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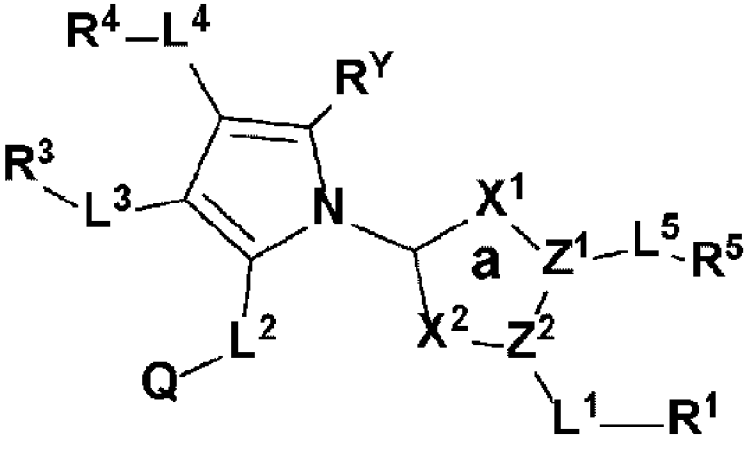
(54) Titre : METHODES D'UTILISATION DE COMPOSES PYRAZOLE ET PYRAZOLE SUBSTITUES POUR LE TRAITEMENT DE MALADIES HYPERPROLIFERATIVES

(54) Title: METHODS OF USING SUBSTITUTED PYRAZOLE AND PYRROLE COMPOUNDS AND FOR TREATMENT OF HYPERPROLIFERATIVE DISEASES

(I)



(57) Abrégé/Abstract:
Disclosed are methods of treating hyperproliferative disorders such as cancer, methods of arresting the cell cycle in cancer cells, methods of inhibiting glutathione synthesis in cancer cells, and associated compounds for use and uses in medicaments. In certain

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(13) A1

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(57) Abrégé(suite)/Abstract(continued):
embodiments, the methods, uses and compounds are provided with reference to compounds of the structural formula (I), in which X^1, X^2, Z^1, Z^2, the ring system denoted by "a", R^1, L^1, L^2, Q, L^3, R^3, L^4, R^4, L^5, and R^5 are as described herein. In certain embodiments, compounds disclosed herein are especially active against cancers having a mutant KRAS gene.

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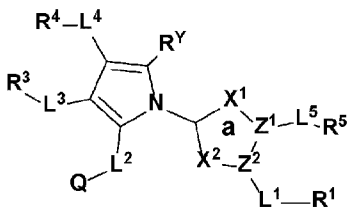
(54) Title: METHODS OF USING SUBSTITUTED PYRAZOLE AND PYRAZOLE COMPOUNDS AND FOR TREATMENT OF HYPERPROLIFERATIVE DISEASES



(I)

(57) Abstract: Disclosed are methods of treating hyperproliferative disorders such as cancer, methods of arresting the cell cycle in cancer cells, methods of inhibiting glutathione synthesis in cancer cells, and associated compounds for use and uses in medicaments. In certain embodiments, the methods, uses and compounds are provided with reference to compounds of the structural formula (I), in which X^1, X^2, Z^1, Z^2, the ring system denoted by "a", R^1, L^1, L^2, Q, L^3, R^3, L^4, R^4, L^5, and R^5 are as described herein. In certain embodiments, compounds disclosed herein are especially active against cancers having a mutant *KRAS* gene.

METHODS OF USING SUBSTITUTED PYRAZOLE AND PYRROLE COMPOUNDS AND FOR TREATMENT OF HYPERPROLIFERATIVE DISEASES

CROSS-REFERENCE TO RELATED APPLICATIONS

[1] This application claims the benefit of priority of U.S. Provisional Patent Application no. 62/428,274, filed November 30, 2016, which is hereby incorporated herein by reference in its entirety.

BACKGROUND OF THE DISCLOSURE

Field

[2] This disclosure relates to the field of compounds, pharmaceutical compositions comprising them, and methods of using the compounds and compositions. This disclosure relates more particularly to methods for using certain compounds for the treatment of hyperproliferative disorders such as cancer.

Technical Background

[3] Cancer, an uncontrolled proliferation of cells, is a multifactorial disease characterized by tumor formation, growth, and in some instances, metastasis. In the United States this year, over 1.5 million people will be diagnosed with cancer, and more than 500,000 people will die from cancer. Overall it is estimated that at least one in three people will develop some form of cancer during their lifetime. There are more than 200 different histopathological types of cancer, with breast, lung, colorectal, and prostate accounting for over half of all new cases in the U.S. Current cancer therapies vary depending upon the localization and stage of the cancer but generally include a combination of surgery, systemic therapy, radiation therapy, and chemotherapy. Despite the effort that has been devoted to the development of anti-cancer strategies, many of them remain unefficacious for specific cancers.

[4] The uncontrolled cell proliferation that represents the essence of cancer involves not only deregulated control of cell proliferation but also corresponding adjustments of energy metabolism in order to fuel cell growth and division. The reprogramming of cell metabolism is emerging as an important molecular hallmark of cancer cells. Under aerobic conditions, normal cells process glucose, first to pyruvate via glycolysis in the cytosol and thereafter to carbon dioxide in the mitochondria; under anaerobic conditions, glycolysis is favored and relatively little pyruvate is dispatched to the oxygen-consuming mitochondria. When growth factors and nutrients are abundant, oncogenic signaling pathways direct enhanced metabolism leading to increased synthesis of macromolecules such as lipids, proteins and nucleic acids. The net effect is the support of cell growth and proliferation.

During tumor formation, however, a harsh, anoxic, nutrient deprived environment exists that challenges the cell and its ability to maintain metabolic homeostasis. Cancer cells can reprogram their glucose metabolism, and thus their energy production, by limiting their energy metabolism largely to glycolysis, which was seen by early biochemists as primitive and inefficient. Despite these early beliefs, the metabolic signatures of cancer cells are not passive responses to damaged mitochondria, but result from oncogene-directed metabolic reprogramming required to support anabolic growth. Oncogene mutations that allow for increased and more efficient utilization of scarce nutrients present unique targets in treatment of cancer.

SUMMARY OF THE DISCLOSURE

[5] In one aspect, the disclosure provides a method for treating a hyperproliferative disorder such as cancer in a subject in need thereof. The method includes administering to the subject an effective amount of a compound as described herein.

[6] In another aspect, the disclosure provides compounds as described herein for use in treating hyperproliferative disorders such as cancer.

[7] In another aspect, the disclosure provides the use of a compound as described herein for the preparation of a medicament for the treatment of a hyperproliferative disorder such as cancer.

[8] In certain embodiments of the various aspects of the disclosure, the hyperproliferative disorder is a hematopoietic cancer. In certain alternative embodiments of the disclosure, the hyperproliferative disorder is a solid tumor.

[9] In certain embodiments of the various aspects of the disclosure, the hyperproliferative disorder is a cancer (e.g., a solid tumor such as a colorectal cancer, a lung cancer or a pancreatic cancer) having a mutant *KRAS* gene, e.g., a heterozygous mutant *KRAS* gene.

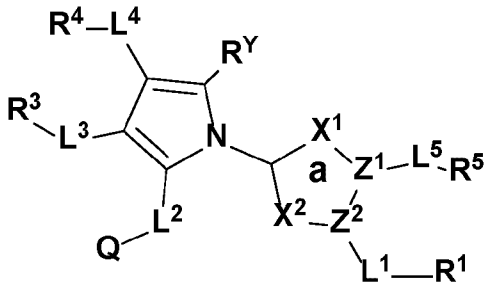
[10] Another aspect of the disclosure provides a method for inhibiting cell cycle progression in a cancer cell. The method includes contacting the cancer cell with an effective amount of a compound as described herein. In certain such embodiments, the cancer cell is a hematopoietic cancer cell. In other such embodiments, the cancer cell is a cancer cell of a solid tumor (e.g., a pancreatic cancer, a lung cancer, or a colorectal cancer). In certain such embodiments, the cancer cell has a heterozygous mutant *KRAS* gene. Cell cycle progression can be inhibited, for example, at the G0/G1 phase.

[11] Another aspect of the disclosure provides a method for inducing apoptosis of a cancer cell. The method includes contacting the cancer cell with an effective amount of a compound as described herein. In certain such embodiments, the cancer cell is a hematopoietic cancer cell.

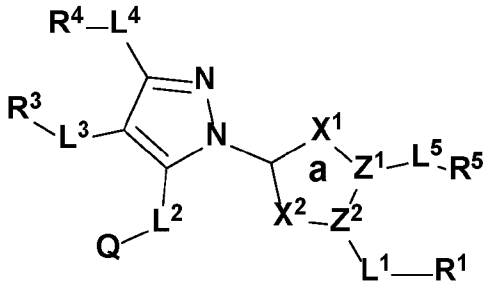
[12] Another aspect of the disclosure provides a method for inducing cytotoxic effect of a cancer cell. The method includes contacting the cancer cell with an effective amount of a compound as described herein. In certain such embodiments, the cancer cell is a hematopoietic cancer cell. In other such embodiments, the cancer cell is a cancer cell of a solid tumor (e.g., a pancreatic cancer, a lung cancer, or a colorectal cancer). In certain such embodiments, the cancer cell has a heterozygous mutant *KRAS* gene.

[13] Another aspect of the disclosure provides a method for inhibiting glutathione synthesis in a cancer cell. The method includes contacting the cancer cell with an effective amount of a compound as described herein. In certain such embodiments, the cancer cell is a hematopoietic cancer cell. In other such embodiments, the cancer cell is a cancer cell of a solid tumor (e.g., a pancreatic cancer, a lung cancer, or a colorectal cancer). In certain such embodiments, the cancer cell has a heterozygous mutant *KRAS* gene.

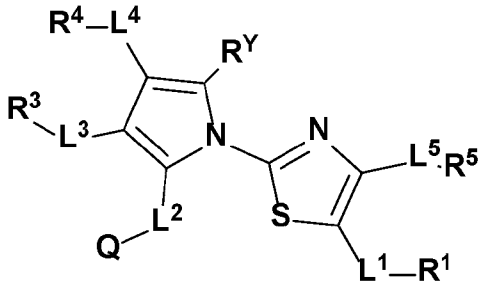
[14] In certain embodiments, the compound used in the methods, compounds and uses described herein is a compound of any of the structural formulae (I) below:



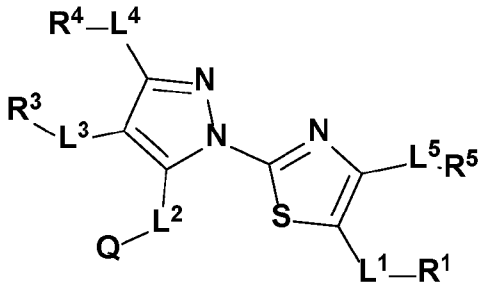
(Ia), in which formula (Ia) the ring system denoted by "a" is heteroaromatic,



(Ib), in which formula (Ib) the ring system denoted by "a" is heteroaromatic,



(Ic),



(Id),

optionally in the form of a pharmaceutically acceptable salt or N-oxide, and/or a solvate or hydrate, wherein

L^1 is selected from the group consisting of a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, -NR^6-, -$C(O)NR^6$-, -$NR^6C(O)$-, -$C(S)NR^6$-, -$NR^6C(S)$-, -C(O)O-, -OC(O)-, -C(O)S-, -SC(O)-, -C(S)O-, -OC(S)-, -C(S)S-, -SC(S)-, -$S(O)_{1-2}O$-, -$OS(O)_{1-2}$-, -$S(O)_{1-2}NR^6$- and -$NR^6S(O)_{1-2}$-;

R^1 is selected from the group consisting of

hydrogen,

C_1-C_8 alkyl, C_1-C_8 alkenyl and C_1-C_8 alkynyl, each unsubstituted or fluorinated,

cycloalkyl and heterocycloalkyl, each optionally substituted with 1-2 R^{1E}, and

aryl and heteroaryl, each optionally substituted with 1-5 R^{1E},

in which

each R^{1E} is independently selected from oxo, optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, SF_5, -N_3, -$C(O)R^{1F}$, -SR^{1F}, -$S(O)_{1-2}R^{1F}$, -OR^{1F}, -$NR^{1G}R^{1F}$ and -$C(O)R^{1F}$;

each R^{1F} is independently selected from H, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl and

each R^{1G} is independently selected from H and C_1-C_3 alkyl,

or L^1 and R^1 are absent;

L^2 is selected from the group consisting of a bond, -CH_2-, -$CH(CH_3)$- or -CH_2CH_2-;

Q is selected from the group consisting of H, -CH_2OH, -C(O)OH, -$C(O)OR^{2A}$, -$C(O)NR^{2B}R^{2A}$, -$C(O)NR^{2B}S(O)_2R^{2A}$, -$C(O)NR^{2B}S(O)_2NR^{2B}R^{2A}$, -$C(O)R^{2A}$, -$S(O)_2OH$, -$P(O)(OH)_2$, -$C(OH)(CF_3)_2$, $S(O)_2R^{2A}$, -$N(R^{2B})S(O)_2R^{2A}$, -$S(O)_2NR^{2B}R^{2A}$, -C(O)NHOH, -C(O)NH-O(C_1-C_3 alkyl), and -CO(NH)CN, in which

each R^{2A} is independently selected from H and C_1-C_3 alkyl, and

each R^{2B} is independently selected from H and C_1-C_3 alkyl;

L^3 is a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, -NR^6-, -CH_2-, -$CH(CH_3)(OH)$- or -CH(OH)-;

