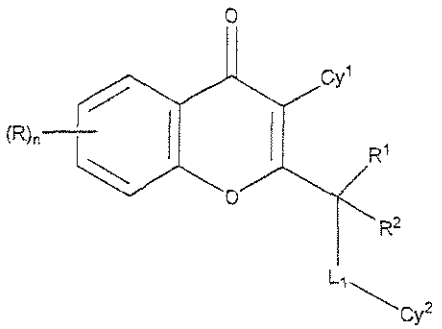
inhibitors. Accordingly, there still remains an unmet and dire need for small molecule kinase modulators in order to regulate and/or modulate transduction of kinases, particularly PI3K and related protein kinase for the treatment of diseases and disorders associated with kinases-mediated events.

SUMMARY ~~OF INVENTION~~

[25] The present disclosure~~invention~~ is directed to compounds, which are useful as PI3K protein kinase modulators and in particular as PI3K inhibitors.

In a first aspect, there is provided a compound of formula



(I)

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

each occurrence of R is independently selected from hydrogen, halogen, $-OR^f$ (wherein R^f is substituted or unsubstituted (C_{1-6})alkyl), CN, 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_{3-8} cycloalkyl, and substituted or unsubstituted heterocyclic group;

R^1 and R^2 may be the same or different and are independently selected from hydrogen, halogen, and substituted or unsubstituted C_{1-6} alkyl, or both R^1 and R^2 directly bound to a common atom, may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the carbon atom to which R^1 and R^2 are bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^a and S;

Cy^1 is a monocyclic group selected from substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocyclic group, substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl;

Cy^2 is selected from a substituted or unsubstituted heterocyclic group, substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl;

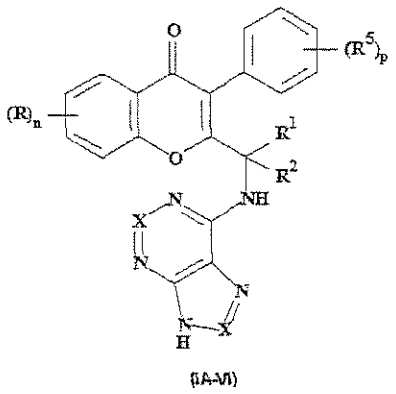
L_1 is selected from $-S(=O)_q-$ and $-NR^a-$;

each occurrence of R^a is selected from hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, $-NR^cR^d$ (wherein R^c and R^d are independently hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, and (C_{1-6})alkoxy) and $-OR^c$ (wherein R^c is substituted or unsubstituted (C_{1-6})alkyl);

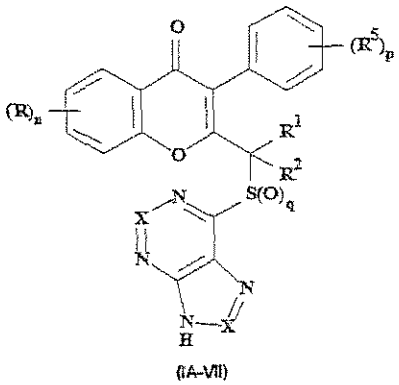
n is an integer from 1 to 4; and

q is 0, 1 or 2.

In a second aspect, there is provided a compound of formula (IA-VI) or (IA-VII):



(IA-VI)



(IA-VII)

or a pharmaceutically acceptable salt thereof, wherein

each occurrence of R is independently selected from hydrogen, halogen, $-OR^a$, CN, 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_{3-8} cycloalkyl, and substituted or unsubstituted heterocyclic group;

R^1 and R^2 may be the same or different and are independently selected from hydrogen, halogen, and substituted or unsubstituted C_{1-6} alkyl, or both R^1 and R^2 directly bound to a common atom, may be joined to form an oxo group (=O) or a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the carbon atom to which R^1 and R^2 are bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^a and S;

each occurrence of R^a is selected from hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, $-NR^cR^d$ (wherein R^c and R^d are independently hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, and (C_{1-6})alkoxy) and $-OR^c$ (wherein R^c is substituted or unsubstituted (C_{1-6})alkyl);

each occurrence of X is independently selected from CR^3 or N; and

each occurrence of R^3 is independently selected from hydrogen, hydroxy, halogen, carboxyl, cyano, nitro, 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 cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenylalkyl substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted heterocyclylalkyl ring, substituted or unsubstituted guanidine, $-COOR^x$, $-C(O)R^x$, $-C(S)R^X$, $-C(O)NR^xR^y$, $-C(O)ONR^xR^y$, $-NR^xCONR^yR^z$, $-N(R^x)SOR^y$, $-N(R^x)SO_2R^y$, $-(=N-N(R^x)R^y)$, $-NR^xC(O)OR$ $-NR^xR^y$, $-NR^xC(O)R^y-$, $-NR^xC(S)R^y$ $-NR^xC(S)NR^yR^z$, $-SONR^xR^y-$, $-SO_2NR^xR^y-$, $-OR^x$, $-OR^xC(O)NR^yR^z$, $-OR^xC(O)OR^y-$, $-OC(O)R^x$, $-OC(O)NR^xR^y$, $-R^xNR^yC(O)R^z$, $-R^xOR^y$, $-R^xC(O)OR^y$, $-R^xC(O)NR^yR^z$, $-R^xC(O)R^x$, $-R^xOC(O)R^y$, $-SR^X$, $-SOR^x$, $-SO_2R^x$, and $-ONO_2$, wherein R^x, R^y and R^z in each of the above groups can be 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 cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted or unsubstituted heterocyclylalkyl ring, or substituted or unsubstituted amino, or any two of R^x, R^y and R^z may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 membered ring, which may optionally include heteroatoms which may be the same or different and are selected from O, NR^w (wherein R^w is hydrogen or substituted or unsubstituted alkyl) or S.

each occurrence of R^5 is hydrogen, C_{1-6} alkyl or halogen;

n is 0, 1, 2, 3 or 4;

p is 0, 1, 2, 3, 4 or 5; and

q is 0, 1 or 2.

In a third aspect, there is provided a compound selected from

2-((9H-Purin-6-ylthio)methyl)-3-phenyl-4H-chromen-4-one;

2-[(9H-Purin-6-ylthio)methyl]-6-bromo-3-phenyl-4H-chromen-4-one;

2-(1-(9H-Purin-6-ylthio)ethyl)-6-bromo-3-phenyl-4H-chromen-4-one;

(S)-2-(1 -(9H-purin-6-ylamino)ethyl)-6-bromo-3-phenyl-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-6-bromo-3-phenyl-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-3-phenyl-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-3-(2-fluorophenyl)-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino)ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(R)-2-(1-(9H-purin-6-ylamino)ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino)ethyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino)ethyl)-3-phenyl-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino)ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

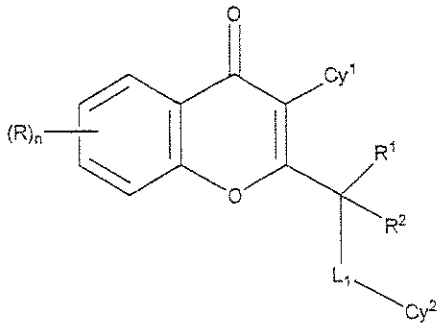
(R)-2-(1-(9H-purin-6-ylamino)ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

6-Fluoro-3-(3-fluorophenyl)-2-(1-(4-methoxyphenylamino)ethyl)-4H-chromen-4-one,

and pharmaceutically acceptable salts thereof.

In a fourth aspect, there is provided a pharmaceutical composition, comprising a compound as defined above and a pharmaceutically acceptable carrier.

