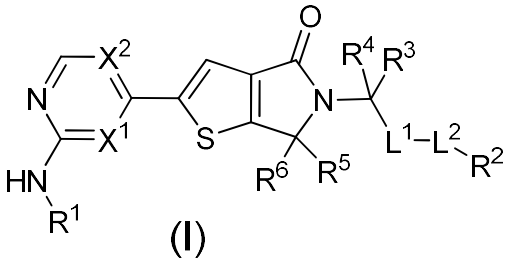
CLAIMS:

Claim 1. A compound of Formula I:



(I)

and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein R^1, R^2, R^3, R^4, R^5, R^6, L^1, L^2, X^1 and X^2 are defined below:

R^1 is selected from an optionally substituted group selected from C1-C6 alkyl, C3-C8 cycloalkyl, C4-8 cycloalkenyl, saturated or unsaturated 4-8 membered heterocyclyl containing 1-2 heteroatoms selected from N, O, and S as ring members, aryl, heteroaryl containing 1-3 heteroatoms selected from N, O, and S as ring members, and wherein the optional substituents for R^1 are 1-4 substituents independently selected from D, halo, -OH, Oxo, CN, N_3, C1-C4 alkyl, C1-C4 alkoxy, C1-C4 haloalkyl, C1-C4 hydroxyalkyl, C1-C4 haloalkoxy, C3-C6 cycloalkyl, 4-8 membered heterocyclyl containing 1-2 heteroatoms independently selected from N, O, and S as ring members, $–CO_2R^7$, $-C(O)N(R^{8a}\ R^{8b})$, $-C(=NR^9)N(R^{8a}\ R^{8b})$, $-C(O)R^7$, $-SO_{0-2}R^{10}$, $-SO(=NR^9)R^{10}$, $-SO_{1-2}N(R^{8a}\ R^{8b})$, $-N(R^{8a}\ R^{8b})$, $-N(R^{8a})C(O)R^{10}$, $-N(R^{8a})C(=NR^9)R^{10}$, $-N(R^{8a})SO_{1-2}R^{10}$, $-N(R^{8c})C(O)N(R^{8a}R^{8b})$, $-N(R^{8c})C(=NR^9)N(R^{8a}R^{8b})$, $-N(R^{8c})SO_{1-2}N(R^{8a}R^{8b})$ and $-N(R^{8a})CO_2R^{10}$, wherein R^7, R^{8a}, R^{8b} and R^{8c} are independently H, or C1-C4 alkyl optionally substituted with 1-3 groups independently selected from D, halo, OH, NH_2, NHMe and NMe_2; R^9 is independently selected from H, CN, OH, C1-C4 alkyl and C1-C4 alkoxy; R^{10} is C1-C4 alkyl optionally substituted with 1-3 groups independently selected from D, halo, OH, NH_2, NHMe and NMe_2; and two substituents on the same or adjacent carbon atoms of R^1 can optionally be taken together to form a 5-6 membered ring that can be saturated or aromatic and optionally contains 1-2 heteroatoms selected from N, O and S and can optionally be substituted with 1-2 groups independently selected from D, Me, halo, OH, oxo, C1-C4 alkoxy, NH_2, C1-C4 alkylamino and di(C1-C4 alkyl)amino;

R^2 is selected from aryl and heteroaryl containing 1-3 heteroatoms selected from N, O and S as ring members, wherein R^2 is optionally substituted with 1-3 substituents independently selected from of D, halo, -OH, =O, CN, N_3, CF_3, C1-C4 alkyl, C1-C4 alkoxy, C1-C4 haloalkyl, C1-C4 hydroxyalkyl, C1-C4 haloalkoxy, C3-C6 cycloalkyl, 4-8 membered heterocyclyl

containing 1-2 heteroatoms selected from N, O, and S as ring members, $–CO_2R^{11}$, $-C(O)N(R^{12a}R^{12b})$, $-C(=NR^{13})N(R^{12a}R^{12b})$, $-C(O)R^{11}$, $-SO_{0-2}R^{14}$, $-SO(=NR^{13})R^{14}$, $-SO_{1-2}N(R^{12a}R^{12b})$, $-N(R^{12a}R^{12b})$, $-N(R^{12a})C(O)R^{11}$, $-N(R^{12a})C(=NR^{13})R^{11}$, $-N(R^{12a})SO_{1-2}R^{14}$, $-N(R^{12c})C(O)N(R^{12a}R^{12b})$, $-N(R^{12c})C(=NR^{13})N(R^{12a}R^{12b})$, $-N(R^{12c})SO_{1-2}N(R^{12a}R^{12b})$ and $-N(R^{12a})CO_2R^{14}$; wherein R^{11}, R^{12a}, R^{12b} and R^{12c} are independently selected from H, and C1-C4 alkyl optionally substituted with 1-3 groups independently selected from D, halo, OH, NH_2, NHMe, NMe_2 and C1-C4 alkoxy; R^{13} is independently selected from H, CN, OH, C1-C4 alkyl, and C1-C4 alkoxy; R^{14} is C1-C4 alkyl optionally substituted with 1-3 groups indepently selected from D, halo, OH, NH_2, NHMe, NMe_2 and C1-C4 alkoxy;

