$, -C(=O)- or $-NR^x-$;

A and B are independently selected from



and

;

wherein each of A and B are optionally substituted with one or more R^3;

each occurrence of R^3 is, independently hydrogen, halogen, substituted or unsubstituted C_{1-3}alkyl, nitro, amino, substituted or unsubstituted C_{1-6} alkoxy, or substituted or unsubstituted C_{1-6} alkylamino;

P and Q are independently selected from from $-NR^xC(=O)-(CR^xR^y)_r-$, $-(CR^xR^y)_r-C(=O)-NR^x-$, $-C(=O)NR^x-(CR^xR^y)_r-$, $-(CR^xR^y)_r-NR^x-C(=O)-$, $-NH-C(=O)-C(R^xR^y)-$, $-(CR^xR^y)-C(=O)-NH-$, $-NR^xC(=O)-$, $-NR^xC(=S)-$, $-NR^xS(=O)_q-$, $-C(=O)NR^x-$, $-C(=S)NR^x-$, or $-NR^x-$;

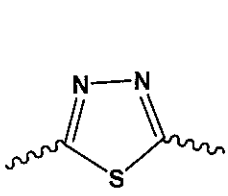
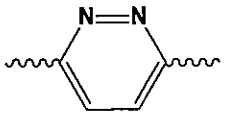
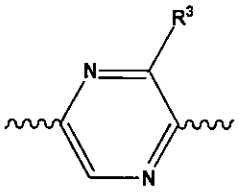
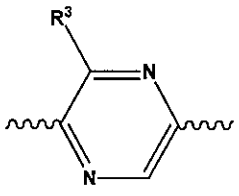
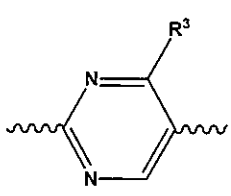
R^1 and R^2 are independently selected from hydrogen, hydroxy, halogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenylalkyl, substituted or unsubstituted heterocyclyl, substituted or unsubstituted heterocyclylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl , $-C(=O)OR^z$, $-C(=O)R^z$, $-C(=S)R^z$, $-C(=O)NR^zR^z$, $-C(=O)ONR^zR^z$, $-NR^zR^z$,-$NR^zC(=O)NR^zR^z$, $-NR^zS(=O)R^z$, $-NR^zS(=O)_2R^z$, $-(=N-N(R^z)R^z)$, - $NR^zC(=O)OR^z$, - $NR^zC(=O)R^z$, $-NR^xC(=S)R^y$ $-NR^zC(=S)NR^zR^z$, $-SONR^zR^z$, $-SO_2NR^zR^z$, $-OR^z$, - $OR^zC(=O)NR^zR^z$, $-OR^zC(=O)OR^z$, $-OC(=O)R^z$, $-OC(=O)NR^zR^z$, $-R^zNR^zC(=O)R^z$, $-R^zOR^z$, - $R^zC(=O)OR^z$, $-R^zC(=O)NR^zR^z$, $-R^zC(=O)R^z$, $-R^zOC(=O)R^z$, $-SR^z$, $-SOR^z$, $-SO_2R^z$, - $CR^xR^yC(=O)R^z$ or $-CR^xR^yC(=S)R^z$;

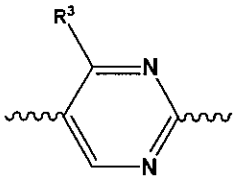
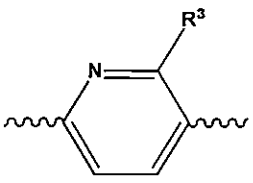
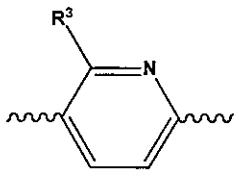
each occurrence of R^x, R^y and R^z is independently selected from hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heterocyclic ring, substituted heterocyclylalkyl ring, or substituted or unsubstituted amino, or any two of R^x and R^y when bound to a common atom may be joined to form (i) a substituted or unsubstituted saturated or unsaturated 3-14 membered ring, which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^z and S, or (ii) an oxo (=O), thio (=S) or imino ($=NR^z$) group wherein R^z is R^x;

each occurrence of q is independently 0,1 or 2; and

each occurrence of r is independently 0,1 or 2.