In a fifth aspect, there is provided a compound of formula



(I)

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

each occurrence of R is independently selected from hydrogen, halogen, $-OR^a$, CN, 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_{3-8} cycloalkyl, and substituted or unsubstituted heterocyclic group;

R^1 and R^2 may be the same or different and are independently selected from hydrogen, halogen, and substituted or unsubstituted C_{1-6} alkyl, or both R^1 and R^2 directly bound to a common atom, may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the carbon atom to which R^1 and R^2 are bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^a and S;

Cy^1 is a monocyclic group selected from substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocyclic group, substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl;

Cy^2 is selected from substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl;

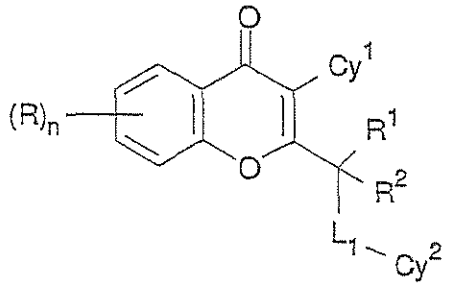
L_1 is selected from $-S(=O)_q-$ and $-NR^a-$;

each occurrence of R^a is selected from hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, $-NR^cR^d$ (wherein R^c and R^d are independently hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, and (C_{1-6})alkoxy) and $-OR^c$ (wherein R^c is substituted or unsubstituted (C_{1-6})alkyl);

n is an integer from 1 to 4; and

q is 0, 1 or 2. In one embodiment, the

compound of the present disclosure~~invention~~ has the formula:



(I)

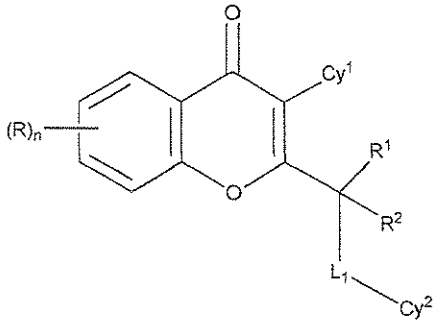
or a tautomer thereof, N-oxide thereof, pharmaceutically acceptable ester thereof, prodrug thereof, or pharmaceutically acceptable salt thereof, wherein

each occurrence of R is independently selected from hydrogen, halogen, $-OR^a$, CN, 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_{3-8} cycloalkyl, and substituted or unsubstituted heterocyclic group;

R^1 and R^2 may be the same or different and are independently selected from hydrogen, halogen, and substituted or unsubstituted C_{1-6} alkyl, or both R^1 and R^2 directly bound to a common atom, may be joined to form an oxo group (=O) or a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the carbon atom to which R^1 and R^2 are bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^a and S;

We claim:

1. A compound of formula



(I)

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

each occurrence of R is independently selected from hydrogen, halogen, $-OR^a$, CN, 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_{3-8} cycloalkyl, and substituted or unsubstituted heterocyclic group;

R^1 and R^2 may be the same or different and are independently selected from hydrogen, halogen, and substituted or unsubstituted C_{1-6} alkyl, or both R^1 and R^2 directly bound to a common atom, may be joined to form an oxo group (=O) or a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the carbon atom to which R^1 and R^2 are bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^a and S;

Cy^1 is a monocyclic group selected from substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocyclic group, substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl;

Cy^2 is selected from a substituted or unsubstituted heterocyclic group, and substituted or unsubstituted heteroaryl;

L_1 is absent or -NH- ;

each occurrence of R^a and R^b may be the same or different and are independently selected from hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, $-NR^cR^d$ (wherein R^c and R^d are independently hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, and (C_{1-6})alkoxy) and $-OR^c$ (wherein R^c is substituted or unsubstituted (C_{1-6})alkyl) or when R^a and R^b are directly bound to a common atom, they may be joined to form an oxo group (=O) or form a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the common atom to which R^a and R^b are directly bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^d (wherein R^d is hydrogen or substituted or unsubstituted (C_{1-6})alkyl) or S;

Y is selected from O, S, and NR^a;

n is an integer from 1 to 4; and

q is 0, 1 or 2,

wherein the compound is not:

4',5,7-trihydroxy-2-piperidinomethylisoflavone,

4',5,7-trihydroxy-2-[(2-thiazolin-2-ylamino)methyl]isoflavone,

4',5,7-trihydroxy-2-[2-thiazolin-2-ylthio]methyl]isoflavone,

ethyl 3.3-(ethylenedioxy)-4-(7-methoxy-5-methyl-3-(3-methylisoxazol-5-yl)-4-oxo-4H-1-benzopyran-2·yl]butanoate,

2-benzoyl-3-[1,3]dioxan-2-yl-chromen-4-one,

3-[1,3]dioxan-2-yl-2-(2-[1,3]dioxan-2-yl-3-oxo-2,3-dihydro-benzofuran-2-ylmethyl)-chromen-4-one,

{2-[7-Methoxy-5-methyl-3-(3-methyl-isoxazol-5-yl)-4-oxo-4H-chromen-2-ylmethyl]-[1,3]dioxolan-2-yl}-acetic acid ethyl ester,

7-Methoxy-5-methyl-2-(2-methyl-[1,3]dioxolan-2-ylmethyl)-3-(3-methyl-isoxazol-5-yl)-chromen-4-one,

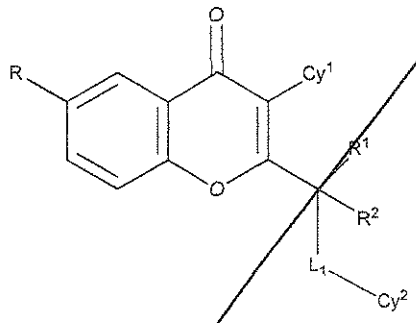
2-(((4,5-dihydrothiazol-2-yl)thio)methyl)-5,7-dihydroxy-3-(4-hydroxyphenyl)-4H-chromen-4-one,

2-(((4,5-dihydrothiazol-2-yl)amino)methyl)-5,7-dihydroxy-3-(4-hydroxyphenyl)-4H-chromen-4-one,

6-methyl-3-phenyl-4-oxo-N-(5-tetrazolyl)-4H-1-benzopyran-2-carboxamide, and

7-methoxy-3-phenyl-4-oxo-N-(5-tetrazolyl)-4H-1-benzopyran-2-carboxamide.

2. A compound of claim 1, wherein the compound has the formula:

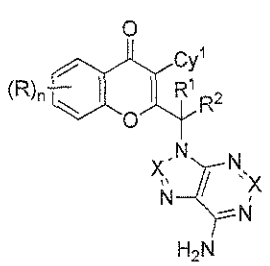


(I-A)

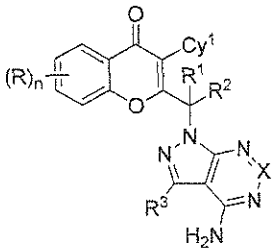
or a tautomer thereof, N-oxide thereof, pharmaceutically acceptable ester thereof, or pharmaceutically acceptable salt thereof, wherein

R, Cy^1, Cy^2, R^1, R^2, and L_1 are as defined in claim 1.

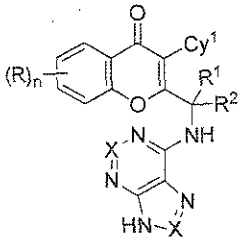
3. A compound of claim 1, wherein the compound has the formula **(IA-I)**, **(IA-II)**, or **(IA-III)**:



(IA-I)



(IA-II)



(IA-III)