R^3 is selected from H, D and F;

R^4 is selected from H, D, F, and C1-C4 alkyl optionally substituted with 1-3 substituents independently selected from D, halo, -OH, =O, CN, N_3, $–CO_2R^{15}$, $-C(O)N(R^{16a}R^{16b})$, $-C(=NR^{17})N(R^{16a}R^{16b})$, $-C(O)R^{15}$, $-SO_{0-2}R^{18}$, $-SO(=NR^{17})R^{18}$, $-SO_{1-2}N(R^{16a}R^{16b})$, $-N(R^{16a}R^{16b})$, $-N(R^{16a})C(O)R^{15}$, $-N(R^{16a})C(=NR^{17})R^{15}$, $-N(R^{16a})SO_{1-2}R^{18}$, $-N(R^{16c})C(O)N(R^{16a}R^{16b})$, $-N(R^{16c})C(=NR^{17})N(R^{16a}R^{16b})$, $-N(R^{16c})SO_{1-2}N(R^{16a}R^{16b})$ and $-N(R^{16a})CO_2R^{18}$; wherein R^{15}, R^{16a}, R^{16b} and R^{16c} are independently selected from H, and C1-C4 alkyl optionally substituted with 1-3 groups independently selected from D, halo, OH, NH_2, NHMe, NMe_2 and C1-C4 alkoxy; R^{17} is independently selected from H, CN, OH, C1-C4 alkyl, and C1-C4 alkoxy; R^{18} is C1-C4 alkyl optionally substituted with 1-3 groups indepently selected from D, halo, OH, NH_2, NHMe, NMe_2 and C1-C4 alkoxy;

R^5 and R^6 are independently selected from H and an optionally substituted group selected from C1-C4 alkyl, C3-C6 cycloalkyl, and saturated or unsaturated 4-6 membered heterocyclyl containing 1-2 heteroatoms selected from N, O, and S as ring members; wherein the optional substituents for R^5 and R^6 are 1-3 substituents independently selected from D, halo, -OH, C1-C4 alkyl, C1-C4 alkoxy, C1-C4 haloalkyl, C1-C4 haloalkoxy, and C3-C6 cycloalkyl;

R^2 and R^4 can optionally cyclize to form an additional C5-C6 cycloalkyl ring or a 5-6 membered heterocyclic ring containing 1-2 heteroatoms selected from N, O, and S;

R^5 and R^6 can optionally cyclize to form a C3-C6 cycloalkyl ring, a 4-6 membered heterocyclic ring containing 1-2 heteroatoms selected from N, O, and S;

L^1 is selected from a bond, $-C(R^{19a}R^{19b})-$, $-C(O)NR^{20}-$, and $-C(R^{19a}R^{19b})NR^{20}-$, wherein R^{19a}, R^{19b} and R^{20} are independently selected from H and C1-C4 alkyl, each of which is optionally substituted with 1-3 groups independently selected from D, halo, OH, NH_2, NHMe, NMe_2 and C1-C4 alkoxy;

L^2 is selected from a bond and -C($R^{21a}R^{21b}$)-, wherein R^{21a} and R^{21b} are independently selected from H and C1-C4 alkyl optionally substituted with 1-3 groups independently selected from D, halo, OH, NH_2, NHMe, NMe_2, -OPO_3H_2 and C1-C4 alkoxy;

X^1 is selected from CR^{22a} and N; wherein R^{22a} is selected from H, halo, CN, and C1-C3 alkyl.

X^2 is selected from CR^{22b} and N; wherein R^{22b} is selected from H, halo, CN, and C1-C3 alkyl.

Claim 2. The compound according to claim 1 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein X^1 and X^2 are N.