2. A compound of claim 1, wherein A and B are independently selected from


,

,

,


,


,

and

;

wherein R^3 is hydrogen, halogen or substituted or unsubstituted C_{1-3} alkyl.

3. A compound of any one of claims 1-2, wherein P and Q are each independently selected from $-NR^xC(=O)-(CR^xR^y)_r-$,$-(CR^xR^y)_r-C(=O)-NR^x-$, $-C(=O)NR^x-(CR^xR^y)_r-$,$-(CR^xR^y)_r-NR^x-C(=O)-$, $-NH-C(=O)-C(R^xR^y)-$,$-(CR^xR^y)-C(=O)-NH-$, $-NR^xC(=O)-$, $-NR^xC(=S)-$, $-NR^xS(=O)_q-$, $-C(=O)NR^x-$, $-C(=S)NR^x-$, or $-NR^x-$.

4. A compound of any one of claims 1-3, wherein

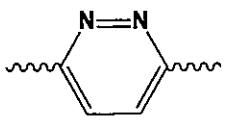
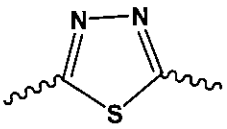
(i) each of P and Q are independently –NH-C(=O)-(CH_2)-,-(CH_2)-C(=O)-NH-, –NH-C(=O)- or –NH-;

(ii) P is -(CH_2)-C(=O)-NH- and Q is –NH-C(=O)-CH_2-, –NH-C(=O)- or –NH-;

(iii) P is -(CH_2)-C(=O)-NH-, –NH-C(=O)- or –NH- and Q is –NH-C(=O)-CH_2-;or

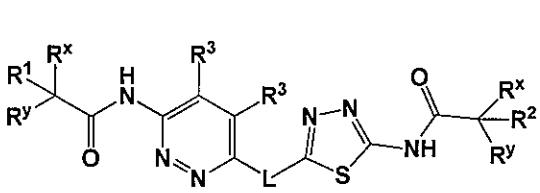
(iv) P is -(CH_2)-C(=O)-NH- and Q is –NH-C(=O)-CH_2-.

5. A compound of any one of claims 1-4, wherein A and B are independently selected from

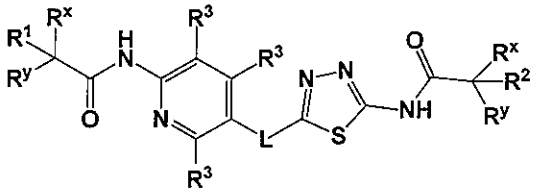

and

and

each of P and Q are independently selected from –NH-C(=O)-CH_2- or -CH_2-C(=O)-NH-.

6. A compound of formula **(II)** or **(III)**



(II)



(III)

or a tautomer thereof, N-oxide thereof, stereoisomer thereof, pharmaceutically acceptable ester thereof or pharmaceutically acceptable salt thereof, wherein

L is $-L_1-L_2-L_3-$;

L_1 is absent or independently selected from substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{2-6} alkenyl, substituted or unsubstituted C_{2-6} alkynyl, O, S, $-S(=O)_q-$, -C(=O)- and $-NR^x-$;

L_2 is substituted or unsubstituted 3 to 14 membered heterocyclyl;

L_3 is absent or independently selected from substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{2-6} alkenyl, substituted or unsubstituted C_{2-6} alkynyl, O, S, $-S(=O)_q-$, -C(=O)- and $-NR^x-$;

