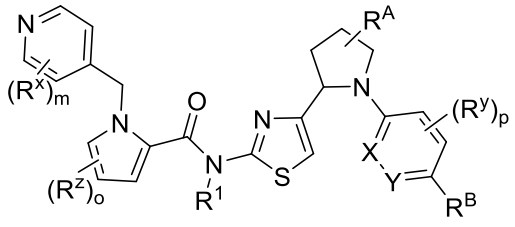
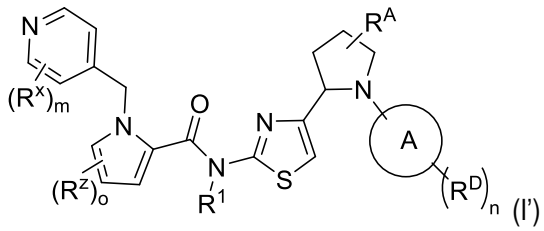
What is claimed is:

1. A compound, or pharmaceutically acceptable salt thereof, having a structure of formula (I) or (I'):


(I) or

(I')

wherein

R^1 is H, C_{1-3}alkyl, or SO_2C_{1-6}alkyl;

each of X and Y is independently N or CR^C;

ring A is a 6-membered heteroaryl having 2 nitrogen ring atoms;

R^A is H, C_{1-6}alkyl, OR^N, $N(R^N)_2$, OC_{1-6}alkylene-$N(R^N)_2$, or OC_{1-6}alkylene-OR^N;

R^B is C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-3}alkylene-C_{1-3}alkoxy, O-C_{1-3}alkylene-C_{1-3}alkoxy, C_{1-6}haloalkyl, C_{1-6}hydroxyalkyl, O-C_{1-6}hydroxyalkyl, halo, C_{0-3}alkylene-CO_2R^N, C_{0-3}alkylene-$N(R^N)_2$, OC_{1-3}alkylene-$N(R^N)_2$, NO_2, C_{0-3}alkylene-$C(O)N(R^N)_2$, C_{0-3}alkylene-$N(R^N)C(O)R^N$, OC_{1-3}alkylene-$N(R^N)C(O)R^N$, C_{0-3}alkylene-$N(R^N)C(O)N(R^N)_2$, C_{0-3}alkylene-$N(R^N)SO_2R^N$, C_{0-3}alkylene-$N(R^N)C(O)OR^N$, C_{0-3}alkylene-$OC(O)N(R^N)_2$, C_{0-3}alkylene-Het, C_{0-3}alkylene-OHet, C_{0-3}alkylene-$NHCO_2$Het, C_{0-3}alkylene-OC(O)Het, C_{0-3}alkylene-$N(R^N)$Het or C_{0-3}alkylene-$N(R^N)C(O)$Het, or

if

(1) m is 1 or 2;

(2) at least one of X and Y is N,

(3) at least one R^C is other than H, or

(4) at least one of o and p is 1,

then R^B can be H; or

if Y is CR^C, then R^C and R^B can combine to form a 6-membered fused ring with the carbons to which they are attached having 0-2 ring heteroatoms selected from N, O, and S and optionally substituted with 1 or 2 substituents independently selected from oxo, halo, and C_{1-6}alkyl;

Het is an aromatic or non-aromatic 4-7 membered ring having 0-3 ring heteroatoms selected from N, O, and S, and Het is optionally substituted with 1 or 2 substituents independently selected from C_{1-6}alkyl, halo, OR^N, oxo, $C(O)R^N$, $C(O)C_{3-6}$cycloalkyl, $C(O)N(R^N)_2$, SOR^N, SO_2R^N, and $SO_2N(R^N)_2$;

each R^C is independently H, halo, C_{1-6}alkoxy, $N(R^N)_2$, CN, Het, or C_{1-6}alkyl;

n is 0, 1, or 2;

each R^D, when present, is independently halo, C_{1-6}alkoxy, or C_{1-6}alkyl;

m is 0, 1, or 2;

each R^x, when present, is independently halo or C_{1-6}alkyl;

p is 0 or 1;

R^y, when present, is C_{1-6}alkyl or halo;

o is 0 or 1;

R^z, when present, is CN, halo, $C(O)N(R^N)_2$, C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6}hydroxyalkyl, or C_{1-6}haloalkyl; and

each R^N is independently H, C_{1-6}alkyl, C_{1-6}hydroxyalkyl, or C_{1-6}haloalkyl,

with the proviso that when each of m, p, and o is 0, R^1 is H, X and Y are each CR^C, and at least one R^C is F, then R^B is not F.

2. The compound or salt of claim 1, wherein Y is CR^C and R^C and R^B combine to form a 6-membered fused ring with the carbons to which they are attached having 0-1 ring heteroatoms selected from N, O, and S and optionally substituted with 1 or 2 substituents independently selected from oxo, halo, and C_{1-6}alkyl.