Claim 3. The compound according to claim 1 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein X^1 is CH and X^2 is CR^{22b}, wherein R^{22b} is selected from H, halo, CN and C1-C3 alkyl.

Claim 4. The compound according to claim 1 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein X^1 is N and X^2 is CR^{22b}, wherein R^{22b} is selected from H, halo, CN and C1-C3 alkyl.

Claim 5. The compound according to claims 1-4 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein R^1 is selected from phenyl, pyridine, pyridone, pyrazine, pyridazine, pyrazole, triazole, tetrazole, thiazole, oxazole, imidazole, isothiazole, isoxazole, furan, 1,2,5-oxadiazole (furazan), and thiophene, each of which is optionally substituted with one or two groups independently selected from Oxo, D, halo, CN, hydroxy, C1-C4 alkoxy, C1-C4 alkyl, C1-C4 haloalkyl, C1-C4 hydroxyalkyl, C1-C4 haloalkoxy, and C3-C6-cycloalkyl.

Claim 6. The compound according to claims 1-5 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein R^1 is selected from R^{1a}, wherin R^{1a} is selected cyclobutyl, cyclopentyl, cyclohexyl, cyclohexenyl, tetrahydropyran, dihydropyran, tetrahydrofuran, oxetane, azetidine, pyrrolidine, piperidine, piperazine, morpholine, tetrahydrothiopyran (thiacyclohexane), and tetrahydrothiofuran (thiacyclopentane), each of which is optionally substituted with one or two groups independently selected from

Oxo, D, halo, CN, hydroxy, C1-C4 alkoxy, C1-C4 alkyl, C1-C4 haloalkyl, C1-C4 hydroxyalkyl, C1-C4 haloalkoxy, C3-C8 cycloalkyl, -$COOR^{23}$, -SO_2R^{24} , –$N(R^{25a}$ $R^{25b})$, -$N(R^{25a})C(O)R^{24}$, -$N(R^{25a})SO_2R^{24}$, -$N(R^{25a})COOR^{24}$, -$CON(R^{25a}R^{25b})$ and -$SO_2N(R^{25a}$ $R^{25b})$, wherein each R^{23}, R^{25a} and R^{25b} are independently selected from H and C1-C4 alkyl; and R^{24} is C1-C4 alkyl.

Claim 7. The compound of any of claims 1-6 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein R^2 is phenyl and is optionally substituted with up to three groups independently selected from halo, D, CN, C1-C4 alkoxy, C1-C4 alkyl, C1-C4 haloalkyl, C1-C4 haloalkoxy, C3-C6 cycloalkyl, -SR^{26}, -SO_2R^{26}, -$N(R^{27a}$ $R^{27b})$, -$N(R^{27a})C(O)R^{26}$ and -$SO_2N(R^{27a}$ $R^{27b})$, wherein each R^{27a} and R^{27b} are independently selected from H, C1-C4 alkyl and C1-C4 haloalkyl; and R^{26} is C1-C4 alkyl.

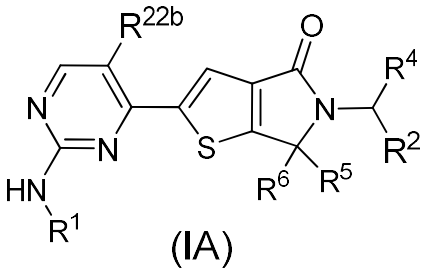
Claim 8. The compound of any of claims 1-7 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein R^2 is thiophene, thiazole, pyridine, pyrimidine, pyrazine or pyridazine, and is optionally substituted with up to three groups independently selected from D, halo, CN, C1-C4 alkoxy, C1-C4 alkyl, C1-C4 haloalkyl, C1-C4 haloalkoxy, -SO_2R^{28}, -$N(R^{29a}$ $R^{29b})$, -$N(R^{29a})C(O)R^{28}$ and -$SO_2N(R^{29a}$ $R^{29b})$, wherein each R^{29a} and R^{29b} are independently selected from H, C1-C4 alkyl and C1-C4 haloalkyl; and R^{28} is C1-C4 alkyl.

Claim 9. The compound of any of claims 1-8 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein R^3 is H, L^1 and L^2 are bond; and R^4 is methyl or ethyl, and is optionally substituted with fluoro, amino, hydroxy, methylamino, ethylamino, dimethylamino, -$OP(O)(OH)_2$, methoxy or ethoxy.

Claim 10. The compound of any of claims 1-8 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein L^1 and L^2 are bond; R^3 and R^4 are H or D.