R^1 and R^2 are independently selected from hydrogen, hydroxy, halogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenylalkyl, substituted or unsubstituted heterocyclyl, substituted or unsubstituted heterocyclylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl , $-C(=O)OR^z$, $-C(=O)R^z$, $-C(=S)R^z$, $-C(=O)NR^zR^z$, $-C(=O)ONR^zR^z$, $-NR^zR^z$,- $NR^zC(=O)NR^zR^z$, $-NR^zS(=O)R^z$, $-NR^zS(=O)_2R^z$, $=N-NR^zR^z$, - $NR^zC(=O)OR^z$, $-NR^zC(=O)R^z$, $-NR^xC(=S)R^y$ $-NR^zC(=S)NR^zR^z$, $-SONR^zR^z$, $-SO_2NR^zR^z$, $-OR^z$, $-OR^zC(=O)NR^zR^z$, $-OR^zC(=O)OR^z$, $-OC(=O)R^z$, $-OC(=O)NR^zR^z$, $-R^zNR^zC(=O)R^z$, $-R^zOR^z$, $-R^zC(=O)OR^z$, $-R^zC(=O)NR^zR^z$, $-R^zC(=O)R^z$, $-R^zOC(=O)R^z$, $-SR^z$, $-SOR^z$, $-SO_2R^z$, $-CR^xR^yC(=O)R^z$ or $-CR^xR^yC(=S)R^z$;

each occurrence of R^x, R^y and R^z is independently selected from hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heterocyclic ring, substituted heterocyclylalkyl ring, or substituted or unsubstituted amino, or any two of R^x and R^y when bound to a common atom may be joined to form (i) a substituted or unsubstituted saturated or unsaturated 3-14 membered ring, which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^z and S, or (ii) an oxo (=O), thio (=S) or imino (=NR^z) group;

R^3 is hydrogen, halogen, substituted or unsubstituted C_{1-3}alkyl, nitro, amino, substituted or unsubstituted C_{1-6} alkoxy, or substituted or unsubstituted C_{1-6} alkylamino; and

each occurrence of q is independently 0,1 or 2.

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

L_1 is absent, substituted or unsubstituted C_{1-6} alkyl or NR^x, wherein R^x is hydrogen or C_{1-3} alkyl;

L_2 is substituted or unsubstituted 3 to 10 membered heterocyclyl; and

L_3 is absent, substituted or unsubstituted C_{1-6} alkyl or NR^x, wherein R^x is hydrogen or C_{1-3} alkyl.

8. A compound of any one of claims 1-7, wherein L_2 is substituted or unsubstituted 3 to 10 membered heterocyclyl, and

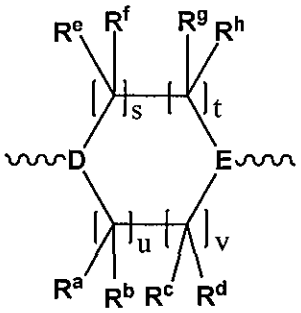
(i) L_1 and L_3 are absent;

(ii) L_1 and L_3 are $-CH_2-$;

(iii) L_1 is $-CH_2-$and $L_3$is absent;or

(iv) L_1 is absent and L_3 is $-CH_2-$.

9. A compound of any one of claims 1-8, wherein L_2 is selected from



wherein

D and E are independently selected from CR"or N, wherein R" is hydrogen, hydroxyl, halogen or substituted or unsubstituted C_{1-3} alkyl;