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

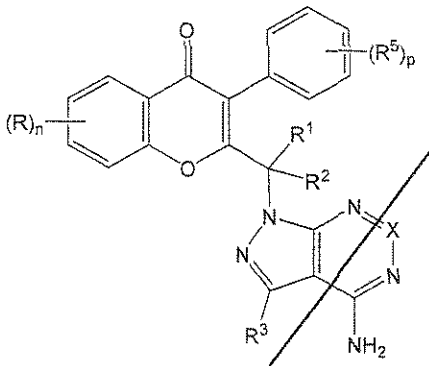
R, Cy^1, R^1, R^2, q and L_1 are as defined in claim 1;

each occurrence of X is independently selected from CR^3 or N; and

each occurrence of R^3 is independently selected from hydrogen, hydroxy, halogen, carboxyl, cyano, nitro, 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 cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenylalkyl substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted heterocyclylalkyl ring, substituted or unsubstituted guanidine, $-COOR^x$, $-C(O)R^x$, $-C(S)R^x$, $-C(O)NR^xR^y$, $-C(O)ONR^xR^y$, $-NR^yR^z$, $-NR^xCONR^yR^z$, $-N(R^x)SOR^y$, $-N(R^x)SO_2R^y$, $-(=N-N(R^x)R^y)$, $-NR^xC(O)OR^y$, $-NR^xR^y$, $-NR^xC(O)R^y-$, $-NR^xC(S)R^y$ $-NR^xC(S)NR^yR^z$, $-SONR^xR^y-$, $-SO_2NR^xR^y-$, $-OR^x$, $-OR^xC(O)NR^yR^z$, $-OR^xC(O)OR^y-$, $-OC(O)R^x$, $-OC(O)NR^xR^y$, $-R^xNR^yC(O)R^z$, $-R^xOR^y$, $-R^xC(O)OR^y$, $-R^xC(O)NR^yR^z$, $-R^xC(O)R^x$, $-R^xOC(O)R^y$, $-SR^x$, $-SOR^x$, $-SO_2R^x$, and $-ONO_2$, wherein R^x, R^y and R^z in each of the above groups can be 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 cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted

or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted or unsubstituted heterocyclylalkyl ring, or substituted or unsubstituted amino, or any two of R^x, R^y and R^z may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 membered ring, which may optionally include heteroatoms which may be the same or different and are selected from O, NR^x (e.g., R^x can be hydrogen or substituted or unsubstituted alkyl) or S.

4. A compound of claim 1, wherein the compound has the formula (IA-V)



(IA-V)

or a pharmaceutically acceptable salt thereof,

wherein

each occurrence of R is independently selected from hydrogen, halogen, $-OR^a$, CN, 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_{3-8} cycloalkyl, and substituted or unsubstituted heterocyclic group;

R^1 and R^2 may be the same or different and are independently selected from hydrogen, halogen, and substituted or unsubstituted C_{1-6} alkyl, or both R^1 and R^2 directly bound to a common atom, may be joined to form an oxo group (=O) or a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the carbon atom to which R^1 and R^2 are bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^a and S;

each occurrence of X is independently selected from CR^3 or N; and

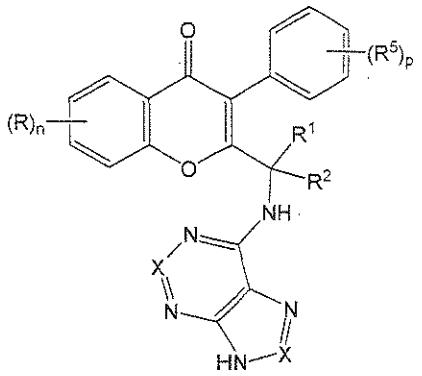
each occurrence of R^3 is independently selected from hydrogen, hydroxy, halogen, carboxyl, cyano, nitro, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenylalkyl substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted heterocyclylalkyl ring, substituted or unsubstituted guanidine, $-COOR^x$, $-C(O)R^x$, $-C(S)R^x$, $-C(O)NR^xR^y$, $-C(O)ONR^xR^y$, $-NR^yR^z$, $-NR^xCONR^yR^z$, $-N(R^x)SOR^y$, $-N(R^x)SO_2R^y$, $-(=N-N(R^x)R^y)$, $-NR^xC(O)OR^y$, $-NR^xR^y$, $-NR^xC(O)R^y-$, $-NR^xC(S)R^y$ $-NR^xC(S)NR^yR^z$, $-SONR^xR^y-$, $-SO_2NR^xR^y-$, $-OR^x$, $-OR^xC(O)NR^yR^z$, $-OR^xC(O)OR^y-$, $-OC(O)R^x$, $-OC(O)NR^xR^y$, $-R^xNR^yC(O)R^z$, $-R^xOR^y$, $-R^xC(O)OR^y$, $-R^xC(O)NR^yR^z$, $-R^xC(O)R^x$, $-R^xOC(O)R^y$, $-SR^x$, $-SOR^x$, $-SO_2R^x$, and $-ONO_2$, wherein R^x, R^y and R^z in each of the above groups can be 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 cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted or unsubstituted heterocyclylalkyl ring, or substituted or unsubstituted amino, or any two of R^x, R^y and R^z may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 membered ring, which may optionally include heteroatoms which may be the same or different and are selected from O, NR^x (e.g., R^x can be hydrogen or substituted or unsubstituted alkyl) or S.

each occurrence of R^5 is hydrogen, C_{1-6} alkyl or halogen;

n is 0, 1, 2, 3 or 4; and

p is 0, 1, 2, 3, 4 or 5.

5. A compound of claim 1, wherein the compound has the formula (IA-VI):



(IA-VI)

or a pharmaceutically acceptable salt thereof, wherein

each occurrence of R is independently selected from hydrogen, halogen, -OR^a, CN, 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_{3-8} cycloalkyl, and substituted or unsubstituted heterocyclic group;

R^1 and R^2 may be the same or different and are independently selected from hydrogen, halogen, and substituted or unsubstituted C_{1-6} alkyl, or both R^1 and R^2 directly bound to a common atom, may be joined to form an oxo group (=O) or a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the carbon atom to which R^1 and R^2 are bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^a and S;

each occurrence of X is independently selected from CR^3 or N; and

each occurrence of R^3 is independently selected from hydrogen, hydroxy, halogen, carboxyl, cyano, nitro, 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 cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenylalkyl substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted heterocyclylalkyl ring, substituted or unsubstituted guanidine, $-COOR^x$, $-C(O)R^x$, $-C(S)R^x$, $-C(O)NR^xR^y$, $-C(O)ONR^xR^y$, $-NR^yR^z$, $-NR^xCONR^yR^z$, $-N(R^x)SOR^y$, $-N(R^x)SO_2R^y$, $-(=N-N(R^x)R^y)$, $-NR^xC(O)OR^y$, $-NR^xR^y$, $-NR^xC(O)R^y-$, $-NR^xC(S)R^y$ $-NR^xC(S)NR^yR^z$, $-SONR^xR^y-$, $-SO_2NR^xR^y-$, $-OR^x$, $-OR^xC(O)NR^yR^z$, -

$OR^xC(O)OR^y$-, $-OC(O)R^x$, $-OC(O)NR^xR^y$, - $R^xNR^yC(O)R^z$, $-R^xOR^y$, $-R^xC(O)OR^y$, - $R^xC(O)NR^yR^z$, $-R^xC(O)R^x$, $-R^xOC(O)R^y$, $-SR^x$, $-SOR^x$, $-SO_2R^x$, and $-ONO_2$, wherein R^x, R^y and R^z in each of the above groups can be 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 cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted or unsubstituted heterocyclylalkyl ring, or substituted or unsubstituted amino, or any two of R^x, R^y and R^z may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 membered ring, which may optionally include heteroatoms which may be the same or different and are selected from O, NR^x (e.g., R^x can be hydrogen or substituted or unsubstituted alkyl) or S.

each occurrence of R^5 is hydrogen, C_{1-6} alkyl or halogen;

n is 0, 1, 2, 3 or 4; and

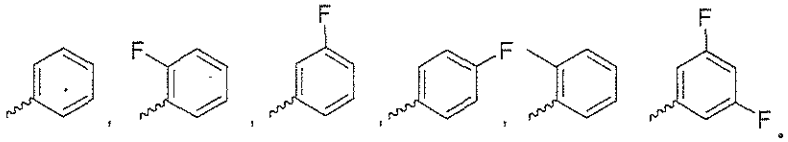
p is 0, 1, 2, 3, 4 or 5.

6. A compound of any one of claims 1-5, wherein R is hydrogen, halogen, substituted or unsubstituted C_{1-6} alkyl, or OR^a.