R^3 is aryl or heteroaryl each (i) optionally substituted with a single substituent selected from -L^{3C}-(aryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(heteroaryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(cycloalkyl optionally substituted with 1-5

R^{3E}), -L^{3C}-(heterocycloalkyl optionally substituted with 1-5 R^{3E}) and (ii) optionally substituted with 1-5 R^{3E},

in which

each L^{3C} is a bond, methylene, ethylene, -C(O)-, -S-, -$S(O)_{1-2}$-, -O- or -NR^{3G}-;

each R^{3D} is independently selected from optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, SF_5, -N_3, -$C(O)R^{3F}$, -SR^{3F}, -$S(O)_{1-2}R^{3F}$, -OR^{3F}, -$NR^{3G}R^{3F}$, -$C(O)R^{3F}$, -$C(O)NR^{3G}R^{3F}$, -$NR^{3G}C(O)R^{3F}$, -$C(S)NR^{3G}R^{3F}$, -$NR^{3G}C(S)R^{3F}$, -$C(O)OR^{3F}$, -$OC(O)R^{3F}$, -$C(O)SR^{3F}$, -$SC(O)R^{3F}$, -$C(S)OR^{3F}$, -$OC(S)R^{3F}$, -$C(S)SR^{3F}$, -$SC(S)R^{3F}$, -$S(O)_{1-2}OR^{3F}$, -$OS(O)_{1-2}R^{3F}$, -$S(O)_{1-2}NR^{3G}R^{3F}$ and -$NR^{3G}S(O)_{1-2}R^{3F}$;

each R^{3E} is independently selected from oxo, optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, SF_5, -N_3, -$C(O)R^{3F}$, -SR^{3F}, -$S(O)_{1-2}R^{3F}$, -OR^{3F}, -$NR^{3G}R^{3F}$, -$C(O)R^{3F}$, -$C(O)NR^{3G}R^{3F}$, -$NR^{3G}C(O)R^{3F}$, -$C(S)NR^{3G}R^{3F}$, -$NR^{3G}C(S)R^{3F}$, -$C(O)OR^{3F}$, -$OC(O)R^{3F}$, -$C(O)SR^{3F}$, -$SC(O)R^{3F}$, -$C(S)OR^{3F}$, -$OC(S)R^{3F}$, -$C(S)SR^{3F}$, -$SC(S)R^{3F}$, -$S(O)_{1-2}OR^{3F}$, -$OS(O)_{1-2}R^{3F}$, -$S(O)_{1-2}NR^{3G}R^{3F}$, -$NR^{3G}S(O)_{1-2}R^{3F}$;

each R^{3F} is independently selected from H, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl and

each R^{3G} is independently selected from H and C_1-C_3 alkyl, C_1-C_3 fluoroalkyl;

L^4 is is selected from the group consisting of a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, -NR^6-, -$C(O)NR^6$-, -$NR^6C(O)$-, -$C(S)NR^6$-, -$NR^6C(S)$-, -C(O)O-, -OC(O)-, -C(O)S-, -SC(O)-, -C(S)O-, -OC(S)-, -C(S)S-, -SC(S)-, -$S(O)_{1-2}O$-, -$OS(O)_{1-2}$-, -$S(O)_{1-2}NR^6$- and -$NR^6S(O)_{1-2}$-;

R^4 is selected from the group consisting of hydrogen, optionally substituted C_1-C_8 alkyl, optionally-substituted C_1-C_8 alkenyl and optionally substituted C_1-C_8 alkynyl;

L^5 is a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, -NR^6-, -CH_2CH_2-, -CH=CH-, -C≡C-, -CH_2-, -$CH(CH_3)(OH)$- or -CH(OH)-;

R^5 is aryl, heteroaryl, cycloalkyl or heterocycloalkyl, each optionally substituted with 1-5 R^{5E},

in which

each R^{5E} is independently selected from oxo, optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, -SF_5, -N_3, -$C(O)R^{5F}$, -SR^{5F}, -$S(O)_{1-2}R^{5F}$, -OR^{5F}, -$NR^{5G}R^{5F}$, -$C(O)R^{5F}$, -$C(O)NR^{5G}R^{5F}$, -$NR^{5G}C(O)R^{5F}$, -$C(S)NR^{5G}R^{5F}$, -$NR^{1G}C(S)R^{5F}$, -$C(O)OR^{5F}$, -$OC(O)R^{5F}$, -$C(O)SR^{5F}$,

$-SC(O)R^{5F}$, $-C(S)OR^{5F}$, $-OC(S)R^{5F}$, $-C(S)SR^{5F}$, $-SC(S)R^{5F}$, $-S(O)_{1-2}OR^{5F}$, $-OS(O)_{1-2}R^{5F}$, $-S(O)_{1-2}NR^{5G}R^{5F}$ and $-NR^{5G}S(O)_{1-2}R^{5F}$;

each R^{5F} is independently selected from H, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl and

each R^{5G} is independently selected from H and C_1-C_3 alkyl;

R^Y is selected from the group consisting of hydrogen, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl;

X^1 is selected from the group consisting of CR^{XA}, S, O, NRX^B and N and

X^2 is selected from the group consisting of CR^{XA}, S, O, NRX^B and N in which

each R^{XA} is independently selected from the group consisting of hydrogen, C_1-C_4 alkyl and C_1-C_4 fluoroalkyl; and

each R^{XB} is independently selected from the group consisting of hydrogen, C_1-C_4 alkyl and C_1-C_4 fluoroalkyl, C_1-C_4 alkyl-C(O)-, C_1-C_4 alkyl-$S(O)_{1-2}$-;

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

wherein

when Z^1 is N and is bound in the ring system denoted by "a" by a double bond, L^1 and R^1 are absent;

each R^6 is selected from the group consisting of hydrogen, C_1-C_3 alkyl and -C(O)(C_1-C_3 alkyl);

each optionally substituted alkyl, alkenyl and alkynyl is unsubstituted, fluorinated or substituted with one or two hydroxyl groups;

each cycloalkyl has 3-10 ring carbons and is unsaturated or partially unsaturated, and optionally includes one or two fused cycloalkyl rings, each fused ring having 3-8 ring members;

each heterocylcloalkyl has 3-10 ring members and 1-3 heteroatoms independently selected from nitrogen, oxygen and sulfur and is unsaturated or partially unsaturated, and optionally includes one or two fused cycloalkyl rings, each having 3-8 ring members;

each aryl is a phenyl or a naphthyl, and optionally includes one or two fused cycloalkyl or heterocycloalkyl rings, each fused cycloalkyl or heterocycloalkyl ring having 4-8 ring members;

each heteroaryl is a 5-6 membered monocyclic heteroaryl ring having 1-4 heteroatoms independently selected from nitrogen, oxygen and sulfur or a 8-10 membered bicyclic heteroaryl having 1-5 heteroatoms independently selected from nitrogen, oxygen or sulfur, and optionally includes one or two fused cycloalkyl or heterocycloalkyl rings, each fused cycloalkyl or heterocycloalkyl ring having 4-8 ring members.

In certain such embodiments, each and every optionally substituted alkyl, alkylene, alkenyl, alkenylene, alkynyl and alkynylene is unsubstituted or fluorinated. For example, in certain

such embodiments, each and every optionally substituted alkyl, alkylene, alkenyl, alkenylene, alkynyl and alkynylene is unsubstituted.

[15] Other aspects and embodiments of the disclosure are evident in view of the detailed description provided herein.

[16] All publications referenced herein are hereby incorporated herein by reference in their entirety to the extent they are not inconsistent with the specific disclosure provided herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[17] **Figure 1** is a bar graph showing responsiveness of cell lines to treatment with a test compound of the disclosure with respect to *KRAS* genotype and *KRAS* zygosity of the cell lines.

[18] **Figure 2** is a graph showing glutathione levels in three cell lines (BJAB, HCT116, and NHFL) following treatment with the test compound. BJAB is represented by dark gray (bottom) line, HCT116 is represented by black (middle) line, and NHFL is represented by light gray (top) line.

[19] **Figure 3** is a pair of bar graphs demonstrating reduction in glutathione levels in HCT-116 cells after treatment with the test compound (top) and menadione treatment (bottom), both in the presence and absence of N-acetyl cysteine (NAC).

[20] **Figure 4A** is a set of graphs representing flow cytometry data collected from a representative cell cycle experiments in HCT116 cells after treatment with the test compound . **Figure 4B** is a bar representation of the data in Figure 4A as the percentage of cells in each phase of the cell cycle.

DETAILED DESCRIPTION

[21] In one aspect, the disclosure provides methods, compounds and uses for treating a variety of hyperproliferative disorders using a compound as described herein. The compound can be defined generically as with respect to any of formulae (Ia), (Ib), (Ic) and (Id) above, or in various subgenera compounds in which the structural formula (I), X^1, X^2, Z^1, Z^2, the ring system denoted by "a", R^Y, R^1, L^1, L^2, Q, L^3, R^3, L^4, R^4, L^5, and R^5 are optionally independently selected from the groups (Ia) *et seq.*, (1a) *et seq.*, (2a) *et seq.,* (3a) *et seq.*, (4a) *et seq.,* (5a) *et seq.,* (6a) *et seq.,* (7a) *et seq.,* (8a) *et seq.,* (9a) *et seq.,* (10a) *et seq.,* (11a) *et seq.*, (12a) *et seq.,* (13a) *et seq.* and (14a) *et seq.* defined hereinbelow (*e.g.*, wherein the compound is of structural formula (I) as defined in any combination of the embodiments below):

[22] **In certain embodiments of the compounds as otherwise described herein, the compound has one of the following structural formulae:**

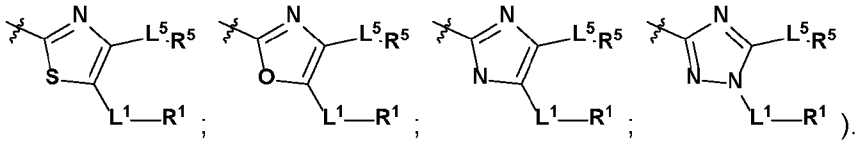
(Ia);

(Ib);

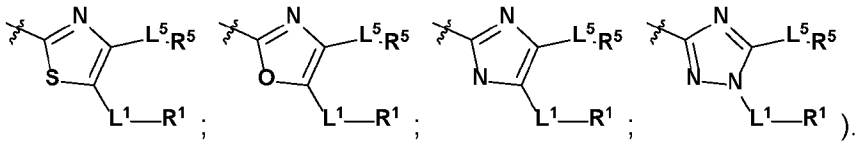
(Ic);

(Id);

(Ie), in which (Ie) is formula (Ia) with the ring system denoted by "a" being oxazole, imidazole, pyrazole or triazole (e.g., in one of the following configurations:



(If), in which (If) is formula (Ib) with the ring system denoted by "a" being oxazole, imidazole, pyrazole, or triazole (e.g., in one of the following configurations:



In certain embodiments, when the compound has of one of formulae (Ia), (Ic), (Ie) or (If) as described above, R^Y is H, -C_1-C_3 alkyl or -C_1-C_3 fluoroalkyl. In certain embodiments, when the compound has one of formulae (Ia) or (Ib), each RX^A and RX^B is hydrogen.

[23] **In certain embodiments of the compounds as otherwise described herein, R^1 is selected from one of the following groups (1a) – (1e):**

(1a) R^1 is selected from the group consisting of hydrogen, optionally substituted C_1-C_8 alkyl and cycloalkyl optionally substituted with 1-5 R^{1E};

(1b) R^1 is hydrogen;

(1c) R^1 is optionally substituted C_1-C_8 alkyl;

(1d) R^1 is unsubstituted C_1-C_8 alkyl or fluorinated C_1-C_8 alkyl;

(1e) R^1 is unsubstituted cycloalkyl.

In certain such embodiments, each optionally substituted alkyl of R^1 (including those of R^{1E}) is unsubstituted or fluorinated. For example, in certain such embodiments each optionally substituted alkyl, alkenyl and alkynyl of R^1 (including those of R^{1E}) is unsubstituted.

[24] **In certain embodiments of the compounds as otherwise described herein, L^1 is selected from one of the following groups (2a) – (2c)**

(2a) L^1 is a bond, -S-, -S(O)- or -$S(O)_2$-;

(2b) L^1 is selected from a bond, -CH_2-, -$CH(CH_3)$-, -CH_2CH_2-, -C(O)-, -S-, -$S(O)_{1\text{-}2}$-, -O-, and -NR^6-;

(2c) L^1 is -O- or -S-.

[25] **In certain embodiments of the compounds as otherwise described herein, L^2 is selected from one of the following groups (3a) – (3c)**

(3a) L^2 is $-CH_2-$, $-CH(CH_3)-$ or $-CH_2CH_2-$;

(3b) L^2 is a bond;

(3c) L^2 is a bond or $-CH_2-$.

[26] **In certain embodiments of the compounds as otherwise described herein, Q is selected from one of the following groups (4a) – (4d)**

(4a) Q is selected from the group consisting of $-CH_2OH$, $-C(O)OH$, $-C(O)OR^{2A}$, $-C(O)NR^{2B}R^{2A}$, $-C(O)NR^{2B}S(O)_2R^{2A}$, $-C(O)NR^{2B}S(O)_2NR^{2B}R^{2A}$, $-C(O)R^{2A}$, $-S(O)_2OH$, $-P(O)(OH)_2$, $-C(OH)(CF_3)_2$, $S(O)_2R^{2A}$, $-N(R^{2B})S(O)_2R^{2A}$, $-S(O)_2NR^{2B}R^{2A}$, $-C(O)NH-O(C_1\text{-}C_3$ alkyl), $-C(O)NHOH$ and $-CO(NH)CN$;

(4b) Q is selected from the group consisting of $-CH_2OH$, $-C(O)OH$, $-C(O)OR^{2A}$, $-C(O)NR^{2B}R^{2A}$, $-C(O)NR^{2B}S(O)_2R^{2A}$, $-C(O)NR^{2B}S(O)_2NR^{2B}R^{2A}$, $-C(O)R^{2A}$, $-S(O)_2OH$, $-P(O)(OH)_2$.