3. The compound or salt of claim 1, wherein at least one R^C is H.

4. The compound or salt of claim 1, wherein at least one R^C is halo.

5. The compound or salt of any one of claims 1, 3, or 4, wherein R^B is C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-3}alkylene-C_{1-3}alkoxy, C_{1-6}haloalkyl, C_{1-6}hydroxyalkyl, halo, C_{3-6}cycloalkyl, CO_2R^N, C_{0-3}alkylene-$N(R^N)_2$, NO_2, C_{0-3}alkylene-$C(O)N(R^N)_2$, C_{0-3}alkylene-$N(R^N)C(O)R^N$, Het, or OHet.

6. The compound or salt of any one of claims 1, 3, or 4, wherein R^B is C_{0-3}alkylene-$N(R^N)C(O)R^N$, OC_{1-3}alkylene-$N(R^N)C(O)R^N$, C_{0-3}alkylene-$N(R^N)C(O)N(R^N)_2$, C_{0-3}alkylene-$N(R^N)C(O)OR^N$, or C_{1-6}haloalkyl.

7. The compound or salt of any one of claims 1, 3, or 4, wherein R^B is Het or OHet, and Het is unsubstituted C_{3-6}cycloalkyl, or an aromatic or non-aromatic 4-7 membered heterocycle with 1-3 ring heteroatoms substituted with 1 substituent selected from C_{1-6}alkyl, O-C_{1-6}alkyl, oxo, $C(O)C_{1-6}$alkyl, and SO_2C_{1-6}alkyl.

8. The compound or salt of any one of claims 1, 3, or 4, wherein R^B is O-C_{1-3}alkylene-C_{1-3}alkoxy, O-C_{1-6}hydroxyalkyl, OC_{1-3}alkylene-$N(R^N)_2$, OC_{1-3}alkylene-$N(R^N)C(O)R^N$, C_{0-3}alkylene-$N(R^N)C(O)N(R^N)_2$, C_{0-3}alkylene-$N(R^N)SO_2R^N$, C_{0-3}alkylene-$N(R^N)C(O)OR^N$, C_{1-3}alkylene-Het, NH-Het, NHC(O)Het, or NHC(O)OHet.

9. The compound or salt of claim 8, wherein Het is tetrahydropyran, piperidine, morpholine, tetrahydrofuran, pyrrolidine, or oxetanyl.

10. The compound or salt of claim any one of claims 1 to 9, wherein m is 1 and R^x is at 2-position of pyridine.

11. The compound or salt of claim 1 to 9, wherein m is 2, optionally where one R^x is at 2-position and other R^x at 6-position of pyridine.

12. The compound or salt of claim 10 or 11, wherein at least one R^x is halo or methyl.

13. The compound or salt of any one of claims 10 to 12, wherein X is N.

14. The compound or salt of any one of claims 10 to 13, wherein Y is N.

15. The compound or salt of any one of claims 10 to 14, wherein at least one R^C is halo, $C_{1\text{-}6}$alkoxy, $N(R^N)_2$, CN, Het, or $C_{1\text{-}6}$alkyl.

16. The compound or salt of any one of claims 1 to 15, wherein o is 1, and R^z is meta to ring nitrogen.

17. The compound or salt of claim 16, wherein R^z is CN, fluoro, or methyl.

18. The compound or salt of any one of claims 1 to 17, wherein p is 1.

19. The compound or salt of claim 18, wherein R^y is methyl or fluoro.

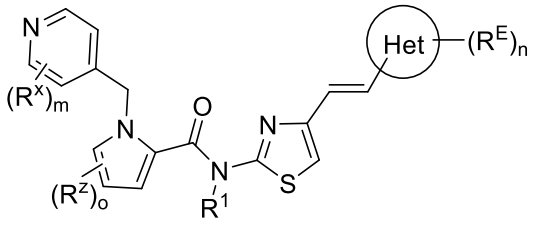
20. The compound or salt of any one of claims 1, 5 to 9, 16, and 17, wherein R^1 is H, X and Y are each CH, R^A is H, m is 1, R^x is fluoro at 2-position of pyridine, and p is 0.