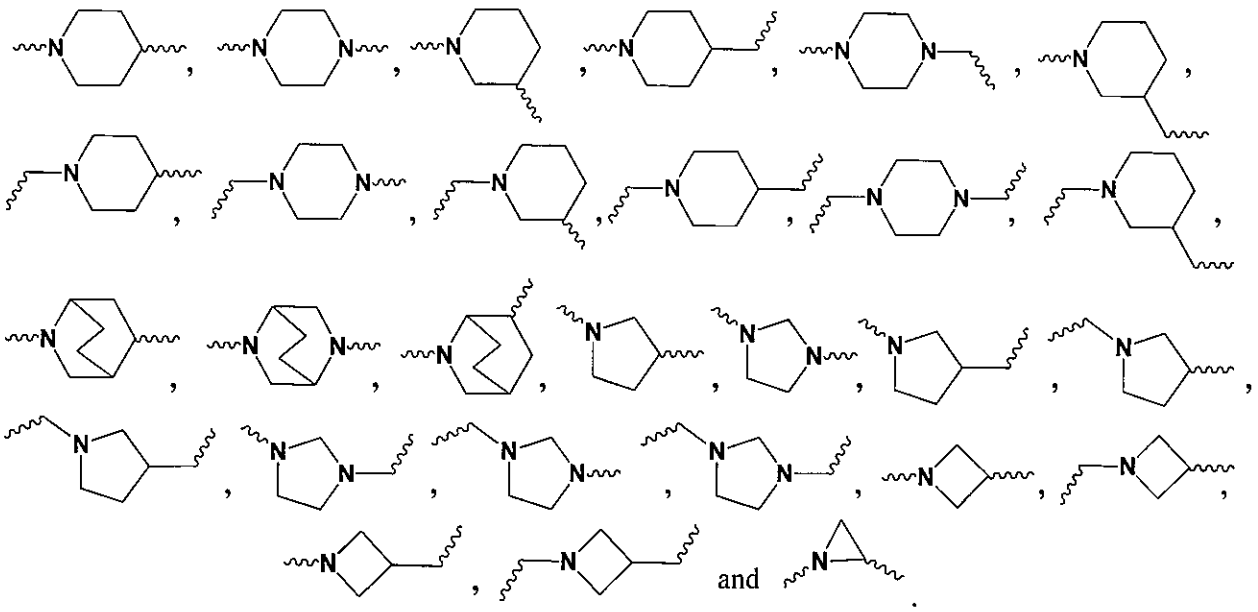
each occurrence of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h is independently selected from hydrogen, nitro, hydroxy, cyano, halogen, substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{2-6} alkenyl, substituted or unsubstituted C_{2-6} alkynyl, substituted or unsubstituted C_{3-6} cycloalkyl, substituted or unsubstituted C_{3-6} cycloalkylalkyl, and substituted or unsubstituted C_{3-6} cycloalkenyl; or any two of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h may be joined to form (i) a substituted or unsubstituted, saturated or unsaturated 3-14 membered ring, which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR' (where R' is H or C_{1-3} alkyl) and S, or (ii) an oxo (=O), thio (=S) or imino (=NR') group; and

each of s, t, u and v is independently 0, 1 or 2 with the proviso that the sum of s, t, u and v is not 0.

10. A compound of claim 9, wherein D and E are independently selected from CH and N and

each of R^a, R^b, R^c, R^d, R^e, R^f, R^g and R^h is hydrogen and the sum of s, t, u and v is 1, 2, 3 or 4.

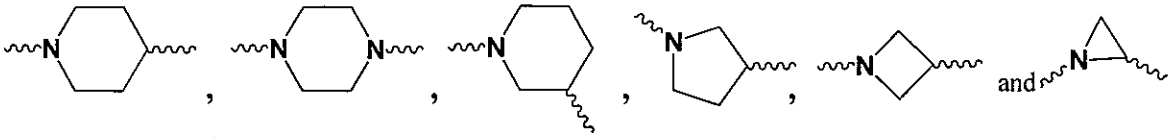
11. A compound of any one of claims 1-10, wherein L (L_1-L_2-L_3) is selected from



12. A compound of any one of claims 1-11, wherein

each of L_1 and L_3 is, independently, absent or $-CH_2-$;

L_2 is selected from



R^3 is hydrogen, halogen or substituted or unsubstituted C_{1-3} alkyl;

R^1 and R^2 are each independently selected from hydrogen, halogen, substituted or unsubstituted alkyl, $-NR^zR^z$, substituted or unsubstituted heterocyclyl, substituted or unsubstituted heterocyclylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted heteroaryl, and substituted or unsubstituted heteroarylalkyl and