(4c) Q is $-CH_2OH$, $-C(O)OH$ or $-C(O)OR^{2A}$;

(4d) Q is $-COOH$.

[27] **In certain embodiments of the compounds as otherwise described herein, L^3 is selected from one of the following groups (5a) – (5c)**

(5a) L^3 is a bond, $-C(O)-$, $-S-$, $-S(O)_{1\text{-}2}-$, $-O-$, $-NR^6-$, $-CH_2-$, $-CH(CH_3)(OH)-$ or $-CH(OH)-$;

(5b) L^3 is a bond;

(5c) L^3 is a bond, $-CH_2-$, $-CH(CH_3)(OH)-$ or $-CH(OH)-$.

[28] **In certain embodiments of the compounds as otherwise described herein, R^3 is selected from one of the following groups (6a) – (6k)**

(6a) R^3 is aryl (e.g., phenyl) or heteroaryl (e.g., monocyclic heteroaryl) each (i) optionally substituted with a single substituent selected from $-L^{3C}-$(aryl optionally substituted with 1-5 R^{3D}), $-L^{3C}-$(heteroaryl optionally substituted with 1-5 R^{3D}), $-L^{3C}-$(cycloalkyl optionally substituted with 1-5 R^{3E}), $-L^{3C}-$(heterocycloalkyl optionally substituted with 1-5 R^{3E}) and (ii) optionally substituted with 1-5 R^{3E};

(6b) R^3 is aryl (e.g., a phenyl, a benzodioxole, or a dihydro-1H-isoquinoline) optionally substituted with 1-5 R^{3E};

(6c) R^3 is aryl (e.g., a phenyl, a benzodioxole, or a dihydro-1H-isoquinoline) (i) substituted with a single substituent selected from $-L^{3C}-$(aryl optionally substituted with 1-5 R^{3D}), $-L^{3C}-$(heteroaryl optionally substituted with 1-5 R^{3D}), $-L^{3C}-$(cycloalkyl optionally substituted with 1-5 R^{3E}), $-L^{3C}-$(heterocycloalkyl optionally substituted with 1-5 R^{3E}) and (ii) optionally substituted with 1-5 R^{3E};

(6d) R^3 is aryl (e.g., a phenyl, a benzodioxole, or a dihydro-1H-isoquinoline) (i) substituted with a single substituent selected from -L^{3C}-(phenyl optionally substituted with 1-5 R^{3D}), -L^{3C}-(monocyclic heteroaryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(monocyclic cycloalkyl optionally substituted with 1-5 R^{3E}), -L^{3C}-(monocyclic heterocycloalkyl optionally substituted with 1-5 R^{3E}) and (ii) optionally substituted with 1-5 R^{3E};

(6e) R^3 is as defined in (6a)-(6d), wherein the aryl is not substituted with any R^{3E};

(6f) R^3 is heteroaryl (e.g., an isothiazole, a pyridone, a thiadiazole, a pyrazine, a pyrazolopyrimidine, a pyrazolopyridine, an imidazole, a benzofuran, an indole, an imidazopyridine, a pyridine, a pyrazole, an isoxazole, a triazolopyridine, a benzimidazole, a thiophene, a benzothiophene, a furan or a pyrimidine) optionally substituted with 1-5 R^{3E};

(6g) R^3 is heteroaryl (e.g., an isothiazole, a pyridone, a thiadiazole, a pyrazine, a pyrazolopyrimidine, a pyrazolopyridine, an imidazole, a benzofuran, an indole, an imidazopyridine, a pyridine, a pyrazole, an isoxazole, a triazolopyridine, a benzimidazole, a thiophene, a benzothiophene, a furan or a pyrimidine) (i) substituted with a single substituent selected from -L^{3C}-(aryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(heteroaryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(cycloalkyl optionally substituted with 1-5 R^{3E}), -L^{3C}-(heterocycloalkyl optionally substituted with 1-5 R^{3E}) and (ii) optionally substituted with 1-5 R^{3E};

(6h) R^3 is heteroaryl (e.g., an isothiazole, a pyridone, a thiadiazole, a pyrazine, a pyrazolopyrimidine, a pyrazolopyridine, an imidazole, a benzofuran, an indole, an imidazopyridine, a pyridine, a pyrazole, an isoxazole, a triazolopyridine, a benzimidazole, a thiophene, a benzothiophene, a furan or a pyrimidine) (i) substituted with a single substituent selected from -L^{3C}-(phenyl optionally substituted with 1-5 R^{3D}), -L^{3C}-(monocyclic heteroaryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(monocyclic cycloalkyl optionally substituted with 1-5 R^{3E}), -L^{3C}-(monocyclic heterocycloalkyl optionally substituted with 1-5 R^{3E}) and (ii) optionally substituted with 1-5 R^{3E};

(6i) R^3 is as defined in (6f)-(6h), wherein the heteroaryl is not substituted with any R^{3E};

(6j) R^3 is selected from the group consisting of: phenyl, benzodioxolyl, dihydro-1H-isoquinolinyl, imidazolyl, oxazolyl, isoxazolyl, isothiazolyl, thiazolyl, pyridinyl, and pyrazinyl, pyridonyl, thiadiazolyl, pyrazolopyrimidinyl, pyrazolopyridinyl, benzofuranyl, indolyl, imidazopyridinyl, pyrazolyl, triazolopyridinyl, benzimidazolyl, a benzimidazolyl, a thienyl, a benzothienyl, a furanyl and pyrimidinyl, each (i) optionally substituted with a single substituent selected from -L^{3C}-(aryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(heteroaryl optionally substituted with 1-5

R^{3D}), -L^{3C}-(cycloalkyl optionally substituted with 1-5 R^{3E}), -L^{3C}-(heterocycloalkyl optionally substituted with 1-5 R^{3E}) and (ii) optionally substituted with 1-5 R^{3E}.

(6k) R^3 is selected from the group consisting of phenyl and monocyclic heteroaryl (e.g., pyridyl, pyrazolyl), optionally substituted with 1-5 R^{3E}.

In certain such embodiments, each optionally substituted alkyl, alkenyl and alkynyl of R^3 (including those of R^{3D} and R^{3E}) is unsubstituted or fluorinated. For example, in certain such embodiments each optionally substituted alkyl, alkenyl and alkynyl of R^3 (including those of R^{3D} and R^{3E}) is unsubstituted. In certain such embodiments, L^{3C} is methylene or -O-.

[29] <u>In certain embodiments of the compounds as otherwise described herein, R^4 is selected from one of the following groups (7a) – (7d)</u>

(7a) R^4 is hydrogen;

(7b) R^4 is optionally substituted C_1-C_8 alkyl, optionally-substituted C_1-C_8 alkenyl or optionally substituted C_1-C_8 alkynyl;

(7c) R^4 is hydrogen or unsubstituted C_1-C_6 alkyl;

(7d) R^4 is unsubstituted C_1-C_3 alkyl.

In certain such embodiments, each optionally substituted alkyl, alkenyl and alkynyl of R^4 is unsubstituted or fluorinated. For example, in certain such embodiments each optionally substituted alkyl, alkenyl and alkynyl of R^4 is unsubstituted.

[30] <u>In certain embodiments of the compounds as otherwise described herein, L^4 is selected from one of the following groups (8a) – (8b)</u>

(8a) L^4 is selected from a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, and -NR^6-;

(8b) L^4 is a bond.

[31] <u>In certain embodiments of the compounds as otherwise described herein, L^5 is selected from one of the following groups (9a) – (9b)</u>

(9a) L^5 is a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, -NR^6-, -CH_2CH_2-, -CH_2-, -$CH(CH_3)(OH)$- or -CH(OH)-;

(9b) L^5 is a bond.

[32] <u>In certain embodiments of the compounds as otherwise described herein, R^5 is selected from one of the following groups (21o) – (21q)</u>

(10a) R^5 is aryl (e.g., phenyl) or heteroaryl (e.g., an isoxazolyl, a pyridyl, an imidazopyridyl, a pyrazolyl), each optionally substituted with 1-5 R^{5E};

(10b) R^5 is phenyl optionally substituted with 1-5 R^{5E};

(10c) R^5 is selected from the group consisting of phenyl, isoxazolyl, pyridyl, imidazopyridyl, and pyrazolyl, each optionally substituted with 1-5 R^{5E}.

In certain such embodiments, each optionally substituted alkyl, alkenyl and alkynyl of R^5 (including those of R^{5D} and R^{5E}) is unsubstituted or fluorinated. For example, in certain such embodiments each optionally substituted alkyl, alkenyl and alkynyl of R^5 (including those of R^{5D} and R^{5E}) is unsubstituted.

[33] In certain embodiments of the compounds as otherwise described herein, X^1 is selected from one of the following groups (11a) – (11i)

(11a) X^1 is selected from the group consisting of CR^{XA}, S, O, N and NR^{XB};

(11b) X^1 is selected from the group consisting of S, O, N and NR^{XB};

(11c) X^1 is O;

(11d) X^1 is S;

(11e) X^1 is N or NR^{XB};

(11f) X^1 is N or NR^{XB}, wherein NR^{XB} is hydrogen or optionally substituted C_1-C_4 alkyl;

(11g) X^1 is N;

(11h) X^1 is CR^{XA};

(11i) X^1 is CR^{XA}, wherein R^{XA} is hydrogen or optionally substituted C_1-C_4 alkyl;

In certain such embodiments, each optionally substituted alkyl, alkenyl and alkynyl of X^1 (including those of R^{XA} and R^{XB}) is unsubstituted or fluorinated. For example, in certain such embodiments each optionally substituted alkyl, alkenyl and alkynyl of X^1 (including those of R^{XA} and R^{XB}) is unsubstituted. In certain embodiments each RX^A and RX^B is hydrogen.

[34] In certain embodiments of the compounds as otherwise described herein, X^2 is selected from one of the following groups (12a) – (12i)

(12a) X^2 is selected from the group consisting of CR^{XA}, S, O, N and NR^{XB};

(12b) X^2 is selected from the group consisting of S, O, N and NR^{XB};

(12c) X^2 is O;

(12d) X^2 is S;

(12e) X^2 is selected from N and NR^{XB};

(12f) X^2 is selected from N and NR^{XB}, wherein NR^{XB} is hydrogen or optionally substituted C_1-C_4 alkyl;

(12g) X^2 is N;

(12h) X^2 is CR^{XA};

(12i) X^2 is CR^{XA}, wherein R^{XA} is hydrogen or optionally substituted C_1-C_4 alkyl.

In certain such embodiments, each optionally substituted alkyl, alkenyl and alkynyl of X^2 (including those of R^{XA} and R^{XB}) is unsubstituted or fluorinated. For example, in certain such embodiments each optionally substituted alkyl, alkenyl and alkynyl of X^2 (including those of R^{XA} and R^{XB}) is unsubstituted. In certain embodiments each RX^A and RX^B is hydrogen.

[35] **In certain embodiments of the compounds as otherwise described herein, Z^1 is selected from one of the following groups (13a) – (13c)**

(13a) Z^1 is selected from C and N;

(13b) Z^1 is C;

(13c) Z^1 is N.

[36] **In certain embodiments of the compounds as otherwise described herein, Z^2 is selected from one of the following groups (14a) – (14c)**

(14a) Z^2 is selected from C and N;

(14b) Z^2 is C;

(14c) Z^2 is N.