Claim 11. The compound of any of claims 1-8 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof, wherein L^1 is -C(O)NH-.

Claim 12. The compound of claim 1, which is of Formula IA:



(IA)

and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof,

wherein:

R^1 is phenyl, pyridine, pyrimidine, triazine, pyrazole, imidazole, isoxazole, isothiazole, oxazole, oxadizole, triazole or thiazole, which can be substituted with up to two groups independently selected from D, F, Cl, Br, CN, Me, Et, Pr, i-Pr, cyclopropyl, butyl, isobutyl, sec-butyl, t- butyl, CH_2F, CHF_2, CF_3, MeO, EtO, i-PrO, PrO, BuO, t-BuO, s-BuO, i-BuO, OCF_3, -O(cycloproyl), $-(CH_2)_2OH$, $-(CH_2)_2OMe$, $-(CH_2)_2NHSO_2NH_2$, - $-O(CH_2)_2OH$, $-O(CH_2)_2OMe$ and $-O(CH_2)_2NHSO_2NH_2$;

or R^1 is a non-aromatic cycloalkyl or heterocyclic group such as cycloppentyl, cyclohexyl, tetrahydropyranyl (e.g., 4-tetrahydropyranyl), 3-oxetanyl, 3- or 4- piperidinyl, 4- or 3- piperidin-2-onyl, 3- or 4-thiacyclopentane, 3-thiacyclohexane, 3- tetrahydrofuran, and the like, wherein a ring sulfur can be oxidized to sulfoxide or sulfone oxidation state, and each of these rings may be substituted with 1-3 groups independently selected from D, F, Cl, CN, amino, NHMe, NMe_2, Me, Et, i-Pr, cyclopropyl, $NHSO_2Me$, NHCOMe, Oxo, OH, OMe, $-CH_2OH$, and CF_3. The 1,4-disubstituted cyclohexyl can have either a cis or trans relative stereochemistry between the groups attached at positions 1 and 4, for example, a trans relative orientation between these groups;

R^2 is phenyl, pyridine or thienyl, optionally substituted with 1-2 groups independently selected from D, amino, halo, CF_3, CN, C1-C4 alkyl, C1-C4 alkoxy, C1-C4 haloalkyl, C1-C4 haloalkoxy, $-COOR^{30}$, $-SO_2R^{31}$, $-N(R^{32a}\ R^{32b})$, $-N(R^{32a})C(O)R^{31}$, $-SO_2N(R^{32a}\ R^{32b})$ and $-N(R^{32a})SO_2R^{31}$, wherein each R^{30}, R^{32a} and R^{32b} are independently selected from H and C1-C4 alkyl; R^{31} is C1-C4 alkyl;

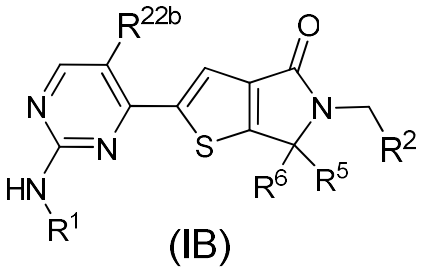
R^4 is selected from H, D and-CH_2R^*, whererin R* is selected from H, -OH, F, $-NH_2$, -NHMe, $-NMe_2$, $-OP(O)(OH)_2$ and –OMe;

R^5 and R^6 are independently selected from H and an optionally substituted group selected from C1-C4 alkyl; wherein the optional substituents for R^5 and R^6 are 1-3 substituents independently selected from D, halo, -OH, C1-C4 alkoxy, C1-C4 haloalkoxy; wherein R^5 and

R^6 can optionally cyclize to form a C3-C6 cycloalkyl ring or a 4-6 membered heterocyclic ring containing 1-2 heteroatoms selected from N, O, and S; and

R^{22b} is selected from H, halo, and C1-C3 alkyl.