7. A compound of claim 6, wherein R^a is alkyl.

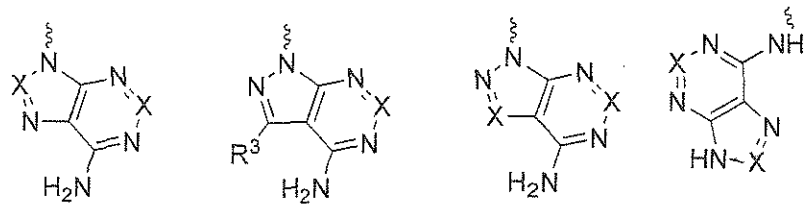
8. A compound of any one of claims 1-3, 6, and 7, wherein Cy^1 is substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl.

9. A compound of any one of claims 1-3, 6, and 7, wherein Cy^1 is selected from:



10. A compound of any one of claims 1-9, wherein R^1 and R^2 represent hydrogen or substituted or unsubstituted C_{1-6} alkyl.

11. A compound of claim 1, wherein Cy^2 is



a b c d

wherein

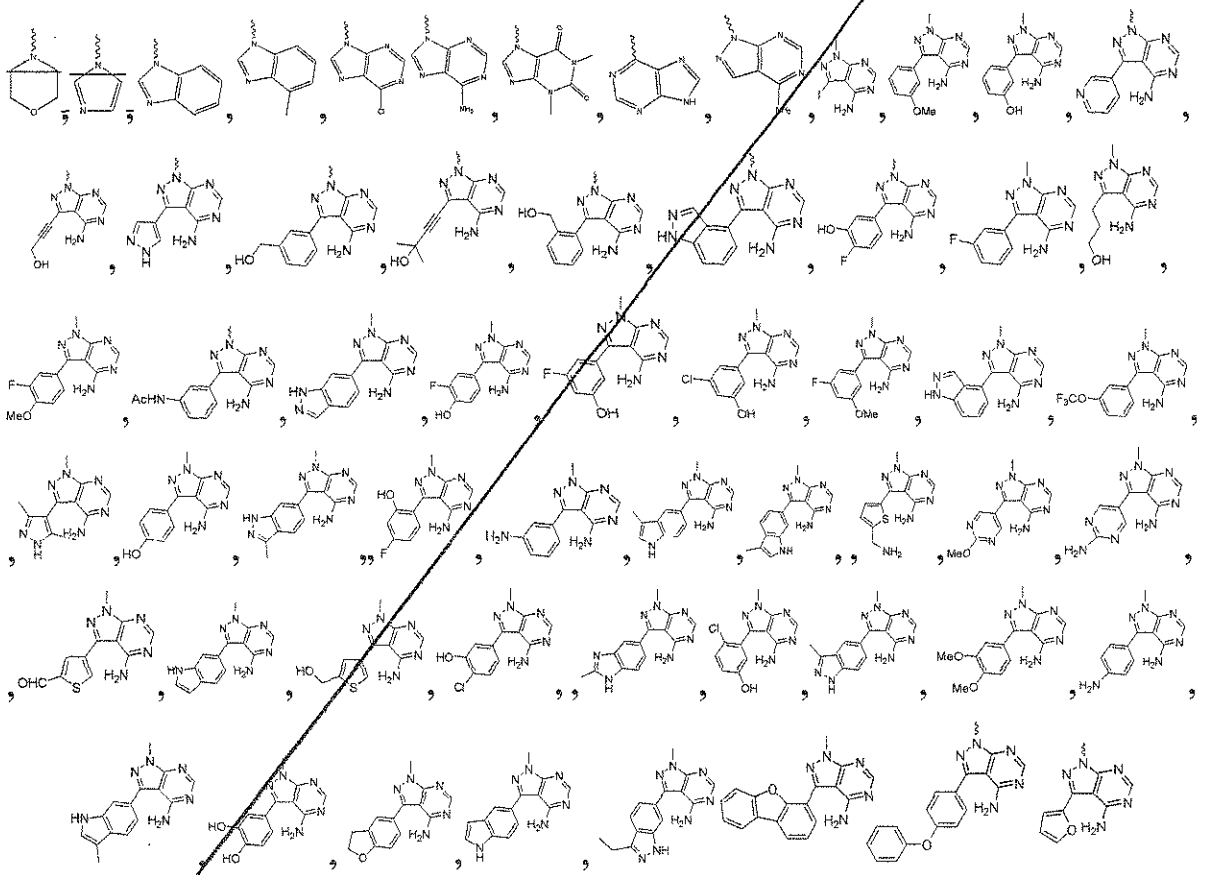
X is CR^3;

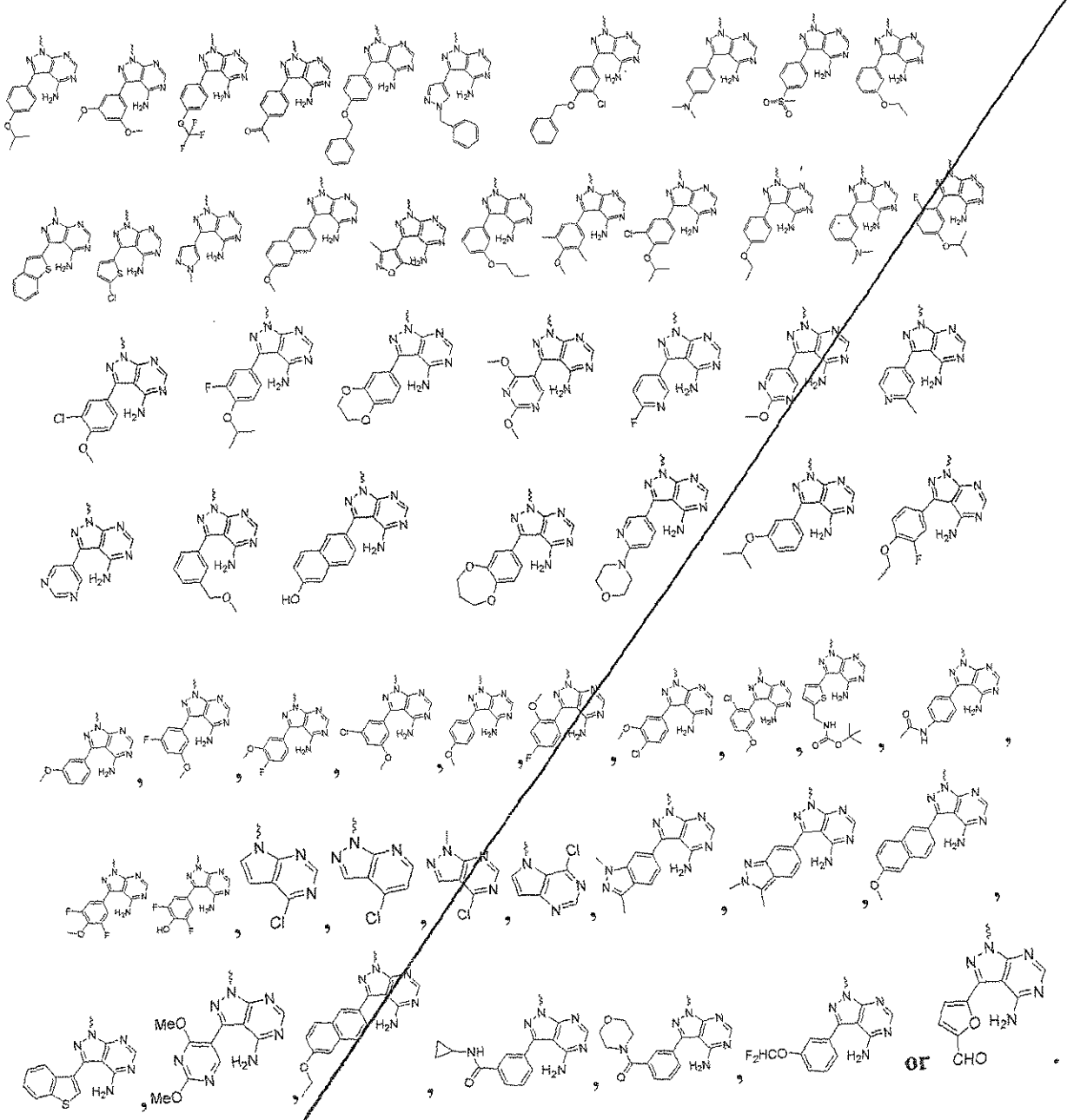
R^3 is independently selected from hydrogen, hydroxy, halogen, carboxyl, cyano, nitro, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl, substituted heterocyclylalkyl ring, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted or unsubstituted guanidine, $-COOR^x$, $-C(O)R^x$, $-C(S)R^x$, $-C(O)NR^xR^y$, $-C(O)ONR^xR^y$, $-NR^yR^z$, $-NR^xCONR^yR^z$, $-N(R^x)SOR^y$, $-N(R^x)SO_2R^y$, $-(=N-N(R^x)R^y)$, $-NR^xC(O)OR^y$, $-NR^xR^y$, $-NR^xC(O)R^y-$, $-NR^xC(S)R^y$ $-NR^xC(S)NR^yR^z$, $-SONR^xR^y-$, $-SO_2NR^xR^y-$, $-OR^x$, $-OR^xC(O)NR^yR^z$, $-OR^xC(O)OR^y-$, $-OC(O)R^x$, $-OC(O)NR^xR^y$, $-R^xNR^yC(O)R^z$, $-R^xOR^y$, $-R^xC(O)OR^y$, $-R^xC(O)NR^yR^z$, $-R^xC(O)R^x$, $-R^xOC(O)R^y$, $-SR^x$, $-SOR^x$, $-SO_2R^x$, $-ONO_2$, wherein R^x, R^y and R^z in each of the above groups can be 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 cycloalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted amino, substituted or unsubstituted aryl, substituted or unsubstituted