[37] Various particular embodiments nos. 1-1024 of compounds for use in the methods, compounds and uses of the disclosure include compounds of formula (I), each as defined in each of the following rows (or a pharmaceutically acceptable salt or *N*-oxide thereof, or a solvate or hydrate thereof), wherein each entry is a group number as defined above:

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
1	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
2	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
3	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
4	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
5	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
6	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
7	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
8	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
9	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
10	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
11	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
12	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
13	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
14	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
15	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
16	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
17	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
18	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
19	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
20	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
21	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
22	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
23	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
24	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
25	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
26	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
27	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
28	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
29	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
30	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
31	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
32	(Ia)-(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
33	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
34	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
35	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
36	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
37	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
38	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
39	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
40	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
41	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
42	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
43	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
44	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
45	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
46	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
47	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
48	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
49	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
50	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
51	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
52	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
53	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
54	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
55	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
56	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
57	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
58	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
59	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
60	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
61	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
62	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
63	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
64	(Ia)-(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
65	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
66	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
67	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
68	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
69	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
70	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
71	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
72	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
73	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
74	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
75	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
76	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
77	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
78	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
79	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
80	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
81	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
82	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
83	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
84	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
85	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
86	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
87	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
88	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
89	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
90	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
91	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
92	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
93	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
94	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
95	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
96	(Ia)-(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
97	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
98	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
99	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
100	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
101	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
102	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
103	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
104	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
105	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
106	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
107	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
108	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
109	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
110	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
111	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
112	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
113	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
114	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
115	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
116	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
117	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
118	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
119	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
120	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
121	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
122	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
123	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
124	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
125	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
126	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
127	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
128	(Ia)-(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
129	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
130	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
131	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
132	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
133	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
134	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
135	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
136	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
137	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
138	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
139	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
140	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
141	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
142	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
143	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
144	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
145	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
146	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
147	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
148	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
149	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
150	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
151	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
152	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
153	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
154	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
155	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
156	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
157	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
158	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
159	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
160	(Ia)-(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
161	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
162	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
163	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
164	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
165	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
166	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
167	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
168	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
169	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
170	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
171	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
172	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
173	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
174	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
175	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
176	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
177	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
178	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
179	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
180	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
181	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
182	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
183	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
184	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
185	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
186	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
187	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
188	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
189	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
190	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
191	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
192	(Ia)-(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
193	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
194	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
195	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
196	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
197	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
198	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
199	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
200	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
201	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
202	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
203	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
204	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
205	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
206	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
207	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
208	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
209	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
210	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
211	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
212	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
213	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
214	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
215	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
216	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
217	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
218	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
219	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
220	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
221	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
222	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
223	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
224	(Ia)-(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
225	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
226	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
227	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
228	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
229	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
230	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
231	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
232	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
233	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
234	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
235	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
236	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
237	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
238	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
239	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
240	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
241	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
242	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
243	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
244	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
245	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
246	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
247	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
248	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
249	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
250	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
251	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
252	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
253	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
254	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
255	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
256	(Ia)-(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
257	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
258	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
259	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
260	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
261	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
262	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
263	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
264	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
265	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
266	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
267	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
268	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
269	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
270	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
271	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
272	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
273	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
274	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
275	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
276	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
277	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
278	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
279	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
280	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
281	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
282	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
283	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
284	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
285	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
286	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
287	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
288	(Ia)-(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
289	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
290	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
291	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
292	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
293	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
294	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
295	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
296	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
297	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
298	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
299	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
300	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
301	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
302	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
303	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
304	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
305	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
306	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
307	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
308	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
309	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
310	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
311	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
312	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
313	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
314	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
315	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
316	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
317	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
318	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
319	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
320	(Ia)-(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
321	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
322	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
323	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
324	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
325	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
326	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
327	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
328	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
329	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
330	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
331	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
332	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
333	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
334	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
335	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
336	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
337	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
338	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
339	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
340	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
341	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
342	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
343	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
344	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
345	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
346	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
347	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
348	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
349	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
350	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
351	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
352	(Ia)-(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
353	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
354	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
355	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
356	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
357	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
358	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
359	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
360	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
361	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
362	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
363	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
364	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
365	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
366	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
367	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
368	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
369	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
370	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
371	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
372	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
373	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
374	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
375	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
376	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
377	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
378	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
379	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
380	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
381	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
382	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
383	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
384	(Ia)-(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
385	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
386	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
387	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
388	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
389	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
390	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
391	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
392	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
393	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
394	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
395	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
396	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
397	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
398	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
399	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
400	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
401	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
402	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
403	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
404	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
405	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
406	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
407	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
408	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
409	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
410	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
411	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
412	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
413	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
414	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
415	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
416	(Ia)-(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
417	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
418	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
419	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
420	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
421	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
422	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
423	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
424	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
425	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
426	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
427	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
428	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
429	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
430	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
431	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
432	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
433	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
434	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
435	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
436	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
437	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
438	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
439	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
440	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
441	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
442	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
443	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
444	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
445	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
446	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
447	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
448	(Ia)-(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
449	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
450	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
451	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
452	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
453	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
454	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
455	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
456	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
457	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
458	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
459	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
460	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
461	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
462	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
463	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
464	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
465	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
466	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
467	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
468	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
469	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
470	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
471	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
472	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
473	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
474	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
475	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
476	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
477	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
478	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
479	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
480	(Ia)-(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
481	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
482	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
483	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
484	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
485	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
486	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
487	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
488	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
489	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
490	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
491	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
492	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
493	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
494	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
495	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
496	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
497	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
498	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
499	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
500	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
501	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
502	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
503	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
504	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
505	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
506	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
507	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
508	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
509	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
510	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
511	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
512	(Ia)-(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
513	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
514	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
515	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
516	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
517	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
518	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
519	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
520	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
521	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
522	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
523	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
524	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
525	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
526	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
527	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
528	(Id)	(1a)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
529	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
530	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
531	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
532	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
533	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
534	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
535	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
536	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
537	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
538	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
539	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
540	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
541	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
542	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
543	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
544	(Id)	(1a)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
545	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
546	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
547	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
548	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
549	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
550	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
551	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
552	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
553	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
554	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
555	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
556	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
557	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
558	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
559	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
560	(Id)	(1a)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
561	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
562	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
563	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
564	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
565	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
566	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
567	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
568	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
569	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
570	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
571	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
572	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
573	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
574	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
575	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
576	(Id)	(1a)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
577	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
578	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
579	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
580	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
581	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
582	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
583	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
584	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
585	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
586	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
587	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
588	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
589	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
590	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
591	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
592	(Id)	(1a)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
593	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
594	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
595	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
596	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
597	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
598	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
599	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
600	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
601	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
602	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
603	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
604	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
605	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
606	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
607	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
608	(Id)	(1a)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
609	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
610	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
611	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
612	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
613	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
614	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
615	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
616	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
617	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
618	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
619	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
620	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
621	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
622	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
623	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
624	(Id)	(1a)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
625	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
626	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
627	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
628	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
629	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
630	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
631	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
632	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
633	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
634	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
635	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
636	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
637	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
638	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
639	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
640	(Id)	(1a)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
641	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
642	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
643	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
644	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
645	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
646	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
647	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
648	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
649	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
650	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
651	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
652	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
653	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
654	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
655	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
656	(Id)	(1a)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
657	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
658	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
659	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
660	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
661	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
662	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
663	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
664	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
665	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
666	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
667	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
668	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
669	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
670	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
671	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
672	(Id)	(1a)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
673	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
674	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
675	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
676	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
677	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
678	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
679	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
680	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
681	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
682	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
683	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
684	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
685	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
686	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
687	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
688	(Id)	(1a)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
689	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
690	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
691	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
692	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
693	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
694	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
695	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
696	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
697	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
698	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
699	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
700	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
701	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
702	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
703	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
704	(Id)	(1a)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
705	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
706	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
707	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
708	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
709	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
710	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
711	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
712	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
713	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
714	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
715	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
716	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
717	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
718	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
719	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
720	(Id)	(1a)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
721	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
722	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
723	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
724	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
725	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
726	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
727	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
728	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
729	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
730	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
731	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
732	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
733	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
734	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
735	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
736	(Id)	(1a)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
737	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
738	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
739	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
740	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
741	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
742	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
743	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
744	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
745	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
746	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
747	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
748	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
749	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
750	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
751	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
752	(Id)	(1a)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
753	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
754	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
755	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
756	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
757	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
758	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
759	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
760	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
761	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
762	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
763	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
764	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
765	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
766	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
767	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
768	(Id)	(1a)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
769	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
770	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
771	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
772	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
773	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
774	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
775	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
776	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
777	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
778	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
779	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
780	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
781	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
782	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
783	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
784	(Id)	(1d)	(2a)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
785	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
786	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
787	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
788	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
789	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
790	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
791	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
792	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
793	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
794	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
795	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
796	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
797	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
798	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
799	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
800	(Id)	(1d)	(2a)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
801	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
802	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
803	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
804	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
805	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
806	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
807	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
808	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
809	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
810	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
811	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
812	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
813	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
814	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
815	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
816	(Id)	(1d)	(2a)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
817	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
818	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
819	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
820	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
821	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
822	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
823	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
824	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
825	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
826	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
827	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
828	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
829	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
830	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
831	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
832	(Id)	(1d)	(2a)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
833	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
834	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
835	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
836	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
837	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
838	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
839	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
840	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
841	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
842	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
843	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
844	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
845	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
846	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
847	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
848	(Id)	(1d)	(2a)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
849	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
850	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
851	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
852	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
853	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
854	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
855	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
856	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
857	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
858	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
859	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
860	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
861	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
862	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
863	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
864	(Id)	(1d)	(2a)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
865	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
866	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
867	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
868	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
869	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
870	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
871	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
872	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
873	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
874	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
875	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
876	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
877	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
878	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
879	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
880	(Id)	(1d)	(2a)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
881	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
882	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
883	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
884	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
885	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
886	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
887	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
888	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
889	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
890	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
891	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
892	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
893	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
894	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
895	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
896	(Id)	(1d)	(2a)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
897	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
898	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
899	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
900	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
901	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
902	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
903	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
904	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
905	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
906	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
907	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
908	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
909	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
910	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
911	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
912	(Id)	(1d)	(2b)	(3c)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
913	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
914	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
915	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
916	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
917	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
918	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
919	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
920	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
921	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
922	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
923	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
924	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
925	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
926	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
927	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
928	(Id)	(1d)	(2b)	(3c)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
929	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
930	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
931	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
932	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
933	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
934	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
935	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
936	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
937	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
938	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
939	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
940	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
941	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
942	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
943	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
944	(Id)	(1d)	(2b)	(3c)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
945	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
946	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
947	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
948	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
949	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
950	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
951	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
952	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
953	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
954	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
955	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
956	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
957	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
958	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
959	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
960	(Id)	(1d)	(2b)	(3c)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)
961	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
962	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
963	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
964	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
965	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
966	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
967	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
968	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
969	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
970	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
971	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
972	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
973	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
974	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
975	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
976	(Id)	(1d)	(2b)	(3b)	(4a)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
977	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
978	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
979	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
980	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
981	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
982	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
983	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
984	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
985	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
986	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
987	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
988	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
989	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
990	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
991	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
992	(Id)	(1d)	(2b)	(3b)	(4a)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)

	I	L^1	R^1	L^2	Q	L^3	R^3	L^4	R^4	L^5	R^5
993	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
994	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
995	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
996	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
997	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10a)
998	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9a)	(10c)
999	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10a)
1000	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6a)	(7d)	(8a)	(9b)	(10c)
1001	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
1002	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
1003	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
1004	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
1005	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10a)
1006	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9a)	(10c)
1007	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10a)
1008	(Id)	(1d)	(2b)	(3b)	(4d)	(5b)	(6k)	(7d)	(8a)	(9b)	(10c)
1009	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10a)
1010	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9a)	(10c)
1011	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10a)
1012	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7a),(7b)	(8a)	(9b)	(10c)
1013	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10a)
1014	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9a)	(10c)
1015	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10a)
1016	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6a)	(7d)	(8a)	(9b)	(10c)
1017	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10a)
1018	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9a)	(10c)
1019	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10a)
1020	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7a),(7b)	(8a)	(9b)	(10c)
1021	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10a)
1022	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9a)	(10c)
1023	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10a)
1024	(Id)	(1d)	(2b)	(3b)	(4d)	(5a)	(6k)	(7d)	(8a)	(9b)	(10c)

[38] In certain additional embodiments, including any of the embodiments described with reference to formulae (I) and (Ia)-(If) and embodiments 1-1024 above, each optionally substituted alkylene, alkenylene, and alkynylene recited in any one of the preceding embodiments is unsubstituted. In alternative additional embodiments, including any of the embodiments described with reference to formulae (I)-(Io) and embodiments 1-1292 above, each optionally substituted alkylene, alkenylene, and alkynylene recited in any one of the preceding embodiments is unsubstituted or fluorinated.

[39] In certain additional embodiments, including any of the embodiments described with reference to formulae (I) and (Ia)-(If) and embodiments 1-1024 above and any embodiment described in the paragraph immediately above, each optionally substituted alkyl, alkenyl, and alkynyl recited in any one of preceding embodiments is unsubstituted. In alternative additional embodiments, including any of the embodiments described with reference to formulae (I)-(Io) and embodiments 1-1292 above and any embodiment described in the paragraph immediately above, each optionally substituted alkyl, alkenyl, and alkynyl recited in any one of preceding embodiments is unsubstituted.

[40] In certain additional embodiments, including any of the embodiments described with reference to formulae (I) and (Ia)-(If) and embodiments 1-1024 above and any embodiment described in the two paragraphs immediately above, each cycloalkyl recited in any one of the preceding embodiments is a 3-7 membered monocyclic cycloalkyl. For example, in certain particular embodiments, including any of the embodiments described with reference to formulae (I) and (Ia)-(If) and embodiments 1-1024 above and any embodiment described in the two paragraphs immediately above, each cycloalkyl recited in any one of the preceding embodiments is a cyclopropyl, a cyclobutyl, a cyclopentyl, a cyclopentenyl, a cyclohexyl or a cyclohexenyl.

[41] In certain additional embodiments, including any of the embodiments described with reference to formulae (I) and (Ia)-(If) and embodiments 1-1024 above and any embodiment described in the three paragraphs immediately above, each heterocycloalkyl recited in any one of the preceding embodiments is a 4-7 membered monocyclic heterocycloalkyl having 1-2 heteroatoms selected from O, S and N. For example, in certain particular embodiments, including any of the embodiments described with reference to formulae (I) and (Ia)-(If) and embodiments 1-1024 above and any embodiment described in the three paragraphs immediately above, each heterocycloalkyl recited in any one of the preceding embodiments is a pyrrolidinyl, a tetrahydrofuranyl, a tetrahydrothienyl, a piperidinyl, a piperazinyl, a morpholinyl, a thiomorpholinyl, a tetrahydro-2H-pyranyl, or a tetrahydro-2H-thiopyranyl.