Claim 13. The compound of claim 1, which is of Formula IB:



(IB)

and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof,

wherein:

R^1 is phenyl, pyridine, pyrimidine, triazine, pyrazole, imidazole, isoxazole, isothiazole, oxazole, oxadizole, triazole or thiazole, which can be substituted with up to two groups independently selected from D, F, Cl, Br, CN, Me, Et, Pr, i-Pr, cyclopropyl, butyl, isobutyl, sec-butyl, t- butyl, CH_2F, CHF_2, CF_3, MeO, EtO, i-PrO, PrO, BuO, t-BuO, s-BuO, i-BuO, OCF_3, -O(cycloproyl), $-(CH_2)_2OH$, $-(CH_2)_2OMe$, $-(CH_2)_2NHSO_2NH_2$, - $-O(CH_2)_2OH$, $-O(CH_2)_2OMe$, and $-O(CH_2)_2NHSO_2NH_2$;

or R^1 is a non-aromatic cycloalkyl or heterocyclic group such as cycloppentyl, cyclohexyl, tetrahydropyranyl (e.g., 4-tetrahydropyranyl), 3-oxetanyl, 3- or 4- piperidinyl, 4- or 3- piperidin-2-onyl, 3- or 4-thiacyclopentane, 3-thiacyclohexane, 3- tetrahydrofuran, and the like, wherein a ring sulfur can be oxidized to sulfoxide or sulfone oxidation state, and each of these rings may be substituted with 1-3 groups independently selected from D, F, Cl, CN, amino, NHMe, NMe_2, Me, Et, i-Pr, cyclopropyl, $NHSO_2Me$, NHCOMe, Oxo, OH, OMe, $-CH_2OH$, and CF_3. The 1,4-disubstituted cyclohexyl can have either a cis or trans relative stereochemistry between the groups attached at positions 1 and 4, for example, a trans relative orientation between these groups;

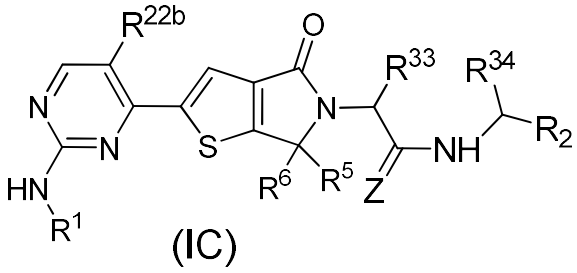
R^2 is phenyl, pyridine or thienyl, optionally substituted with 1-2 groups independently selected from D, amino, halo, CF_3, CN, C1-C4 alkyl, C1-C4 alkoxy, C1-C4 haloalkyl, C1-C4 haloalkoxy, $-COOR^{30}$, $-SO_2R^{31}$, $-N(R^{32a}\ R^{32b})$, $-N(R^{32a})C(O)R^{31}$, $-SO_2N(R^{32a}\ R^{32b})$ and -

$N(R^{32a})SO_2R^{31}$, wherein each R^{30}, R^{32a} and R^{32b} are independently selected from H and C1-C4 alkyl; R^{31} is C1-C4 alkyl;

R^5 and R^6 are independently selected from H and an optionally substituted group selected from C1-C4 alkyl; wherein the optional substituents for R^5 and R^6 are 1-3 substituents independently selected from D, halo, -OH, C1-C4 alkoxy, C1-C4 haloalkoxy; wherein R^5 and R^6 can optionally cyclize to form a C3-C6 cycloalkyl ring or a 4-6 membered heterocyclic ring containing 1-2 heteroatoms selected from N, O, and S; and

R^{22b} is selected from H, halo, and C1-C3 alkyl.

Claim 14. The compound of claim 1, which is of Formula IC:



(IC)

and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof,

wherein:

R^{33} is selected from H, D, and-CH_2R^*, whererin R* is selected from H and C1-C4 alkyl;

R^{34} is selected from H, D and-CH_2R^*, whererin R* is selected from H, -OH, F, $-NH_2$, -NHMe, $-NMe_2$, $-OP(O)(OH)_2$ and –OMe;

Z is O or 2H;

R^1 is phenyl, pyridine, pyrimidine, triazine, pyrazole, imidazole, isoxazole, isothiazole, oxazole, oxadizole, triazole or thiazole, which can be substituted with up to two groups independently selected from D, F, Cl, Br, CN, Me, Et, Pr, i-Pr, cyclopropyl, butyl, isobutyl, sec-butyl, t- butyl, CH_2F, CHF_2, CF_3, MeO, EtO, i-PrO, PrO, BuO, t-BuO, s-BuO, i-BuO, OCF_3, -O(cycloproyl), $-(CH_2)_2OH$, $-(CH_2)_2OMe$, $-(CH_2)_2NHSO_2NH_2$, - $-O(CH_2)_2OH$, $-O(CH_2)_2OMe$ and $-O(CH_2)_2NHSO_2NH_2$;

or R^1 is a non-aromatic cycloalkyl or heterocyclic group such as cycloppentyl, cyclohexyl, tetrahydropyranyl (e.g., 4-tetrahydropyranyl), 3-oxetanyl, 3- or 4- piperidinyl, 4- or 3- piperidin-2-onyl, 3- or 4-thiacyclopentane, 3-thiacyclohexane, 3- tetrahydrofuran, and the like, wherein a ring sulfur can be oxidized to sulfoxide or sulfone oxidation state, and each of these rings may