heteroaryl, substituted heterocyclylalkyl ring, substituted or unsubstituted heteroarylalkyl, or substituted or unsubstituted heterocyclic ring, or any two of R^x, R^y and R^z may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 membered ring, which may optionally include heteroatoms which may be the same or different and are selected from O, NR^X or S; and

q is 0, 1 or 2.

12. A compound of claim 1, wherein Cy^2 is





13. A compound of claim 3 or 4, wherein R^3 is iodo, cyano, substituted or unsubstituted alkyl, substituted or unsubstituted alkynyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl.

14. A compound of claim 3 or 5, wherein X is CR^3 and each occurrence of R^3 is independently hydrogen, halogen, hydroxyl or NH_2.

15. A compound of claim 14, wherein R^3 is hydrogen.

16. A compound of claim 1, wherein the compound is selected from:

2-[(6-Amino-9H-purin-9-yl) methyl]-6-bromo-3-phenyl-4H-chromen-4-one;

6-Bromo-2-(morpholinomethyl)-3-phenyl-4H-chromen-4-one;

6-Bromo-2-(morpholinomethyl)-3-phenyl-4H-chromen-4-one hydrochloride;

2-[(6-Amino-9H-purin-9-yl) methyl]-3-phenyl-4H-chromen-4-one;

2-(Morpholinomethyl)-3-phenyl-4H-chromen-4-one;

2-(Morpholinomethyl)-3-phenyl-4H-chromen-4-one hydrochloride;

2-[(1H-Benzo[d]imidazol-1-yl) methyl]-6-bromo-3-phenyl-4H-chromen-4-one;

6-Bromo-2-[(4-methyl-1H-benzo[d]imidazol-1-yl) methyl]-3-phenyl-4H-chromen-4-one;

2-[(1H-benzo[d]imidazol-1-yl) methyl]-3-phenyl-4H-chromen-4-one;

2-[(4-methyl-1H-benzo[d]imidazol-1-yl)methyl]-3-phenyl-4H-chromen-4-one;

2-[(6-Chloro-9H-purin-9-yl)methyl]-3-phenyl-4H-chromen-4-one;

6-Bromo-2-[(6-chloro-9H-purin-9-yl)methyl]-3-phenyl-4H-chromen-4-one;

2-[(1H-Imidazol-1-yl)methyl]-3-phenyl-4H-chromen-4-one ;

2-((4-Amino-1H-pyrazolo[3,4-d]pyrimidin-1-yl)methyl)-6-bromo-3-phenyl-4H-chromen-4-one ;

2-[(6-Amino-9H-purin-9-yl)methyl]-6-bromo-3-(4-fluorophenyl)-4H-chromen-4-one ;

2-[(6-Amino-9H-purin-9-yl)methyl]-3-(4-fluorophenyl)-4H-chromen-4-one ;

6-Bromo-3-(4-fluorophenyl)-2-(morpholinomethyl)-4H-chromen-4-one ;

6-Bromo-3-(4-fluorophenyl)-2-(morpholinomethyl)-4H-chromen-4-one hydro chloride;

3-(4-fluorophenyl)-2-(morpholinomethyl)-4H-chromen-4-one ;

3-(4-fluorophenyl)-2-(morpholinomethyl)-4H-chromen-4-one hydrochloride ;

2-[(6-Amino-9H-purin-9-yl)methyl]-6-bromo-3-o-tolyl-4H-chromen-4-one;

7-[(6-Bromo-4-oxo-3-phenyl-4H-chromen-2-yl)methyl]-1,3-dimethyl-1H-purine-2,6(3H,7H)-dione;

2-(1-(6-Amino-9H-purin-9-yl)ethyl)-6-bromo-3-phenyl-4H-chromen-4-one;

2-(1-(6-Amino-9H-purin-9-yl)ethyl)-3-phenyl-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino)ethyl)-6-bromo-3-phenyl-4H-chromen-4-one ;

2-((9H-purin-6-ylamino)methyl)-6-bromo-3-phenyl-4H-chromen-4-one ;

2-(1-(4-amino-1H-pyrazolo[3,4-d]pyrimidin-1-yl)ethyl)-6-bromo-3-phenyl-4H-chromen-4-one ;

2-((6-Amino-9H-purin-9-yl)methyl)-6-methoxy-3-phenyl-4H-chromen-4-one;

2-(1-(6-Amino-9H-purin-9-yl)ethyl)-6-bromo-3-(2-fluorophenyl)-4H-chromen-4-one;

2-((6-Amino-9H-purin-9-yl)methyl)-6-bromo-3-(2-fluorophenyl)-4H-chromen-4-one ;

2-(1-(4-Amino-1H-pyrazolo[3,4-d]pyrimidin-1-yl)ethyl)-3-phenyl-4H-chromen-4-one ;

2-(1-(6-Amino-9H-purin-9-yl) propyl)-3-phenyl-4H-chromen-4-one;

2-(1-(6-Amino-9H-purin-9-yl)ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((6-Amino-9H-purin-9-yl)methyl)-3-(2-fluorophenyl)-4H-chromen-4-one ;

2-(1-(6-Amino-9H-purin-9-yl)ethyl)-3-(2-fluorophenyl)-4H-chromen-4-one ;

2-(1-(6-Amino-9H-purin-9-yl)propyl)-3-(2-fluorophenyl)-4H-chromen-4-one;

2-(1-(6-amino-9H-purin-9-yl)propyl)-3-(3-fluorophenyl)-4H-chromen-4-one ;

2-(1-(6-Amino-9H-purin-9-yl)propyl)-3-(4-fluorophenyl)-4H-chromen-4-one ;

2-(1-(6-amino-9H-purin-9-yl)propyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

2-(1-(6-Amino-9H-purin-9-yl)ethyl)-3-(4-fluorophenyl)-4H-chromen-4-one;

2-(1-(6-Amino-9H-purin-9-yl)ethyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

2-(1-(4-Amino-3-(3-methoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)ethyl)-3-phenyl-4H-chromen-4-one;

2-(1-(4-Amino-3-(3-hydroxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)ethyl)-3-phenyl-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-3-phenyl-4H-chromen-4-one;

2-(1-(6-Amino-9H-purin-9-yl)ethyl)-3-o-tolyl-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-3-(2-fluorophenyl)-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino)ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(6-amino-9H-purin-9-yl)ethyl)-6-fluoro-3-(2-fluorophenyl)-4H-chromen-4-one;