[42] In certain additional embodiments, including any of the embodiments described with reference to formulae (I) and (Ia)-(If) and embodiments 1-1024 above and any embodiment described in the four paragraphs immediately above, each heteroaryl is a 5-6 membered monocyclic heteroaryl having 1-3 heteroatoms selected from O, S and N. For example, in certain particular embodiments, including any of the embodiments described with reference to formulae (I) and (Ia)-(If) and embodiments 1-1024 above and any embodiment described in the four paragraphs immediately above, each heteroaryl is a furanyl, a thienyl, a pyrrolyl, a pyrazolyl, an imidazolyl, an oxazolyl or a thiazolyl.

[43] In certain additional embodiments, including any of the embodiments described with reference to formulae (I) and (Ia)-(If) and embodiments 1-1024 above and any embodiment described in the four paragraphs immediately above, each aryl is phenyl.

[44] In certain additional embodiments as described above, including any of the embodiments described with reference to formulae (I) and (Ia)-(If) and embodiments 1-1024 above and any embodiment described in the five paragraphs immediately above, R^5 is substituted with 1, 2 or 3 substituents selected from halogen (e.g., chloro- or fluoro-) and fluorinated C_1-C_3 alkyl (e.g., trifluoromethyl, difluoromethyl, fluoromethyl, pentafluoroethyl, trifluoroethyl). For example, in certain embodiment as described above, R^5 is phenyl substituted (e.g., 3-substituted, 4-substituted, 3,4-disubstituted, 2,4-disubstituted, or 2,5-disubstituted) with one or two substitutents selected from trifluoromethyl, fluorine and chlorine. For example, in particular embodiments, R^5 can be dichlorophenyl, e.g., 3,4-dichlorophenyl, or trifluoromethylphenyl, e.g., 4-trifluoromethylphenyl.

[45] In certain embodiments, the compound is one of the compounds of the compound table below, optionally provided as a pharmaceutically-acceptable salt or N-oxide, and/or a solvate or hydrate . BJAB cell proliferation data is presented in the table; "A" indicates a measured EC_{50} less than or equal to 1 μM; "B" indicates a measured EC_{50} greater than 1 μM and less than or equal to 5 μM; "C" indicates a measured EC_{50} greater than 5 μM and less than or equal to 10 μM; "D" indicates a measured EC_{50} greater than 10 μM and less than or equal to 25 μM; "E" indicates a measured EC_{50} greater than 25 μM and less than or equal to 50 μM; "F" indicates a measured EC_{50} greater than 50 μM and less than or equal to 100 μM; "G" indicates that in the experiments performed there was no measured EC_{50} less than or equal to 80 μM; "H" indicates that in the experiments performed there was no measured EC_{50} less than or equal to 50 μM; "I" indicates that in the experiments performed there was no measured EC_{50} less than or equal to 40 μM; "J" indicates that in the experiments performed there was no measured EC_{50} less than or equal to 25 μM; and "K" indicates that in the experiments performed there was no measured EC_{50} less than or equal to 20 μM. Characterization data for the compounds are also provided.

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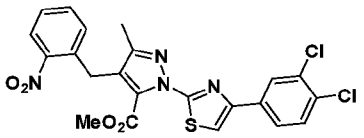
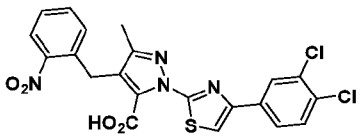
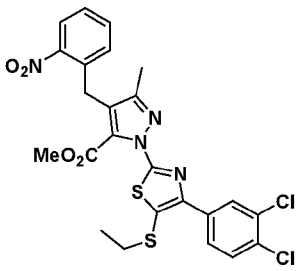
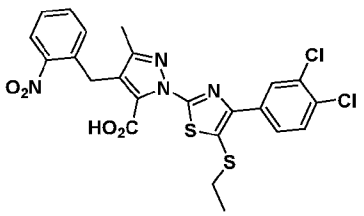
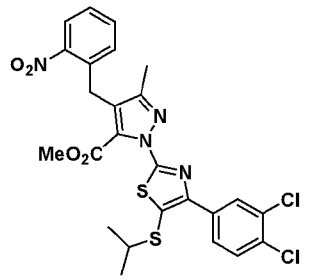
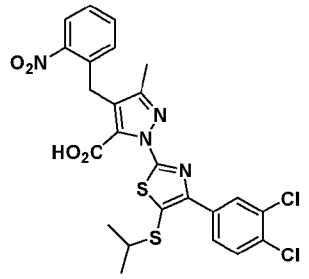
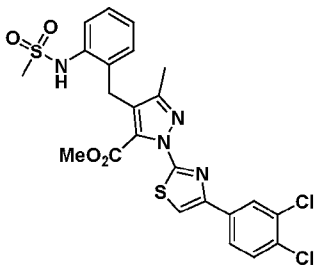
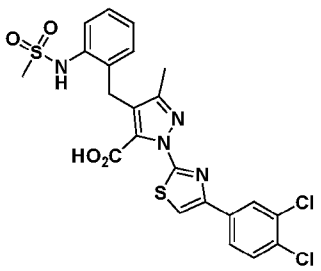
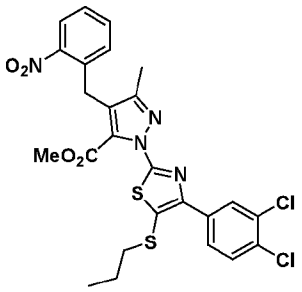
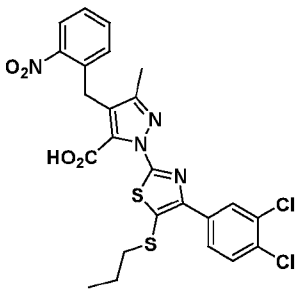
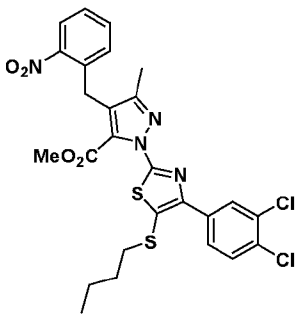
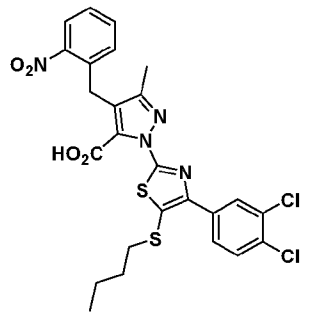
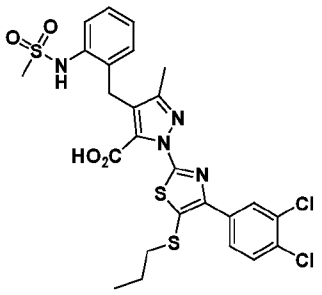
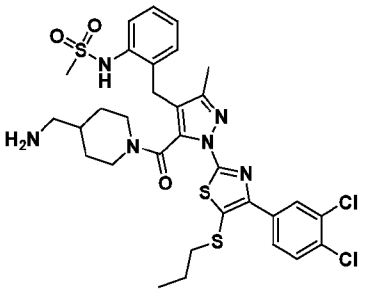
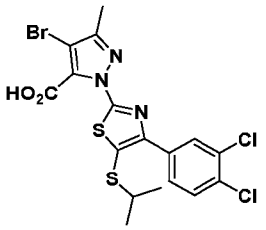
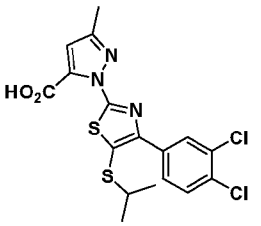
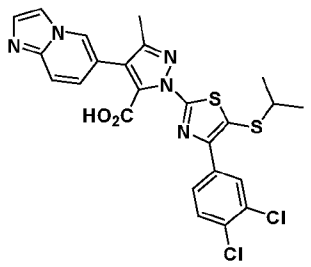
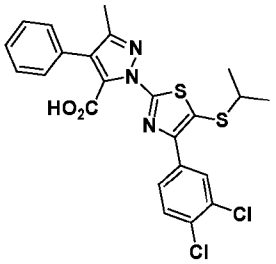
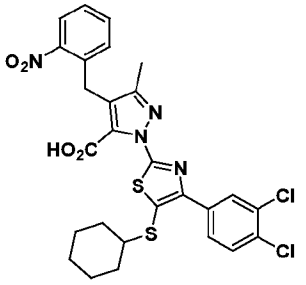
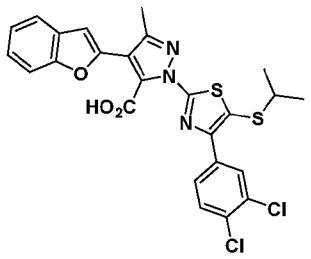
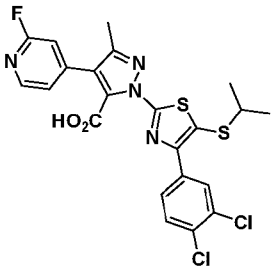
Ex.	Structure	Name	EC_{50}	Characterization
1		methyl 1-(4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate	H	^{1}H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.08 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.1, 1.1 Hz, 1H), 7.82 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.73 (d, *J* = 8.4 Hz, 1H), 7.69 (td, *J* = 7.6, 1.2 Hz, 1H), 7.57 – 7.51 (m, 1H), 7.33 (d, *J* = 7.5 Hz, 1H), 4.24 (s, 2H), 3.68 (s, 3H), 2.14 (s, 3H); MS (m/z): 503.12 $[M+1]^+$.
2		1-(4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	H	^{1}H NMR (500 MHz, DMSO) δ 8.20 (s, 1H), 8.13 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.1, 1.1 Hz, 1H), 7.89 (dd, *J* = 8.4, 2.1 Hz, 1H), 7.72 (d, *J* = 8.4 Hz, 1H), 7.65 (td, *J* = 7.7, 1.2 Hz, 1H), 7.50 (t, *J* = 7.2 Hz, 1H), 7.24 (d, *J* = 7.6 Hz, 1H), 4.24 (s, 2H), 2.06 (s, 3H); MS (m/z): 489.1 $[M+1]^+$
3		methyl 1-(4-(3,4-dichlorophenyl)-5-(ethylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate	G	^{1}H NMR (500 MHz, DMSO) δ 8.06 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.1, 1.3 Hz, 1H), 7.91 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.68 (td, *J* = 7.6, 1.3 Hz, 1H), 7.57 – 7.50 (m, 1H), 7.33 (d, *J* = 6.9 Hz, 1H), 4.23 (s, 2H), 3.64 (s, 3H), 2.97 (q, *J* = 7.3 Hz, 2H), 2.15 (s, 3H), 1.21 (t, *J* = 7.3 Hz, 3H); MS (m/z): 563.0 $[M+1]^+$
4		1-(4-(3,4-dichlorophenyl)-5-(ethylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	F	^{1}H NMR (500 MHz, DMSO) δ 8.11 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.1, 1.2 Hz, 1H), 7.94 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.64 (dt, *J* = 7.7, 3.8 Hz, 1H), 7.50 (t, *J* = 7.8 Hz, 1H), 7.23 (d, *J* = 7.8 Hz, 1H), 4.23 (s, 2H), 2.97 (q, *J* = 7.3 Hz, 2H), 2.06 (s, 3H), 1.21 (t, *J* = 7.3 Hz, 3H); MS (m/z): 549.1 $[M+1]^+$

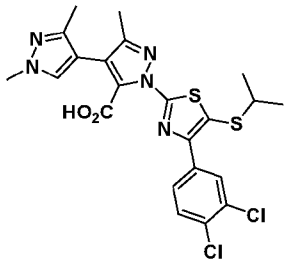
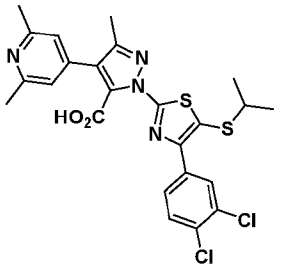
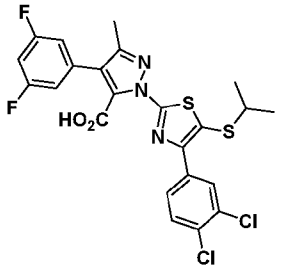
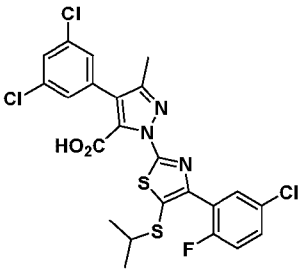
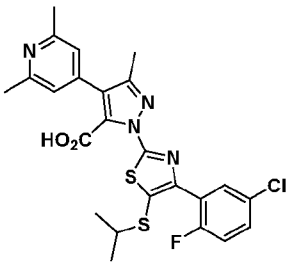
Ex.	Structure	Name	EC_{50}	Characterization
5		methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate	G	^{1}H NMR (500 MHz, DMSO) δ 8.10 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.2, 1.2 Hz, 1H), 7.96 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.72 – 7.64 (m, 1H), 7.54 (t, *J* = 7.2 Hz, 1H), 7.33 (d, *J* = 7.1 Hz, 1H), 4.23 (s, 2H), 3.64 (s, 3H), 3.38 – 3.34 (m, 1H), 2.15 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 577.1 $[M+1]^+$
6		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 8.16 (d, *J* = 2.1 Hz, 1H), 8.02 – 7.96 (m, 2H), 7.76 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.64 (t, *J* = 7.6 Hz, 1H), 7.50 (t, *J* = 7.2 Hz, 1H), 7.23 (d, *J* = 7.5 Hz, 1H), 4.23 (s, 2H), 3.37 – 3.34 (m, 1H), 2.06 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 563.09 $[M+1]^+$
7		methyl 1-(4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carboxylate	G	^{1}H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.10 (d, *J* = 2.0 Hz, 1H), 7.85 (dd, *J* = 8.4, 2.1 Hz, 1H), 7.75 (d, *J* = 8.4 Hz, 1H), 7.33 (dd, *J* = 7.9, 1.2 Hz, 1H), 7.24 (t, *J* = 6.9 Hz, 1H), 7.14 (t, *J* = 7.2 Hz, 1H), 6.93 (d, *J* = 6.7 Hz, 1H), 4.02 (s, 2H), 3.77 (s, 3H), 2.96 (s, 3H), 2.09 (s, 3H); MS (m/z): 551.1 $[M+1]^+$
8		1-(4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carboxylic acid	G	^{1}H NMR (500 MHz, DMSO) δ 14.01 (s, 1H), 9.41 (s, 1H), 8.20 (s, 1H), 8.15 (d, *J* = 2.0 Hz, 1H), 7.90 (dd, *J* = 8.4, 2.1 Hz, 1H), 7.73 (d, *J* = 8.4 Hz, 1H), 7.40 – 7.34 (m, 1H), 7.25 (td, *J* = 7.8, 1.4 Hz, 1H), 7.21 – 7.15 (m, 1H), 6.98 (s, 1H), 4.05 (s, 2H), 2.96 (s, 3H), 2.03 (s, 3H); MS (m/z): 537.1 $[M+1]^+$