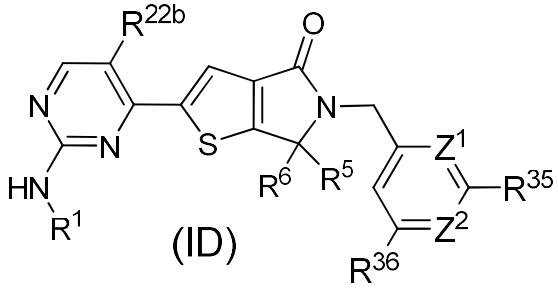
be substituted with 1-3 groups independently selected from D, F, Cl, CN, amino, NHMe, NMe_2, Me, Et, i-Pr, cyclopropyl, $NHSO_2Me$, NHCOMe, Oxo, OH, OMe, $-CH_2OH$, and CF_3. The 1,4-disubstituted cyclohexyl can have either a cis or trans relative stereochemistry between the groups attached at positions 1 and 4, for example, a trans relative orientation between these groups;

R^2 is phenyl, pyridine or thienyl, optionally substituted with 1-2 groups independently selected from D, amino, halo, CF_3, CN, C1-C4 alkyl, C1-C4 alkoxy, C1-C4 haloalkyl, C1-C4 haloalkoxy, $-COOR^{30}$, $-SO_2R^{31}$, $-N(R^{32a}\ R^{32b})$, $-N(R^{32a})C(O)R^{31}$, $-SO_2N(R^{32a}\ R^{32b})$ and $-N(R^{32a})SO_2R^{31}$, wherein each R^{30}, R^{32a} and R^{32b} are independently selected from H and C1-C4 alkyl; R^{31} is C1-C4 alkyl;

R^5 and R^6 are independently selected from H and an optionally substituted group selected from C1-C4 alkyl; wherein the optional substituents for R^5 and R^6 are 1-3 substituents independently selected from D, halo, -OH, C1-C4 alkoxy, C1-C4 haloalkoxy; wherein R^5 and R^6 can optionally cyclize to form a C3-C6 cycloalkyl ring or a 4-6 membered heterocyclic ring containing 1-2 heteroatoms selected from N, O, and S; and

R^{22b} is selected from H, halo, and C1-C3 alkyl.

Claim 15. The compound of claim 1, which is of Formula ID:



(ID)

wherein:

R^{35} and R^{36} are independently selected from H, F, CN, $-CF_3$, OMe, OCF_3, SMe and an optional substituted group selected from C1-C4 alkyl, C3-C6 cycloalkyl and C1-C4 alkoxyl; wherein the optional substituents are 1-3 substituents independently selected halogen;

Z^1 and Z^2 are independently selected from CH and N;

wherein:

R^1 is phenyl, pyridine, pyrimidine, triazine, pyrazole, imidazole, isoxazole, isothiazole, oxazole, oxadizole, triazole or thiazole, which can be substituted with up to two groups independently selected from D, F, Cl, Br, CN, Me, Et, Pr, i-Pr, cyclopropyl, butyl, isobutyl, sec-butyl, t- butyl, CH_2F, CHF_2, CF_3, MeO, EtO, i-PrO, PrO, BuO, t-BuO, s-BuO, i-BuO, OCF_3, -

O(cycloproyl), -$(CH_2)_2OH$, -$(CH_2)_2OMe$, -$(CH_2)_2NHSO_2NH_2$, - -$O(CH_2)_2OH$, -$O(CH_2)_2OMe$ and -$O(CH_2)_2NHSO_2NH_2$;

or R^1 is a non-aromatic cycloalkyl or heterocyclic group such as cycloppentyl, cyclohexyl, tetrahydropyranyl (e.g., 4-tetrahydropyranyl), 3-oxetanyl, 3- or 4- piperidinyl, 4- or 3- piperidin-2-onyl, 3- or 4-thiacyclopentane, 3-thiacyclohexane, 3- tetrahydrofuran, and the like, wherein a ring sulfur can be oxidized to sulfoxide or sulfone oxidation state, and each of these rings may be substituted with 1-3 groups independently selected from D, F, Cl, CN, amino, NHMe, NMe_2, Me, Et, i-Pr, cyclopropyl, $NHSO_2Me$, NHCOMe, Oxo, OH, OMe, -CH_2OH, and CF_3. The 1,4-disubstituted cyclohexyl can have either a cis or trans relative stereochemistry between the groups attached at positions 1 and 4, for example, a trans relative orientation between these groups;