2-(1-(6-Amino-9H-purin-9-yl)ethyl)-3-(3,5-difluorophenyl)-4H-chromen-4-one;

2-(1-(6-amino-9H-purin-9-yl)ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-methoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-Amino-3-(3-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-((4-Amino-3-(3-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-((4-amino-3-(3-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(3-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(R)-2-(1-(9H-purin-6-ylamino) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino) ethyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

2-((4-Amino-3-iodo-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-iodo-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-iodo-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-iodo-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-iodo-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-iodo-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-iodo-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) propyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(pyridin-3-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-((4-amino-3-(3-hydroxyprop-1-ynyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-((4-amino-3-(1H-pyrazol-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-((4-amino-3-(3-(hydroxymethyl) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-((4-amino-3-(1H-indazol-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-((4-amino-3-(3-fluorophenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one

2-((4-amino-3-(3-hydroxypropyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

N-(3-(4-amino-1-((4-oxo-3-phenyl-4H-chromen-2-yl) methyl)-1H-pyrazolo [3, 4-d] pyrimidin-3-yl) phenyl) acetamide;

2-((4-amino-3-(3-fluoro-5-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-((4-amino-3-(3-fluoro-5-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-((4-amino-3-(3-fluoro-5-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(3-fluoro-5-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(1H-pyrazol-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-(1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-(3-hydroxy-3-methylbut-1-ynyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-(1H-pyrazol-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino) ethyl)-3-phenyl-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino) ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-(3-fluoro-5-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-fluoro-5-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(1H-indazol-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3, 5-dimethyl-1H-pyrazol-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-methyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2-(hydroxymethyl) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-fluoro-3-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-fluoro-3-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-hydroxyprop-1-ynyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-fluoro-4-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-fluoro-4-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-chloro-5-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-chloro-5-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-(trifluoromethoxy) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((6-amino-9H-purin-9-yl) methyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-fluoro-2-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-fluoro-2-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(3-aminophenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-((4-amino-3-(3-methyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-(2-aminopyrimidin-5-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(1H-indol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-chloro-3-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-chloro-3-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2-chloro-5-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2-chloro-5-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3, 4-dimethoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3, 4-dihydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(3-methyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(1H-indol-5-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-Amino-3-(3-methyl-1H-indol-5-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

tert-butyl-(5-(4-amino-1-(1-(3-(3-fluorophenyl)-4-oxo-4H-chromen-2-yl) ethyl)-1H-pyrazolo [3, 4-d] pyrimidin-3-yl) thiophen-2-yl) methylcarbamate

2-(1-(4-amino-3-(5-(aminomethyl) thiophen-2-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(3-methyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-(3-methyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-(3-methyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-(3-methyl-1H-indazol-5-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

N-(4-(4-amino-1-(1-(3-(3-fluorophenyl)-4-oxo-4H-chromen-2-yl) ethyl)-1H-pyrazolo [3, 4-d] pyrimidin-3-yl) phenyl) acetamide;

2-(1-(4-amino-3-(4-aminophenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-methyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2, 3-dihydrobenzofuran-5-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-ethyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-methyl-1H-indol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2-methoxypyrimidin-5-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

4-(4-amino-1-(1-(3-(3-fluorophenyl)-4-oxo-4H-chromen-2-yl) ethyl)-1H-pyrazolo [3, 4-d] pyrimidin-3-yl) thiophene-2-carbaldehyde;

2-(1-(4-amino-3-(5-(hydroxymethyl) thiophen-3-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2-methyl-1H-benzo[d]imidazol-5-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-methyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) propyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-methyl-1H-indol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((6-amino-9H-purin-9-yl) methyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

2-((6-amino-9H-purin-9-yl) methyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(3-fluoro-5-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(3-fluoro-5-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((9H-purin-6-ylamino) methyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((9H-purin-6-ylamino) methyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

(R)-2-(1-(9H-purin-6-ylamino) ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(1H-pyrazol-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

2-(1-(4-amino-3-(3, 5-difluoro-4-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3, 5-difluoro-4-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(3, 5-difluoro-4-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((4-amino-3-(3, 5-difluoro-4-hydroxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) methyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

(+)-2-(1-(4-amino-3-(3-methyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(-)-2-(1-(4-amino-3-(3-methyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3, 5-dimethoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-methoxy-3, 5-dimethylphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2-fluoro-5-isopropoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2, 3-dihydrobenzo[b] [1, 4] dioxin-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(1-benzyl-1H-pyrazol-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2-methylpyridin-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3, 4-dihydro-2H-benzo[b] [1, 4] dioxepin-7-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(6-morpholinopyridin-3-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(dibenzo [b, d] furan-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-(benzyloxy)-3-chlorophenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-chloro-4-isopropoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-(dimethylamino) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-ethoxy-3-fluorophenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-isopropoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-(trifluoromethoxy) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(3-(4-acetylphenyl)-4-amino-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-(benzyloxy) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-(dimethylamino) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-(methylsulfonyl) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-ethoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(benzo[b]thiophen-2-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(5-chlorothiophen-2-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3, 5-dimethylisoxazol-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-propoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(furan-2-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(4-ethoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-chloro-4-methoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-fluoro-4-isopropoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(6-fluoropyridin-3-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(pyrimidin-5-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-(methoxymethyl) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(6-hydroxynaphthalen-2-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-isopropoxyphenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(1-methyl-1H-pyrazol-4-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

6-Fluoro-3-(3-fluorophenyl)-2-(1-(4-methoxyphenylamino) ethyl)-4H-chromen-4-one;

2-(1-(4-Chloro-7H-pyrrolo [2, 3-d] pyrimidin-7-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-Chloro-1H-pyrazolo [3, 4-b] pyridin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-Chloro-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-Chloro-5H-pyrrolo [3, 2-d] pyrimidin-5-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(1, 3-dimethyl-1H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2, 3-dimethyl-2H-indazol-6-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(6-methoxynaphthalen-2-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(benzo[b]thiophen-3-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(2, 4-dimethoxypyrimidin-5-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(6-ethoxynaphthalen-2-yl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

3-(4-amino-1-(1-(3-(3-fluorophenyl)-4-oxo-4H-chromen-2-yl) ethyl)-1H-pyrazolo [3, 4-d] pyrimidin-3-yl)-N-cyclopropylbenzamide;

2-(1-(4-amino-3-(3-(morpholine-4-carbonyl) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

2-(1-(4-amino-3-(3-(difluoromethoxy) phenyl)-1H-pyrazolo [3, 4-d] pyrimidin-1-yl) ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

5-(4-amino-1-(1-(3-(3-fluorophenyl)-4-oxo-4H-chromen-2-yl) ethyl)-1H-pyrazolo [3, 4-d] pyrimidin-3-yl) furan-2-carbaldehyde

and pharmaceutically acceptable salts thereof.

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

18. The pharmaceutical composition of claim 17, 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.

19. Use of a compound of any one of claims 1-16 in the manufacture of a medicament for the treatment of a disease, disorder, or condition 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, asthma, 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; scleroderma titis, psoriasis, chronic

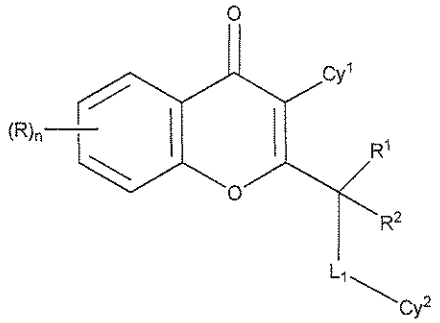
demyelinating diseases of the nervous system, AIDS-related neurodegeneration, Alzheimer's disease, infectious meningitis, encephalomyelitis, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis viral or autoimmune encephalitis; autoimmune disorders, immune-complex vasculitis, systemic lupus and erythematodes; systemic lupus erythematosus (SLE); cardiomyopathy, ischemic heart disease hypercholesterolemia, atherosclerosis, preeclampsia; chronic liver failure, brain and spinal cord trauma, cancer, 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, thyroidcancer, prostatecancer, skincancer, 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, Kaposi's sarcoma, chronic lymphocytic leukemia, multiple myelomas which includes smoldering multiple myeloma, nonsecretory myeloma, osteosclerotic mycloma, plasma cell leukemia, solitary plasmacytoma, extramedullary plasmacytoma, Chronic Lymphocytic Leukemia (CLL); Lymphoma Non-Hodgkin (NHL); Acute Myeloid Leukemia (AML); Multiple Myeloma (MM), Small Lymphocytic Lymphoma (SLL), or Indolent Non-Hodgkin's Lymphoma (I-NHL).