R^x and R^y are hydrogen

13. A compound of any one of claims 1-12, wherein

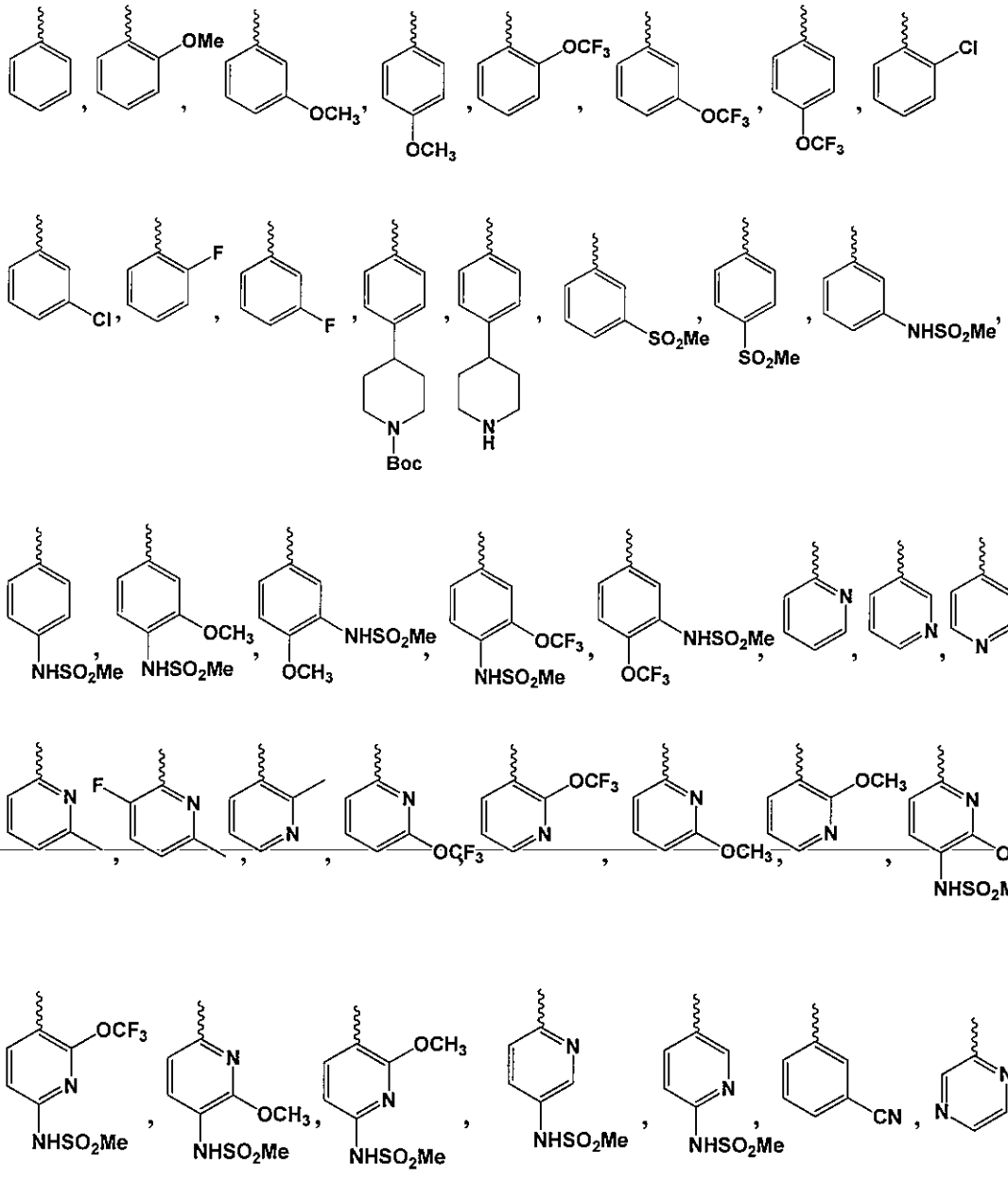
(i) R^1 is substituted or unsubstituted aryl and R^2 is substituted or unsubstituted heteroaryl;

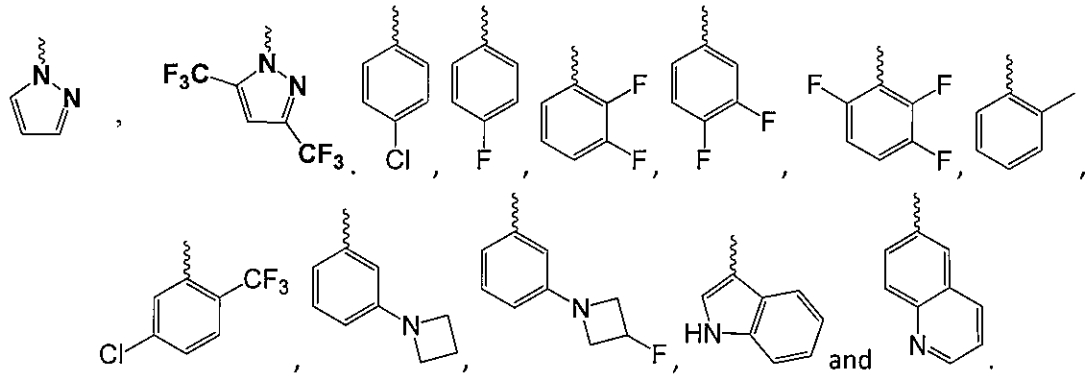
(ii) R^1 is substituted or unsubstituted heteroaryl and R^2 is substituted or unsubstituted aryl;