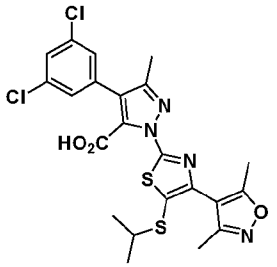
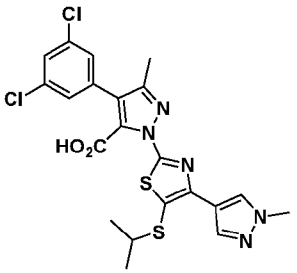
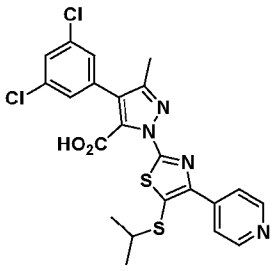
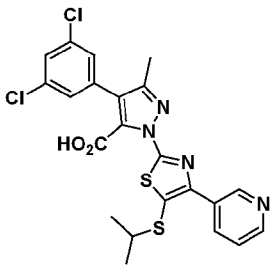
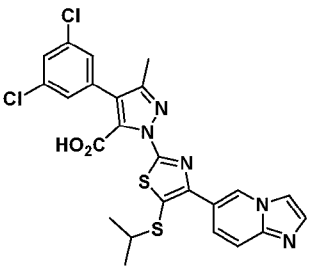
Ex.	Structure	Name	EC_{50}	Characterization
9		methyl 1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate	G	^{1}H NMR (500 MHz, $CDCl_3$) δ 8.14 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.2, 1.3 Hz, 1H), 7.92 (dd, *J* = 8.4, 2.1 Hz, 1H), 7.52 (td, *J* = 7.6, 1.3 Hz, 1H), 7.49 – 7.45 (m, 1H), 7.43 – 7.38 (m, 1H), 7.22 (d, *J* = 7.8 Hz, 1H), 4.28 (s, 2H), 3.75 (s, 3H), 2.81 (t, *J* = 10.0Hz, 2H), 2.18 (s, 3H), 1.63 (sex, *J* = 10.0Hz, 2H), 0.96 (t, *J* = 7.3 Hz, 3H); MS (m/z): 577.1 $[M+1]^+$
10		1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 8.13 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.1, 1.2 Hz, 1H), 7.93 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.64 (td, *J* = 7.6, 1.3 Hz, 1H), 7.54 – 7.48 (m, 1H), 7.23 (dd, *J* = 7.8, 0.7 Hz, 1H), 4.23 (s, 2H), 2.93 (t, *J* = 7.1 Hz, 2H), 2.06 (s, 3H), 1.61 – 1.50 (m, 2H), 0.90 (t, *J* = 7.3 Hz, 3H); MS (m/z): 563.1 $[M+1]^+$
11		methyl 1-(5-(butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate	G	^{1}H NMR (500 MHz, DMSO) δ 8.07 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.2, 1.3 Hz, 1H), 7.90 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.68 (td, *J* = 7.6, 1.4 Hz, 1H), 7.57 – 7.51 (m, 1H), 7.33 (dd, *J* = 7.8, 1.0 Hz, 1H), 4.23 (s, 2H), 3.64 (s, 3H), 2.95 (t, *J* = 7.2 Hz, 2H), 2.15 (s, 3H), 1.51 (dt, *J* = 14.7, 7.3 Hz, 2H), 1.31 (dq, *J* = 14.5, 7.4 Hz, 2H), 0.80 (t, *J* = 7.4 Hz, 3H); MS (m/z): 591.1 $[M+1]^+$

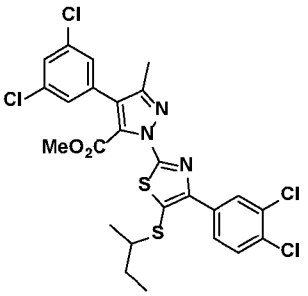
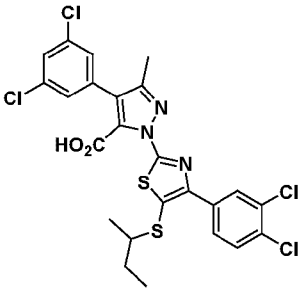
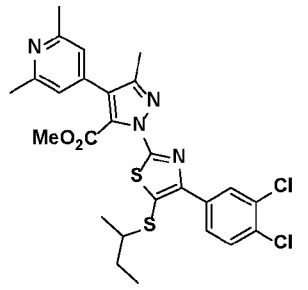
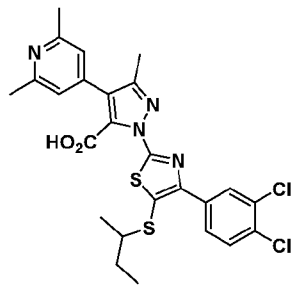
Ex.	Structure	Name	EC_{50}	Characterization
12		1-(5-(butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	G	^{1}H NMR (500 MHz, $CDCl_3$) δ 8.04 (d, *J* = 1.7 Hz, 1H), 7.97 (d, *J* = 7.9 Hz, 1H), 7.68 (dd, *J* = 8.6, 1.6 Hz, 1H), 7.55 (d, *J* = 8.3 Hz, 1H), 7.44 (t, *J* = 8.1 Hz, 1H), 7.36 (t, *J* = 7.6 Hz, 1H), 7.05 (d, *J* = 7.7 Hz, 1H), 4.66 (s, 2H), 2.87 (t, *J* = 7.3 Hz, 2H), 2.17 (s, 3H), 1.60 (dt, *J* = 14.9, 7.5 Hz, 2H), 1.39 (dq, *J* = 14.5, 7.3 Hz, 2H), 0.88 (t, *J* = 7.4 Hz, 3H); MS (m/z): 577.2 $[M+1]^+$
13		1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 14.06 (s, 1H), 9.29 (s, 1H), 8.15 (d, *J* = 2.1 Hz, 1H), 7.95 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.78 (d, *J* = 8.5 Hz, 1H), 7.36 (d, *J* = 7.8 Hz, 1H), 7.25 (t, *J* = 7.6 Hz, 1H), 7.18 (t, *J* = 7.5 Hz, 1H), 6.90 (d, *J* = 7.3 Hz, 1H), 4.05 (s, 2H), 3.01 (s, 3H), 2.94 (t, *J* = 7.1 Hz, 2H), 2.02 (s, 3H), 1.62 – 1.52 (m, 2H), 0.90 (t, *J* = 7.3 Hz, 3H); MS (m/z): 613.1 $[M+1]^+$

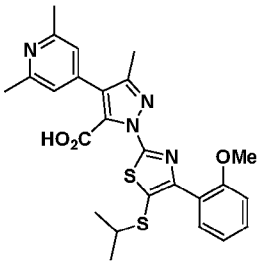
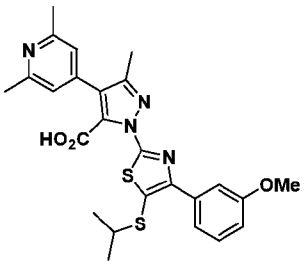
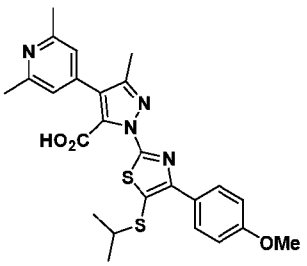
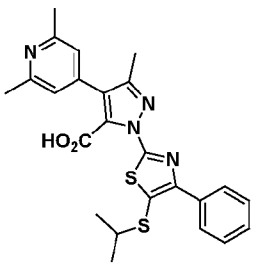
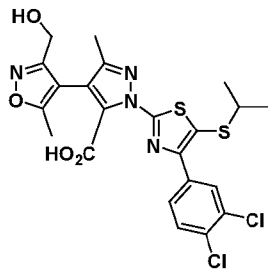
Ex.	Structure	Name	EC_{50}	Characterization
14		N-(2-((5-(4-(aminomethyl)piperidine-1-carbonyl)-1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-4-yl)methyl)phenyl)methanesulfonamide	D	^{1}H NMR Mixture of 2 rotamers 1:1 (500 MHz, MeOD) δ 8.55 (s, 3H), 8.16 (d, *J* = 2.1 Hz, 1H), 8.11 (d, *J* = 2.0 Hz, 1H), 8.05 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.95 (dd, *J* = 8.4, 2.1 Hz, 1H), 7.64 – 7.57 (m, 2H), 7.39 – 7.32 (m, 2H), 7.31 – 7.19 (m, 4H), 7.19 – 7.09 (m, 2H), 4.64 (d, *J* = 13.2 Hz, 2H), 4.53 (d, *J* = 13.4 Hz, 2H), 4.03 (s, 2H), 3.98 (s, 2H), 3.49 – 3.41 (m, 1H), 3.40 – 3.34 (m, 1H), 3.02 (s, 3H), 3.00 (s, 3H), 2.95 – 2.79 (m, 4H), 2.79 – 2.72 (m, 1H), 2.58 (dd, *J* = 36.5, 24.3 Hz, 4H), 2.25 (d, *J* = 4.2 Hz, 3H), 2.20 (s, 3H), 2.03 (s, 1H), 1.81 (d, *J* = 11.8 Hz, 1H), 1.68 – 1.52 (m, 4H), 1.46 (t, *J* = 15.3 Hz, 3H), 1.29 (s, 1H), 1.12 (d, *J* = 12.7 Hz, 1H), 1.00 – 0.91 (m, 6H), 0.84 – 0.59 (m, 2H); MS (m/z): 709.0 $[M+1]^+$
15		4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 2.25 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H). Note: isopropyl CH is overlapping with water signal; MS (m/z): 505.7 $[M+H]^+$
16		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	F	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.81 (d, *J* = 8.5 Hz, 1H), 6.91 (s, 1H), 3.39 (sept, *J* = 6.7 Hz, 1H), 2.33 (s, 3H), 1.27 (d, *J* = 6.7 Hz, 6H); MS (m/z): 426.0 $[M-H]^-$

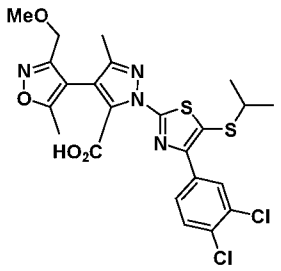
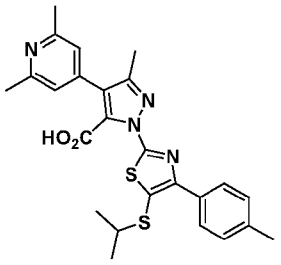
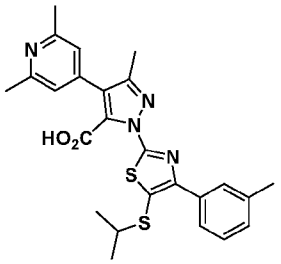
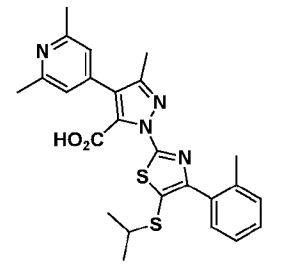
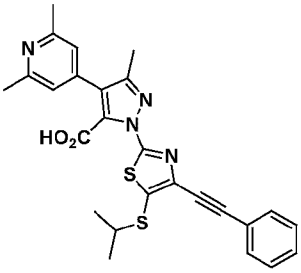
Ex.	Structure	Name	EC_{50}	Characterization
17		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(imidazo[1,2-a]pyridin-6-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.70 (s, 1H), 8.21 (d, *J* = 2.1 Hz, 1H), 8.06 – 7.99 (m, 2H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.64 (d, *J* = 9.5 Hz, 2H), 7.34 (d, *J* = 9.0 Hz, 1H), 3.42 – 3.29 (m, 1H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 544.0 $[M+1]^+$
18		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-phenyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.23 (d, *J* = 2.0 Hz, 1H), 8.04 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.55 – 7.29 (m, 5H), 7.12 (br s, 1H), 3.42 – 3.29 (m, 1H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 5H); MS (m/z): 504.5 $[M+1]^+$
19		1-(5-(cyclohexylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.16 (d, *J* = 2.1 Hz, 1H), 8.03 – 7.95 (m, 2H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.64 (dd, *J* = 11.4, 3.8 Hz, 1H), 7.51 (t, *J* = 7.7 Hz, 1H), 7.22 (d, *J* = 7.5 Hz, 1H), 4.24 (s, 2H), 3.17 – 3.09 (m, 1H), 2.07 (s, 3H), 1.95 – 1.81 (m, 2H), 1.65 (dd, *J* = 9.2, 3.8 Hz, 2H), 1.50 (dd, *J* = 7.6, 3.1 Hz, 1H), 1.38 – 1.10 (m, 5H); MS (m/z): 603.5 $[M+1]^+$
20		4-(benzofuran-2-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.25 (d, *J* = 1.9 Hz, 1H), 8.06 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.82 – 7.73 (m, 1H), 7.68 (d, *J* = 7.2 Hz, 1H), 7.56 (d, *J* = 8.3 Hz, 1H), 7.30 (dt, *J* = 22.9, 7.2 Hz, 2H), 7.17 (s, 1H), 3.42 – 3.29 (m, 1H), 2.54 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 544.0 $[M+1]^+$
21		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-fluoropyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.28 (s, 1H), 8.22 (d, *J* = 5.5 Hz, 1H), 8.09 (dd, *J* = 8.4, 1.6 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.58 (d, *J* = 5.4 Hz, 1H), 7.41 (s, 1H), 2.37 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 523.0 $[M+1]^+$