~~20. The use of claim 19, wherein the medicament is administered to a subject in~~ need thereof simultaneously or sequentially with 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. An in vitro method for inhibiting a catalytic activity of a PI3 kinase present in a~~ cell, comprising contacting the cell with an effective amount of a compound of any one of claims 1 to 16.

We claim:

1. A compound of formula



(I)

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

each occurrence of R is independently selected from hydrogen, halogen, $-OR^f$ (wherein R^f is substituted or unsubstituted (C_{1-6})alkyl), CN, 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_{3-8} cycloalkyl, and substituted or unsubstituted heterocyclic group;

R^1 and R^2 may be the same or different and are independently selected from hydrogen, halogen, and substituted or unsubstituted C_{1-6} alkyl, or both R^1 and R^2 directly bound to a common atom, may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the carbon atom to which R^1 and R^2 are bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^a and S;

Cy^1 is a monocyclic group selected from substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocyclic group, substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl;

Cy^2 is selected from a substituted or unsubstituted heterocyclic group, substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl;

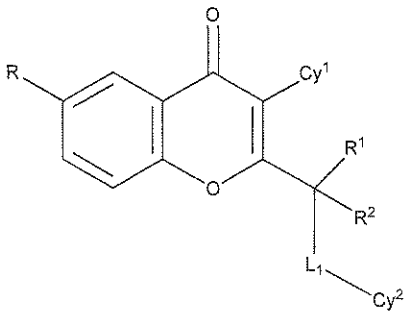
L_1 is selected from $-S(=O)_q-$ and $-NR^a-$;

each occurrence of R^a is selected from hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, $-NR^cR^d$ (wherein R^c and R^d are independently hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, and (C_{1-6})alkoxy) and $-OR^c$ (wherein R^c is substituted or unsubstituted (C_{1-6})alkyl);

n is an integer from 1 to 4; and

q is 0, 1 or 2.

2. A compound of claim 1, wherein the compound has the formula:



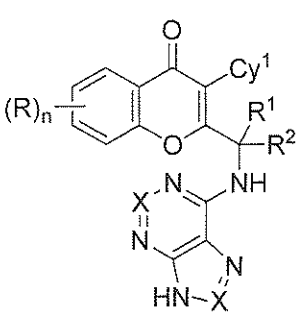
(I-A)

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

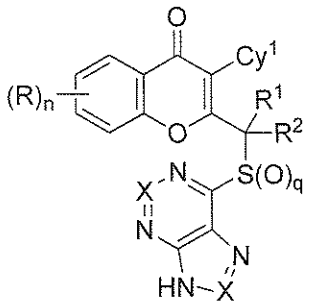
R, Cy^1, R^1, R^2, and L_1 are as defined in claim 1; and

Cy^2 is selected from substituted or unsubstituted heterocyclic group and substituted or unsubstituted heteroaryl.

3. A compound of claim 1, wherein the compound has the formula **(IA-III)**, or **(IA-IV)**:



(IA-III)



(IA-IV)

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

R, Cy^1, R^1, R^2, and q are as defined in claim 1;

each occurrence of X is independently selected from CR^3 or N; and

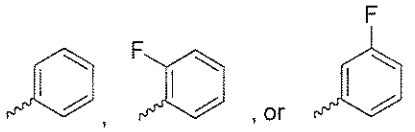
each occurrence of R^3 is independently selected from hydrogen, hydroxy, halogen, carboxyl, cyano, nitro, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenylalkyl substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted heterocyclylalkyl ring, substituted or unsubstituted guanidine, $-COOR^x$, $-C(O)R^x$, $-C(S)R^x$, $-C(O)NR^xR^y$, $-C(O)ONR^xR^y$, $-NR^xCONR^yR^z$, $-N(R^x)SOR^y$, $-N(R^x)SO_2R^y$, $-(=N-N(R^x)R^y)$, $-NR^xC(O)OR^y$, $-NR^xR^y$, $-NR^xC(O)R^y-$, $-NR^xC(S)R^y$ $-NR^xC(S)NR^yR^z$, $-SONR^xR^y-$, $-SO_2NR^y-$, $-OR^x$, $-OR^xC(O)NR^yR^z$, $-OR^xC(O)OR^y-$, $-OC(O)R^x$, $-OC(O)NR^xR^y$, $-R^xNR^yC(O)R^z$, $-R^xOR^y$, $-R^xC(O)OR^y$, $-R^xC(O)NR^yR^z$, $-R^xC(O)R^x$, $-R^xOC(O)R^y$, $-SR^x$, $-SOR^x$, $-SO_2R^x$, and $-ONO_2$, wherein R^x, R^y and R^z in each of the above groups can be 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 cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted or unsubstituted heterocyclylalkyl ring, or substituted or unsubstituted amino, or any two of R^x, R^y and R^z may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 membered ring, which may optionally include heteroatoms which may be the same or different and are selected from O, NR^w (wherein R^w is hydrogen or substituted or unsubstituted alkyl) or S.

4. A compound of claim 1, wherein R is hydrogen, halogen, substituted or unsubstituted C_{1-6} alkyl, or $-OR^f$.

5. A compound of claim 1, wherein Cy^1 is substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl.

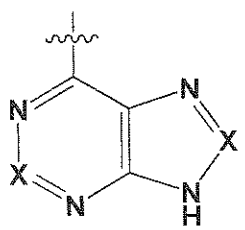
6. A compound of claim 1, wherein Cy^1 is



7. A compound of claim 1, wherein R^1 and R^2 represent hydrogen or substituted or unsubstituted C_{1-6} alkyl.

8. A compound of claim 1, wherein L_1 is $-NR^a-$.

9. A compound of claim 1, wherein Cy^2 is



wherein

X is CR^3; and

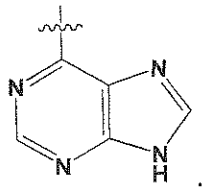
R^3 is independently selected from hydrogen, hydroxy, halogen, carboxyl, cyano, nitro, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted arylalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted heterocyclylalkyl ring, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted or unsubstituted guanidine, $-COOR^x$, $-C(O)R^x$, $-C(S)R^x$, $-C(O)NR^xR^y$, $-C(O)ONR^xR^y$, $-NR^xCONR^yR^z$, $-N(R^x)SOR^y$, $-N(R^x)SO_2R^y$, $-(=N-N(R^x)R^y)$, $-NR^xC(O)OR^y$, $-NR^xR^y$, $-NR^xC(O)R^y-$, $-NR^xC(S)R^y$ $-NR^xC(S)NR^yR^z$, $-SONR^xR^y-$, $-SO_2NR^xR^y-$, $-OR^x$, $-OR^xC(O)NR^yR^z$, $-OR^xC(O)OR^y-$, $-OC(O)R^x$, $-OC(O)NR^xR^y$, $-R^xNR^yC(O)R^z$, $-R^xOR^y$, $-R^xC(O)OR^y$, $-R^xC(O)NR^yR^z$, $-R^xC(O)R^x$, $-R^xOC(O)R^y$, $-SR^x$, $-SOR^x$, $-SO_2R^x$, and $-ONO_2$, wherein R^x, R^y and R^z in each of the above groups can be 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 cycloalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted amino, substituted or unsubstituted heteroaryl, substituted heterocyclylalkyl ring, substituted or unsubstituted heteroarylalkyl, or substituted or unsubstituted heterocyclic ring, or any two of R^x, R^y and R^z may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 membered ring, which may optionally include heteroatoms which may be the same or different and are selected from O, NR^w (wherein R^w is hydrogen or substituted or unsubstituted alkyl) or S.