(iii) both R^1 and R^2 are substituted or unsubstituted aryl or

(iv) both R^1 and R^2 are substituted or unsubstituted heteroaryl.

14. A compound of any one of claims 1-13, wherein R^1 and R^2 are each independently selected from





15. A compound selected from:

2-(Pyridin-2-yl)-*N*-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

(R)-2-(Pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

(S)-2-(Pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-3-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

(R)-2-(Pyridin-3-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

(S)-2-(Pyridin-3-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-3-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl) piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3-Cyanophenyl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-(4-(5-(2-(3-(trifluoromethoxy)phenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridin-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-(3-(5-(2-(3-(trifluoromethoxy)phenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridin-2-yl)acetamide;

2-(pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl) piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-3-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3-(Methylsulfonamido)phenyl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl) acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(2-Chlorophenyl)-N-(6-(4-(5-(2-(pyridin-2-yl)acetamido)-1,3,4-thiadiazol-2-yl) piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(2-Chlorophenyl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-3-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(2-Fluorophenyl)-N-(6-(4-(5-(2-(pyridin-2-yl)acetamido)-1,3,4-thiadiazol-2-yl) piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(Pyrazin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide dihydrochloride;

2-(Pyridin-2-yl)-N-(6-(4-(5-(2-(3-(trifluoromethoxy)phenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(Pyridin-3-yl)-N-(6-(4-(5-(2-(3-(trifluoromethoxy)phenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(Pyridin-3-yl)-N-(6-(4-(5-(2-(2,3,6-trifluorophenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(Pyridin-2-yl)-N-(6-(4-(5-(2-(2,3,6-trifluorophenyl)acetamido)-1,3,4-thiadiazol-2-yl)piperidin-1-yl)pyridazin-3-yl)acetamide;

2-(2,3-Difluorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3,4-Difluorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(2-Fluorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3-Fluorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)p;yridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(4-Fluorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3-Chlorophenyl)-N-(5-(1-(6-(2-(pyridin-2-yl)acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

3-Hydroxy-2-phenyl-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido) pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)propanamide;

(R)-2-hydroxy-2-phenyl-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido) pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(3-(3-Fluoroazetidin-1-yl)phenyl)-N-(5-(1-(6-(2-(3-(trifluoromethoxy)phenyl) acetamido)pyridazin-3-yl)piperidin-4-yl)-1,3,4-thiadiazol-2-yl)acetamide;

2-(Pyridin-2-yl)-N-(5-((1-(6-(2-(3-(trifluoromethoxy)phenyl)acetamido)pyridazin-3-yl) piperidin-4-yl)methyl)-1,3,4-thiadiazol-2-yl)acetamide;

and pharmaceutically acceptable salts thereof.

16. A pharmaceutical composition comprising a compound of any one of claims 1-15 and a pharmaceutically acceptable carrier.

17. The pharmaceutical composition of claim 16, further comprising one or more additional therapeutic agents selected from anti-cancer agents, anti-inflammatory agents, immunosuppressive agents, steroids, non-steroidal anti-inflammatory agents, antihistamines, analgesics, and mixtures thereof.

18. The use of a compound of any one of claims 1-15 in the manufacture of a medicament for the treatment of a disease, disorder, or condition that would benefit from inhibiting catalytic activity of glutaminase.

19. The compound of any one of claims 1-15 for use in the treatment of a glutaminase associated disease or disorder in a subject in need thereof.

20. The compound of claim 19, wherein the treatment when it begins is to further comprise the administration, simultaneously or sequentially to a subject in need thereof at least one other anti-cancer agent, anti-inflammatory agent, immunosuppressive agent, steroid, non-steroidal anti-inflammatory agent, antihistamine, analgesic, or a mixture thereof.