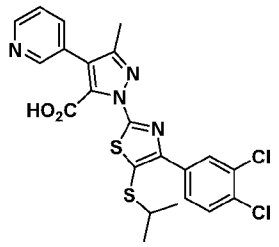
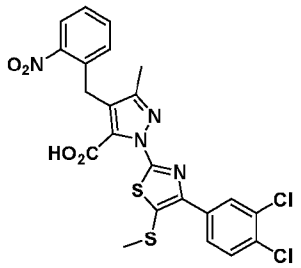
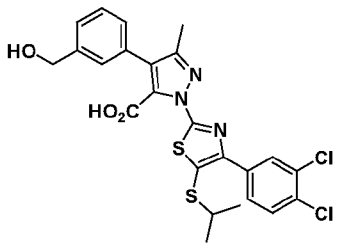
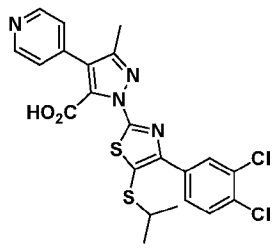
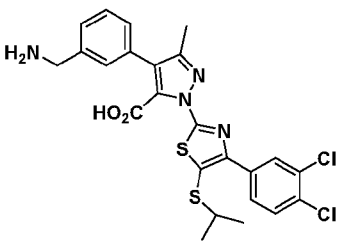
Ex.	Structure	Name	EC_{50}	Characterization
22		2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2',5,5'-trimethyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.0 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.66 (s, 1H), 3.79 (s, 3H), 2.14 (s, 3H), 2.06 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 522.2 $[M+1]^+$
23		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.16 (s, 2H), 2.47 (s, 6H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 533.0 $[M+1]^+$
24		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3,5-difluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.33 – 7.20 (m, *J* = 19.2, 8.0 Hz, 3H), 3.42 – 3.29 (m, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 541.9 $[M+1]^+$
25		1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3,5-dichlorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.66 – 7.49 (m, 5H), 7.42 (t, *J* = 9.1 Hz, 2H), 3.42 – 3.29 (m, 1H), 2.30 (s, 3H), 1.16 (d, *J* = 6.7 Hz, 6H); MS (m/z): 558.0 $[M+1]^+$
26		1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 14.26 (s, 1H), 7.60 (ddd, *J* = 8.8, 4.3, 2.8 Hz, 1H), 7.54 (dd, *J* = 6.1, 2.7 Hz, 1H), 7.42 (t, *J* = 9.1 Hz, 1H), 7.13 (s, 2H), 3.28 – 3.19 (m, *J* = 13.3, 6.6 Hz, 2H), 2.45 (s, 6H), 2.32 (s, 3H), 1.16 (d, *J* = 6.7 Hz, 6H); MS (m/z): 517.1 $[M+1]^+$

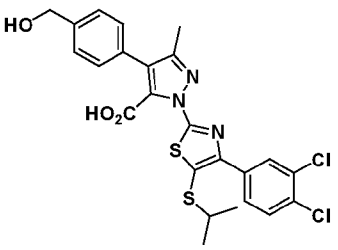
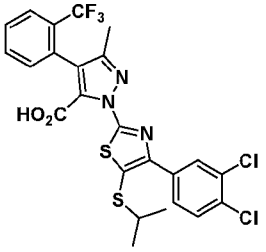
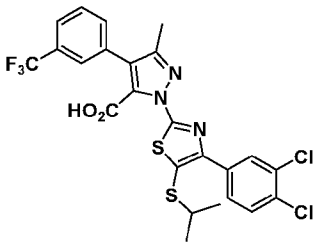
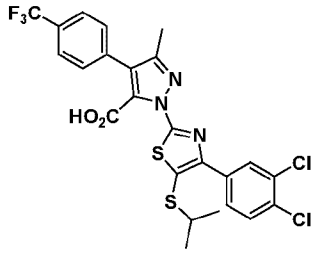
Ex.	Structure	Name	EC_{50}	Characterization
27		4-(3,5-dichlorophenyl)-1-(4-(3,5-dimethylisoxazol-4-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 14.33 (s, 1H), 7.64 (s, 1H), 7.53 (s, 2H), 3.27 – 3.16 (m, *J* = 13.1, 6.4 Hz, 1H), 2.38 (s, 3H), 2.31 (s, 3H), 2.19 (s, 3H), 1.14 (d, *J* = 6.7 Hz, 6H); MS (m/z): 524.9 $[M+1]^+$.
28		4-(3,5-dichlorophenyl)-1-(5-(isopropylthio)-4-(1-methyl-1H-pyrazol-4-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 14.36 (s, 1H), 8.28 (s, 1H), 7.98 (s, 1H), 7.65 (s,1H), 7.54 (d, *J* = 1.4 Hz, 2H), 3.90 (s, 3H), 3.42 – 3.29 (m, 1H), 2.30 (s, 3H), 1.28 (d, *J* = 6.7 Hz, 6H); MS (m/z): 508.4 $[M+1]^+$
29		4-(3,5-dichlorophenyl)-1-(5-(isopropylthio)-4-(pyridin-4-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 8.68 (d, *J* = 6.1 Hz, 2H), 8.03 (d, *J* = 6.1 Hz, 2H), 7.63 (d, *J* = 1.6 Hz, 2H), 7.52 (s, 1H), 3.42 – 3.29 (m, 1H), 2.30 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 505.0 $[M+1]^+$
30		4-(3,5-dichlorophenyl)-1-(5-(isopropylthio)-4-(pyridin-3-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 9.14 (d, *J* = 1.7 Hz, 1H), 8.61 (dd, *J* = 4.8, 1.6 Hz, 1H), 8.43 – 8.32 (m, 1H), 7.65 (s, 1H), 7.59 – 7.47 (m, 3H), 3.42 – 3.29 (m, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 505.0 $[M+1]^+$
31		4-(3,5-dichlorophenyl)-1-(4-(imidazo[1,2-a]pyridin-6-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 9.11 (s, 1H), 8.07 (s, 1H), 7.90 (d, *J* = 9.4 Hz, 1H), 7.68 – 7.52 (m, 5H), 3.42 – 3.29 (m, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 505.0 $[M+1]^+$

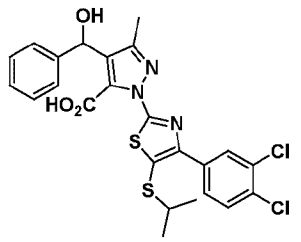
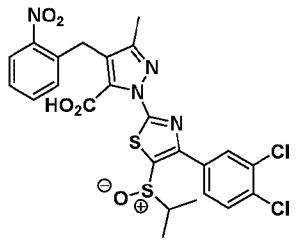
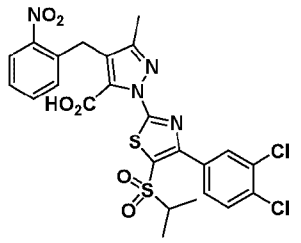
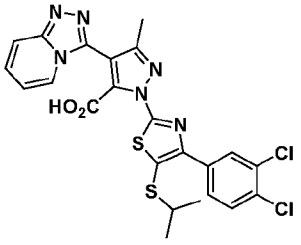
Ex.	Structure	Name	EC_{50}	Characterization
32a		methyl 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(3,5-dichlorophenyl)-3-methyl-1H-pyrazole-5-carboxylate	J	^{1}H NMR (500 MHz, DMSO) δ 8.16 (d, *J* = 2.1 Hz, 1H), 7.98 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.82 (d, *J* = 8.5 Hz, 1H), 7.72 (t, *J* = 1.9 Hz, 1H), 7.51 (d, *J* = 1.9 Hz, 1H), 3.82 (s, 3H), 3.22 – 3.14 (m, 1H), 2.34 (s, 3H), 1.63 – 1.45 (m, 2H), 1.22 (d, *J* = 6.8 Hz, 3H), 0.91 (t, *J* = 7.3 Hz, 3H); MS (m/z): 602.0 $[M+1]^+$
32b		1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(3,5-dichlorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.23 (d, *J* = 1.9 Hz, 1H), 8.01 (dd, *J* = 8.5, 1.8 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.65 (s, 1H), 7.59 – 7.52 (m, *J* = 7.3 Hz, 2H), 3.21 – 3.09 (m, 1H), 2.31 (s, 3H), 1.64 – 1.44 (m, 2H), 1.21 (d, *J* = 6.7 Hz, 3H), 0.90 (t, *J* = 7.4 Hz, 3H); MS (m/z): 588.0 $[M+1]^+$
33a		methyl 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate	J	^{1}H NMR (500 MHz, DMSO) δ 8.15 (d, *J* = 2.1 Hz, 1H), 7.98 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.81 (d, *J* = 8.5 Hz, 1H), 7.07 (s, 2H), 3.84 (s, 3H), 3.23 – 3.11 (m, 1H), 2.47 (s, 5H), 2.36 (s, 3H), 1.61 – 1.47 (m, 2H), 1.22 (d, *J* = 6.8 Hz, 3H), 0.90 (t, *J* = 7.4 Hz, 3H). MS (m/z): MH+ = 563.0 $[M+1]^+$
33b		1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.15 (s, 2H), 3.21 – 3.12 (m, *J* = 13.2, 6.6 Hz, 1H), 2.47 (s, 6H), 2.33 (s, 3H), 1.63 – 1.43 (m, 2H), 1.21 (d, *J* = 6.8 Hz, 3H), 0.90 (t, *J* = 7.4 Hz, 3H); MS (m/z): 547.1 $[M+1]^+$

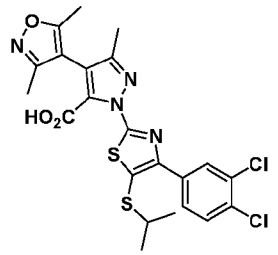
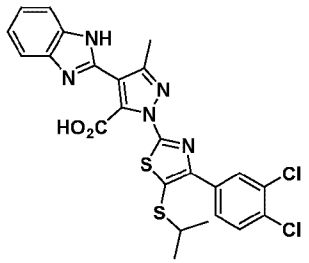
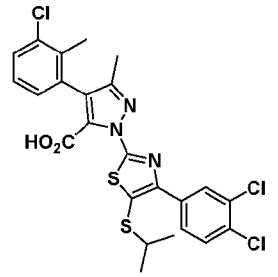
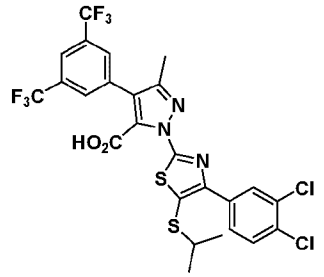
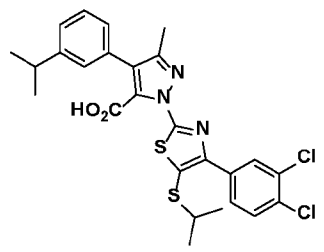
Ex.	Structure	Name	EC_{50}	Characterization
34		4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(2-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 7.45 – 7.39 (m, 1H), 7.26 (dd, *J* = 7.5, 1.7 Hz, 1H), 7.13 – 7.08 (m, 2H), 7.05 – 6.98 (m, 1H), 3.75 (s, 3H), 3.24 – 3.10 (m, 1H), 2.45 (s, 6H), 2.31 (s, 3H), 1.14 (d, *J* = 6.7 Hz, 6H); MS (m/z): 495.1 $[M+1]^+$
35		4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.04 – 7.92 (m, 1H), 7.14 (s, 1H), 7.05 – 6.97 (m, 1H), 3.82 (s, 1H), 3.32 – 3.19 (m, 7H), 2.46 (s, 2H), 2.32 (s, 1H), 1.23 (d, *J* = 6.7 Hz, 2H); MS (m/z): 495.2 $[M+1]^+$
36		4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(4-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 7.66 – 7.58 (m, 1H), 7.39 (t, *J* = 8.0 Hz, 1H), 7.15 (s, 2H), 6.99 (dd, *J* = 7.4, 2.6 Hz, 1H), 3.81 (s, 3H), 3.38 – 3.31 (m, 1H), 2.46 (s, 6H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 495.2 $[M+1]^+$
37		4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.03 – 7.94 (m, 2H), 7.52 – 7.45 (m, 2H), 7.45 – 7.39 (m, *J* = 9.5, 4.3 Hz, 1H), 7.14 (s, 2H), 3.40 – 3.30 (m, 1H), 2.47 (s, 6H), 2.33 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 465.2 $[M+1]^+$
38		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-(hydroxymethyl)-5-methylisoxazol-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	H	^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.1 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 4.36 (s, 2H), 3.42 – 3.29 (m, 1H), 2.28 (s, 3H), 2.10 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 539.3 $[M+1]^+$