R^2 is phenyl, pyridine or thienyl, optionally substituted with 1-2 groups independently selected from D, amino, halo, CF_3, CN, C1-C4 alkyl, C1-C4 alkoxy, C1-C4 haloalkyl, C1-C4 haloalkoxy, -$COOR^{30}$, -SO_2R^{31}, -$N(R^{32a}$ $R^{32b})$, -$N(R^{32a})C(O)R^{31}$, -$SO_2N(R^{32a}$ $R^{32b})$ and -$N(R^{32a})SO_2R^{31}$, wherein each R^{30}, R^{32a} and R^{32b} are independently selected from H and C1-C4 alkyl; R^{31} is C1-C4 alkyl;

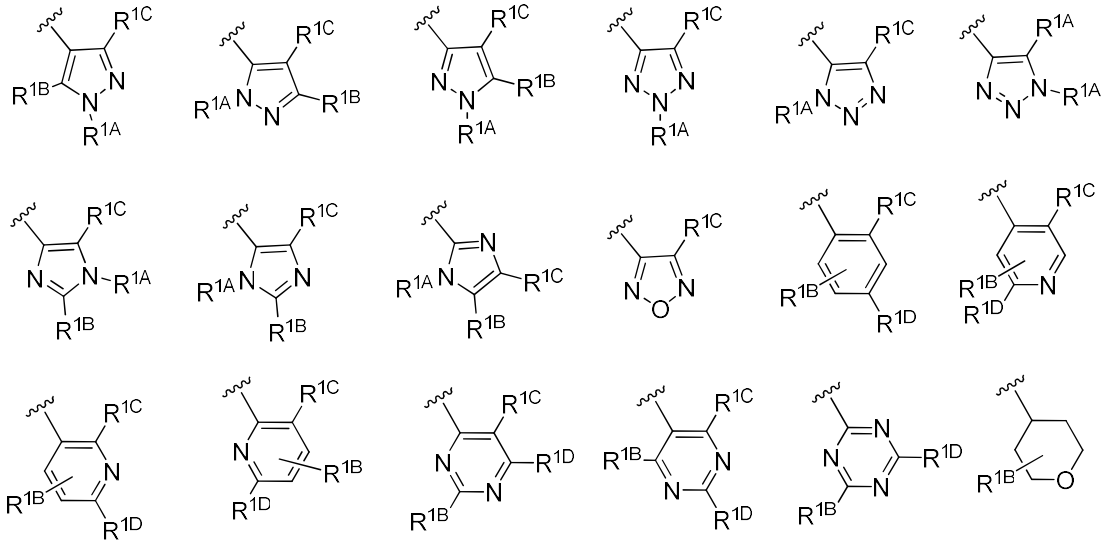
R^5 and R^6 are independently selected from H and an optionally substituted group selected from C1-C4 alkyl; wherein the optional substituents for R^5 and R^6 are 1-3 substituents independently selected from D, halo, -OH, C1-C4 alkoxy, C1-C4 haloalkoxy; wherein R^5 and R^6 can optionally cyclize to form a C3-C6 cycloalkyl ring or a 4-6 membered heterocyclic ring containing 1-2 heteroatoms selected from N, O, and S; and

R^{22b} is selected from H, halo, and C1-C3 alkyl.

Claim 16. The compound of any one of claims 12-15,

and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof,

wherein R^1 is selected from:



wherein each R^{1A} is independently selected from H, Me, Et, propyl, isopropyl, cyclopropyl, butyl, t- butyl, sec-butyl, isobutyl, CH_2F, CF_2H and CF_3; wherein R^{1B}, R^{1C} and R^{1D} are independently selected fom H, Me, Et, propyl, isopropyl, cyclopropyl, butyl, t- butyl, sec-butyl, isobutyl, CH_2F, CF_2H, CF_3, MeO, EtO, PrO, i-PrO, c-PrO, BuO, t-BuO, s-BuO, i-BuO, OCF_3, c-PrO, CN, Cl, and F.