21. The compound of claim 19 or 20, wherein the glutaminase associated disease, disorder or condition is an immune system-related disease, a disease or disorder involving inflammation, cancer or other proliferative disease, a hepatic disease or disorder, or a renal disease or disorder.

22. The compound of claim 19 or 20, wherein the glutaminase associated disease, disorder or condition is selected from hematopoietic tumors of lymphoid lineage, leukemia, acute lymphocytic leukemia, acute lymphoblastic leukemia, B-cell lymphoma, T-cell lymphoma, Hodgkin's lymphoma, non-Hodgkins lymphoma, hairy cell lymphoma and Burkett's lymphoma; hematopoietic tumors of myeloid lineage, acute myelogenous leukemias, chronic myelogenous leukemias, myelodysplastic syndrome, promyelocytic leukemia; carcinoma of the bladder, carcinoma of the breast, carcinoma of the colon, carcinoma of the kidney, carcinoma of the liver, carcinoma of the lung, small cell lung cancer, esophageal cancer, gall bladdercancer, ovarian cancer, pancreatic cancer, stomach cancer, cervical cancer, thyroid cancer, prostate cancer, skin cancer, squamous cell carcinoma; tumors of mesenchymal origin, fibrosarcoma, rhabdomyosarcoma; tumors of the central and peripheral nervous system, astrocytoma, neuroblastoma, glioma, schwannoma; melanoma, seminoma, teratocarcinoma, osteosarcoma, xenoderoma pigmentosum, keratoctanthoma, thyroid follicular cancer and Kaposi's sarcoma,.inflammation,

glomerulonephritis, uveitis, hepatic diseases or disorders, renal diseases or disorders, chronic obstructive pulmonary disease, rheumatoid arthritis, inflammatory bowel disease, vasculitis, dermatitis, osteoarthritis, inflammatory muscle disease, allergic rhinitis, vaginitis, interstitial cystitis, scleroderma, osteoporosis, eczema, allogeneic or xenogeneic transplantation, graft rejection, graft-versus-host disease, lupus erythematosus, pulmonary fibrosis, dermatomyositis, thyroiditis, myasthenia gravis, autoimmune hemolytic anemia, cystic fibrosis, chronic relapsing hepatitis, primary biliary cirrhosis, allergic conjunctivitis, hepatitis, atopic dermatitis, asthm , Sjogren's syndrome, organ transplant rejection, multiple sclerosis, Guillain-Barre, autoimmune uveitis, autoimmune hemolytic anemia, pernicious anemia, autoimmune thrombocytopenia, temporal arteritis, anti-phospholipid syndrome, vasculitides such as Wegener's granulomatosis, Behcet's disease, psoriasis, dermatitis herpetiformis, pemphigus vulgaris, vitiligo, Crohn's disease, colitis, ulcerative colitis, primary biliary cirrhosis, autoimmune hepatitis, Type 1 or immune-mediated diabetes mellitus, Grave's disease. Hashimoto's thyroiditis, autoimmune oophoritis and orchitis, autoimmune disorder of the adrenal gland, systemic lupus erythematosus, polymyositis, dermatomyositis, ankylosing spondylitis, transplant rejection, skin graft rejection, arthritis, bone diseases associated with increased bone resorption;, ileitis, Barrett's syndrome, adult respiratory distress syndrome, chronic obstructive airway disease; corneal dystrophy, trachoma, onchocerciasis, sympathetic ophthalmitis, endophthalmitis; gingivitis, periodontitis; tuberculosis; leprosy; uremic complications, nephrosis; sclerodermatitis, psoriasis, chronic demyelinating diseases of the nervous system, AIDS-related neurodegeneration, Alzheimer's disease, infectious meningitis, encephalomyelitis, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis viral or autoimmune encephalitis; autoimmune disorders, immune-complex vasculitis, systemic lupus and erythematodes; systemic lupus erythematosus (SLE); cardiomyopathy, ischemic heart disease hypercholesterolemia, atherosclerosis, preeclampsia; chronic liver failure, brain and spinal cord trauma, and cancer.