21. The compound or salt of claim 1, wherein ring A is pyrimidinyl, pyrazinyl, or pyradazinyl.

22. The compound or salt of any one of claims 1 to 21, wherein each R^N is independently H or methyl.

23. The compound or salt of claim 1, having a structure as shown in Table A.

24. A compound, or pharmaceutically acceptable salt thereof, having a structure of formula (II):



(II)

wherein

R^1 is H, $C_{1\text{-}3}$alkyl, or $SO_2C_{1\text{-}6}$alkyl;

Het is oxazole, imidazole, pyrazole, isoxazole, morpholine, tetrahydroquinoline, oxazolidinone, piperidinone,, dihydrooxazole, pyrazine, pyrimidine, imidazo[1,2-*a*]pyridine, 5,6,7,8-tetrahydroimidazo[1,5-*a*]pyridine,

pyridine-2(1*H*)-one, 6,7-dihydro-5*H*-pyrrolo[1,2-a]imidazole, or quinoline, or

when at least one of n and m is 1 or 2, Het can be pyridine, and when n is 1 or 2, Het can be diazinyl;

n is 0, 1, or 2;

each R^E, when present, is independently halo, C_{1-6}alkyl, C_{0-6}alkylene-$C(O)N(R^N)_2$, C_{0-6}alkylene-$N(R^N)C(O)R^N$, C_{0-6}alkylene-CN, C_{0-6}alkylene-OR^N, C_{0-6}alkylene-$N(R^N)_2$, C_{1-6}haloalkyl, C_{1-6}haloalkoxy, C_{1-6}hydroxyalkyl, C_{0-6}alkylene-CO_2R^N, or C_{0-6}alkylene-$[C(O)]_{0-1}$-3-6 membered aromatic or non-aromatic ring having 0-2 ring heteroatoms independently selected from N, O and S;

wherein when R^E comprises a 3-6 membered ring, , it is optionally substituted with 1-2 groups independently selected from halo, C_{1-6}alkyl, CN, C_{1-6}haloalkyl, CO_2R^N, $C(O)R^N$, $CON(R^N)_2$, $N(R^N)COR^N$, and OR^N;

m is 0, 1, or 2;

each R^x, when present, is independently halo or C_{1-6}alkyl;

o is 0 or 1;

R^z, when present, is CN, halo, $C(O)N(R^N)_2$, C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6}hydroxyalkyl, or C_{1-6}haloalkyl; and

each R^N is independently H, C_{1-6}alkyl, C_{1-6}hydroxyalkyl, or C_{1-6}haloalkyl.

25. The compound or salt of claim 24, wherein R^1 is H.

26. The compound or salt of claim 24 or 25, wherein Het is oxazole.

27. The compound or salt of claim 24 or 25, wherein Het is imidazole.

28. The compound or salt of claim 24 or 25, wherein Het is isoxazole, morpholine, tetrahydroquinoline, oxazolidinone, piperidinone, or dihydrooxazole.

29. The compound or salt of any one of claims 24 to 28, wherein n is 0.

30. The compound or salt of any one of claims 24 to 28, wherein n is 1.

31. The compound or salt of any one of claims 24 to 28, wherein n is 2.

32. The compound or salt of claim 30 or 31, wherein Het is pyridine.

33. The compound or salt of any one of claims 30 to 32, wherein at least one R^E is halo.

34. The compound or salt of any one of claims 30 to 33, wherein at least one R^E is C_{1-6}alkyl or $C(O)N(R^N)_2$.

35. The compound or salt of any one of claims 30 to 34, wherein at least one R^E is C_{0-6}alkylene-OR^N or C_{0-6}alkylene-$N(R^N)_2$.

36. The compound or salt of any one of claims 30 to 35, wherein at least one R^E is C_{1-6}alkylene-$C(O)N(R^N)_2$, C_{1-6}alkylene-CN, C_{1-6}hydroxyalkyl, C_{0-6}alkylene-$[C(O)]_{0-1}$- 3-6 membered non-aromatic ring having 1 or 2 ring heteroatoms independently selected from N, O and S, or C_{1-6}alkylene-CO_2R^N.

37. The compound or salt of claim 36, wherein the 3-6 membered ring is substituted with one substituent selected from halo, C_{1-6}alkyl, CN, C_{1-6}haloalkyl, C_{1-6}haloalkoxy, OH, C_{1-6}alkoxy, CO_2R^N, $C(O)R^N$, $CON(R^N)_2$, and $N(R^N)COR^N$.

38. The compound or salt of any one of claims 30 to 35, wherein at least one R^E is C_{0-3}alkylene-phenyl.

39. The compound or salt of any one of claims 24 to 38, wherein m is 0.

40. The compound or salt of any one of claims 24 to 38, wherein m is 1 and R^x is at 2-position of pyridine.

41. The compound or salt of any one of claims 24 to 38, wherein m is 2, optionally where one R^x is at 2-position and other R^x at 6-position of pyridine.

42. The compound or salt of claim 40 or 41, wherein at least one R^x is methyl or fluoro.

43. The compound or salt of any one of claims 24 to 42, wherein o is 0.

44. The compound or salt of any one of claims 24 to 42, wherein o is 1.

45. The compound or salt of claim 24, having a structure as shown in Table B.

46. The compound or salt of any one of claims 1 to 45 for use in the treatment of cancer.