Claim 17. The compound of claim 1, which is selected from the following compounds and stereoisomers, tautomers, stable isotopes, and pharmaceutically acceptable salts thereof:

6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-((2-(trifluoromethyl)pyridin-4-yl)methyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

5-(3-chlorobenzyl)-6,6-dimethyl-2-(2-(1-methyl-1H-pyrazol-5-ylamino)pyrimidin-4-yl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one.

6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-((6-(trifluoromethyl)pyridin-2-yl)methyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-((6-(trifluoromethyl)pyridin-3-yl)methyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-((4-(trifluoromethyl)thiazol-2-yl)methyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-((2-(trifluoromethyl)pyrimidin-4-yl)methyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-((3-(trifluoromethyl)isoxazol-5-yl)methyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-(2-(2-

(trifluoromethyl)pyridin-4-yl)ethyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

6,6-dimethyl-2-(2-(1-methyl-1H-pyrazol-5-ylamino)pyrimidin-4-yl)-5-(1-(2-(trifluoromethyl)pyridin-4-yl)ethyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

(R)-6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-(1-(2-(trifluoromethyl)pyridin-4-yl)ethyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

(S)-6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-(1-(2-(trifluoromethyl)pyridin-4-yl)ethyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-(1-(4-(trifluoromethyl)thiazol-2-yl)ethyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

(R)-6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-(1-(4-(trifluoromethyl)thiazol-2-yl)ethyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

(S)-6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-(1-(4-(trifluoromethyl)thiazol-2-yl)ethyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

(S)-5-(1-(3-chlorophenyl)-2-hydroxyethyl)-6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-(1-(6-(trifluoromethyl)pyridin-2-yl)ethyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5-(1-(2-(trifluoromethyl)pyrimidin-4-yl)ethyl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one,

(S)-N-(1-(3-chlorophenyl)-2-hydroxyethyl)-2-(6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-4-oxo-4H-thieno[2,3-c]pyrrol-5(6H)-yl)acetamide,

N-((S)-1-(3-chlorophenyl)-2-hydroxyethyl)-2-(6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-4-oxo-4H-thieno[2,3-c]pyrrol-5(6H)-yl)propanamide,

2-(6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-4-oxo-4H-thieno[2,3-c]pyrrol-5(6H)-yl)-N-((2-(trifluoromethyl)pyridin-4-yl)methyl)acetamide, and

(S)-5-(2-((1-(3-chlorophenyl)-2-hydroxyethyl)amino)ethyl)-6,6-dimethyl-2-(2-((1-methyl-1H-pyrazol-5-yl)amino)pyrimidin-4-yl)-5,6-dihydro-4H-thieno[2,3-c]pyrrol-4-one.

Claim 18. A pharmaceutical composition comprising a compound according to any one of claims 1-17 admixed with at least one pharmaceutically acceptable excipient.

Claim 19. The pharmaceutical composition of claim 18, further comprising a therapeutic co-agent.

Claim 20. The pharmaceutical composition of claim 19, wherein the therapeutic co-agent is selected from anticancer compounds, analgesics, and anti-inflammatory compounds.

Claim 21. An agent for use in treating a cancer, comprising a therapeutically effective amount of a compound according to any one of claims 1-17.

Claim 22. The agent for use of claim 21, wherein the cancer is selected from adenoma, bladder cancer, brain cancer, breast cancer, cervical cancer, colorectal cancer, colon cancer, epidermal carcinoma, follicular carcinoma, genitourinary cancers, glioblastoma, head and neck cancers, Hodgkin's disease, non-Hodgkin's lymphoma, hepatoma, head and neck cancers, kidney cancer, lung cancers such as small cell or non-small cell lung cancer, leukemias such as AML or CML, multiple myeloma, lymphoid disorders, skin cancers including melanoma, neuroblastoma, ovarian cancer, pancreatic cancer, prostate cancer, rectal cancer, sarcoma, testicular cancer, and thyroid cancer.

Claim 23. A compound according to any one of claims 1-17 for use as a medicament.

Claim 24. Use of a compound according to any one of claims 1 to 17 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof,

in the manufacture of a medicament for the treatment of cancer; or use of a compound according to any one of claims 1 to 17 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof,
in medicine.

Claim 25. An agent for use in treating an inflammatory disease in a patient comprisinga therapeutically effective amount of a compound according to any one of claims 1-17 and/or a stereoisomer, a tautomer, a stable isotope, or a pharmaceutically acceptable salt thereof,
and a pharmaceutically acceptable carrier, wherein the inflammatory disease is selected from rheumatoid arthritis, psoriasis, or eczema.