10. A compound of claim 9, wherein L_1 is $-NR^a-$.

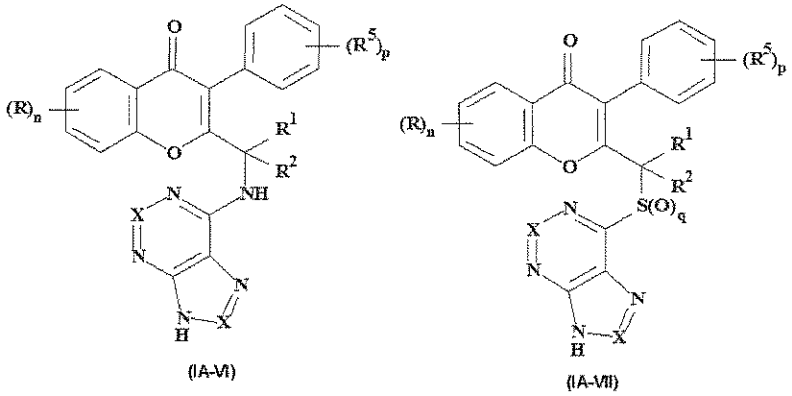
11. A compound of claim 9, wherein L_1 is –NH-.

12. A compound of claim 9, wherein each occurrence of X is CH.

13. A compound of claim 9, wherein Cy^2 is



14. A compound of formula (IA-VI) or (IA-VII):



or a pharmaceutically acceptable salt thereof, wherein

each occurrence of R is independently selected from hydrogen, halogen, -OR^a, CN, 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_{3-8} cycloalkyl, and substituted or unsubstituted heterocyclic group;

R^1 and R^2 may be the same or different and are independently selected from hydrogen, halogen, and substituted or unsubstituted C_{1-6} alkyl, or both R^1 and R^2 directly bound to a common atom, may be joined to form an oxo group (=O) or a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the carbon atom to which R^1 and R^2 are bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^a and S;

each occurrence of R^a is selected from hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, -NR^cR^d (wherein R^c and R^d are independently hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, and (C_{1-6})alkoxy) and -OR^c (wherein R^c is substituted or unsubstituted (C_{1-6})alkyl);

each occurrence of X is independently selected from CR^3 or N; and

each occurrence of R^3 is independently selected from hydrogen, hydroxy, halogen, carboxyl, cyano, nitro, 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 cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenylalkyl substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted heterocyclylalkyl ring, substituted or unsubstituted guanidine, $-COOR^x$, $-C(O)R^x$, $-C(S)R^X$, $-C(O)NR^xR^y$, $-C(O)ONR^xR^y$, $-NR^xCONR^yR^z$, $-N(R^x)SOR^y$, $-N(R^x)SO_2R^y$, $-(=N-N(R^x)R^y)$, $-NR^xC(O)OR$ $-NR^xR^y$, $-NR^xC(O)R^y-$, $-NR^xC(S)R^y$ $-NR^xC(S)NR^yR^z$, $-SONR^xR^y-$, $-SO_2NR^xR^y-$, $-OR^x$, $-OR^xC(O)NR^yR^z$, $-OR^xC(O)OR^y-$, $-OC(O)R^x$, $-OC(O)NR^xR^y$, $-R^xNR^yC(O)R^z$, $-R^xOR^y$, $-R^xC(O)OR^y$, $-R^xC(O)NR^yR^z$, $-R^xC(O)R^x$, $-R^xOC(O)R^y$, $-SR^X$, $-SOR^x$, $-SO_2R^x$, and $-ONO_2$, wherein R^x, R^y and R^z in each of the above groups can be 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 cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted cycloalkenyl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroarylalkyl, substituted or unsubstituted heterocyclic ring, substituted or unsubstituted heterocyclylalkyl ring, or substituted or unsubstituted amino, or any two of R^x, R^y and R^z may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 membered ring, which may optionally include heteroatoms which may be the same or different and are selected from O, NR^w (wherein R^w is hydrogen or substituted or unsubstituted alkyl) or S.

each occurrence of R^5 is hydrogen, C_{1-6} alkyl or halogen;

n is 0, 1, 2, 3 or 4;

p is 0, 1, 2, 3, 4 or 5; and

q is 0, 1 or 2.

15. A compound of claim 14, wherein R is H or halogen, n is 0 or 1 and p is 0, 1, or 2.

16. A compound of claim 14, wherein R^5 is H or halogen.

17. A compound of claim 14, wherein R^1 and R^2 are independently selected from H, CH_3 or C_2H_5.

18. A compound of claim 14, wherein X is CH.

19. A compound selected from

2-((9H-Purin-6-ylthio)methyl)-3-phenyl-4H-chromen-4-one;

2-[(9H-Purin-6-ylthio)methyl]-6-bromo-3-phenyl-4H-chromen-4-one;

2-(1-(9H-Purin-6-ylthio)ethyl)-6-bromo-3-phenyl-4H-chromen-4-one;

(S)-2-(1 -(9H-purin-6-ylamino)ethyl)-6-bromo-3-phenyl-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-6-bromo-3-phenyl-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-3-phenyl-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-3-(2-fluorophenyl)-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino)ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(R)-2-(1-(9H-purin-6-ylamino)ethyl)-3-(3-fluorophenyl)-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino)ethyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino)ethyl)-3-phenyl-4H-chromen-4-one;

(S)-2-(1-(9H-purin-6-ylamino)ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

2-((9H-purin-6-ylamino)methyl)-6-fluoro-3-phenyl-4H-chromen-4-one;

(R)-2-(1-(9H-purin-6-ylamino)ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one;

6-Fluoro-3-(3-fluorophenyl)-2-(l-(4-methoxyphenylamino)ethyl)-4H-chromen-4-one,

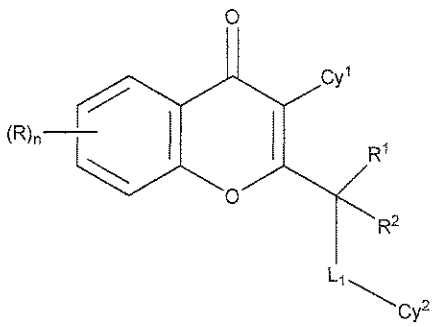
and pharmaceutically acceptable salts thereof.

20. A pharmaceutical composition, comprising a compound of claim 1 and a pharmaceutically acceptable carrier.

21. The pharmaceutical composition of claim 20, 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.

22. The compound of claim 19, wherein the compound is (S)-2-(1-(9H-purin-6-ylamino)ethyl)-6-fluoro-3-(3-fluorophenyl)-4H-chromen-4-one or a pharmaceutically acceptable salts thereof.

23. A compound of formula



(I)

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

each occurrence of R is independently selected from hydrogen, halogen, -OR^a, CN, 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_{3-8} cycloalkyl, and substituted or unsubstituted heterocyclic group;

R^1 and R^2 may be the same or different and are independently selected from hydrogen, halogen, and substituted or unsubstituted C_{1-6} alkyl, or both R^1 and R^2 directly bound to a common atom, may be joined to form a substituted or unsubstituted saturated or unsaturated 3-10 member ring (including the carbon atom to which R^1 and R^2 are bound), which may optionally include one or more heteroatoms which may be the same or different and are selected from O, NR^a and S;

Cy^1 is a monocyclic group selected from substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocyclic group, substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl;

Cy^2 is selected from substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl;

L_1 is selected from $-S(=O)_q-$ and $-NR^a-$;

each occurrence of R^a is selected from hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, $-NR^cR^d$ (wherein R^c and R^d are independently hydrogen, halogen, hydroxy, cyano, substituted or unsubstituted (C_{1-6})alkyl, and (C_{1-6})alkoxy) and $-OR^c$ (wherein R^c is substituted or unsubstituted (C_{1-6})alkyl);

n is an integer from 1 to 4; and

q is 0, 1 or 2.