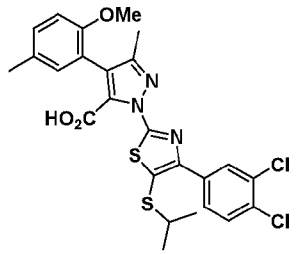
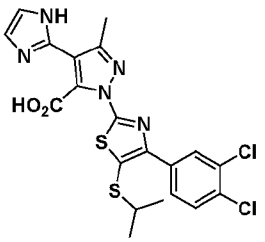
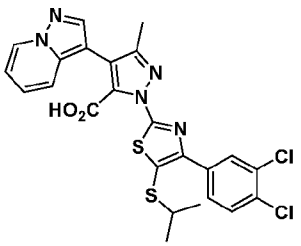
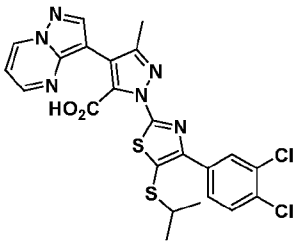
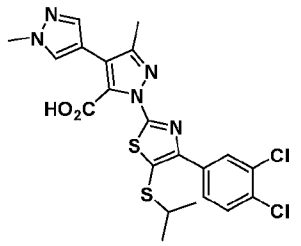
Ex.	Structure	Name	EC_{50}	Characterization
39		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-(methoxymethyl)-5-methylisoxazol-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 4.42 (d, *J* = 12.6 Hz, 1H), 4.35 (d, *J* = 12.7 Hz, 1H), 3.42 – 3.29 (m, 1H), 3.15 (s, 3H), 2.30 (s, 3H), 2.11 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 553.3 $[M+1]^+$
40		4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-p-tolylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.91 (d, *J* = 8.2 Hz, 2H), 7.28 (d, *J* = 8.0 Hz, 2H), 7.14 (s, 1H), 3.36 – 3.26 (m, 1H), 2.46 (s, 6H), 2.36 (s, 3H), 2.33 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 479.1 $[M+1]^+$.
41		4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-m-tolylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 7.80 (d, *J* = 6.3 Hz, 2H), 7.40 – 7.32 (m, 1H), 7.23 (d, *J* = 7.6 Hz, 1H), 7.16 (s, 2H), 3.38 – 3.25 (m, 1H), 2.45 (s, 6H), 2.37 (s, 3H), 2.32 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 479.2 $[M+1]^+$
42		4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-o-tolylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, Acetone) δ 7.40 – 7.22 (m, 5H), 7.14 (s, 2H), 2.47 (s, 6H), 2.34 (s, 3H), 2.27 (s, 3H), 2.08 – 2.06 (m, 1H), 1.19 (d, *J* = 6.7 Hz, 6H); MS (m/z): 479.2 $[M+1]^+$.
43		4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(phenylethynyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, MeOD) δ 7.57 – 7.49 (m, 2H), 7.42 – 7.38 (m, 3H), 7.36 (s, 2H), 3.49 – 3.39 (m, 1H), 2.55 (s, 6H), 2.38 (s, 3H), 1.38 (d, *J* = 6.7 Hz, 6H); MS (m/z): 489.3 $[M+1]^+$

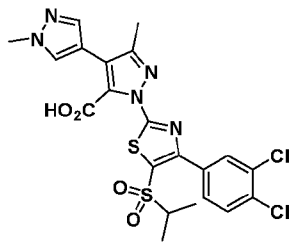
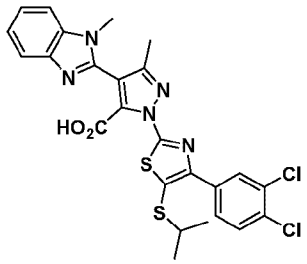
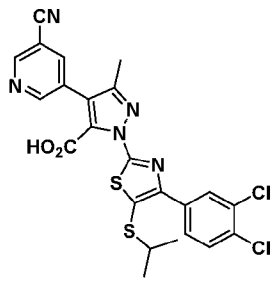
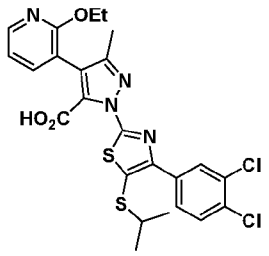
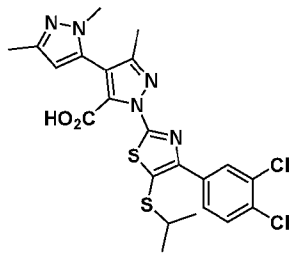
Ex.	Structure	Name	EC_{50}	Characterization
44		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(pyridin-3-yl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.71-8.68 (m, 1H), 8.58-8.54 (m, 1H), 8.23-8.20 (m, 1H), 8.03 (d, *J* = 8.1 Hz, 1H), 7.92 (d, *J* = 7.8 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.50-7.46 (m, 1H), 2.51 (m, 1H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 505.0 $[M+H]^+$.
45		1-(4-(3,4-dichlorophenyl)-5-(methylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 8.06 (d, *J* = 2.1 Hz, 1H), 8.00 (dd, *J* = 8.1, 1.3 Hz, 1H), 7.88 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.65 (td, *J* = 7.6, 1.3 Hz, 1H), 7.54 – 7.49 (m, 1H), 7.22 (d, *J* = 6.8 Hz, 1H), 4.25 (s, 2H), 2.60 (s, 3H), 2.07 (s, 3H); MS (m/z): 533.0 $[M+H]^+$
46		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-(hydroxymethyl)phenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.21 (s, 1H), 8.03 (d, *J* = 9.8 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.44-7.39 (m, 2H), 7.36-7.31 (m, 2H), 5.25 (s (br), 1H), 4.54 (d, *J* = 5.3 Hz, 2H), 2.53-2.50 (m, 1H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 533.9 $[M+H]^+$
47		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(pyridin-4-yl)-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.65-8.58 (m, 2H), 8.23 (s, 1H), 8.04 (d, *J* = 8.2 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.57-7.50 (m, 2H), 2.53-2.50 (m, 1H), 2.35 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 504.9 $[M+H]^+$
48		4-(3-(aminomethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 8.30 (d, *J* = 2.1 Hz, 1H), 8.18 (s, 1H), 8.12 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.62 – 7.59 (m, 2H), 7.41 (t, *J* = 7.7, 1H), 7.34 (d, *J* = 7.7 Hz, 1H), 3.99 (s, 2H), 2.51 (hept, *J* = 6.7 Hz, 1H), 2.28 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 533.1 $[M+H]^+$

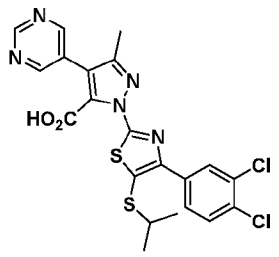
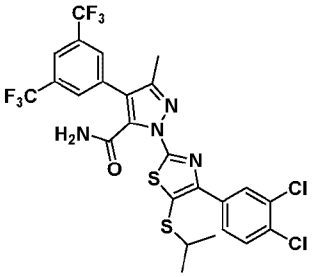
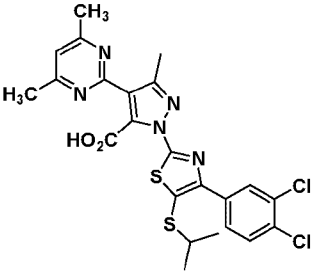
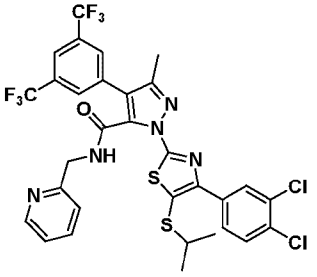
Ex.	Structure	Name	EC_{50}	Characterization
49		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(4-(hydroxymethyl)phenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	H	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.6, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.42-7.40 (m, 4H), 5.23 (t, *J* = 5.7 Hz, 1H), 4.54 (d, *J* = 5.7 Hz, 2H), 2.51 (hept, *J* = 6.7 Hz, 1H) 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 534.2 $[M+H]^+$
50		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-(trifluoromethyl)phenyl)-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.16 (d, *J* = 2.1 Hz, 1H), 7.98 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.86 (d, *J* = 7.8 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.76 (t, *J* = 7.7 Hz, 1H), 7.66 (t, *J* = 7.7 Hz, 1H), 7.45 (d, *J* = 7.6 Hz, 1H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.01 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 3H), 1.24 (d, *J* = 6.7 Hz, 3H); MS (m/z): 571.9 $[M+H]^+$
51		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-(trifluoromethyl)phenyl)-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 2.0 Hz, 1H), 8.03 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.84 (s, 1H), 7.80 (d, *J* = 7.5 Hz, 1H), 7.78-7.74 (m, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.71 (t, *J* = 7.5 Hz, 1H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 571.8 $[M+H]^+$
52		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(4-(trifluoromethyl)phenyl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.0 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.83 (d, *J* = 8.0 Hz, 2H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.71 (d, *J* = 8.0 Hz, 2H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 571.8 $[M+H]^+$

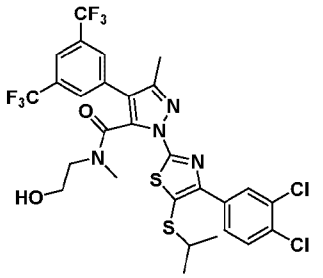
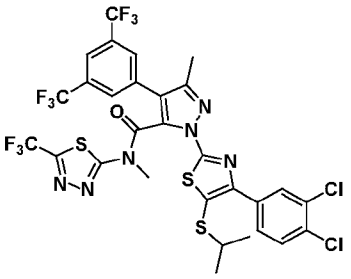
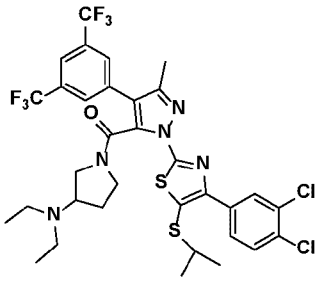
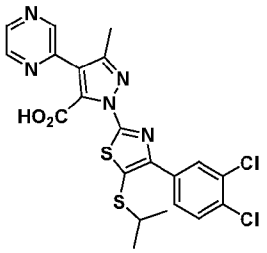
Ex.	Structure	Name	EC_{50}	Characterization
53		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(hydroxy(phenyl)methyl)-3-methyl-1H-pyrazole-5-carboxylic acid	H	^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.41 (d, *J* = 7.1 Hz, 2H), 7.28 (t, *J* = 7.7 Hz, 2H), 7.18 (d, *J* = 7.5 Hz, 1H), 5.67-5.63 (m, 1H), 2.51 (hept, 1H, *J* = 7.1 Hz), 2.11 (s, 3H), 1.22 (d, *J* = 7.1 Hz, 6H); MS (m/z): 533.8 $[M+H]^+$
54		1-(4-(3,4-dichlorophenyl)-5-(isopropylsulfinyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 7.98 (d, *J* = 8.0 Hz, 1H), 7.92 (d, *J* = 1.7 Hz, 1H), 7.80 (d, *J* = 8.4 Hz, 1H), 7.70 (dd, *J* = 6.7, 1.7 Hz, 1H), 7.63 (t, *J* = 7.1 Hz, 1H), 7.49 (t, *J* = 7.9 Hz, 1H), 7.26 (d, *J* = 8.0 Hz, 1H), 4.21 (s, 2H), 3.29 (hept, *J* = 6.7 Hz, 1H), 2.04 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 3H), 1.17 (d, *J* = 6.7 Hz, 3H); MS (m/z): 579.0 $[M+H]^+$
55		1-(4-(3,4-dichlorophenyl)-5-(isopropylsulfonyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.02 (t, *J* = 1.2 Hz, 1H), 7.99 (d, *J* = 8.2 Hz, 1H), 7.79 (d, *J* = 1.1 Hz, 2H), 7.63 (t, *J* = 7.0 Hz, 1H), 7.49 (t, *J* = 7.5 Hz, 1H), 7.24 (d, *J* = 6.9 Hz, 1H), 4.21 (s, 2H), 3.38 (hept, *J* = 6.8 Hz, 1H), 2.05 (s, 3H), 1.17 (d, *J* = 6.8 Hz, 6H); MS (m/z): 595.0 $[M+H]^+$
56		4-([1,2,4]triazolo[4,3-a]pyridin-3-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	H	^{1}H NMR (500 MHz, DMSO) δ 8.34 (d, *J* = 7.0 Hz, 1H), 8.19 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.86 (d, *J* = 9.3 Hz, 1H), 7.78 (d, *J* = 8.5 Hz, 1H), 7.45 (dd, *J* = 9.3, 6.9 Hz, 1H), 7.01 (t, *J* = 6.9 Hz, 1H), 3.39 (hept, *J* = 6.7 Hz, 1H), 2.25 (s, 2H), 1.26 (d, *J* = 6.7 Hz, 6H); MS (m/z): 545.0 $[M+H]^+$

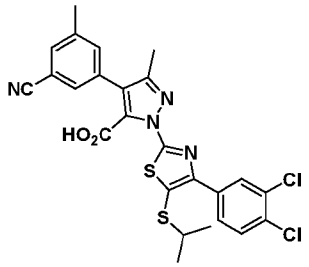
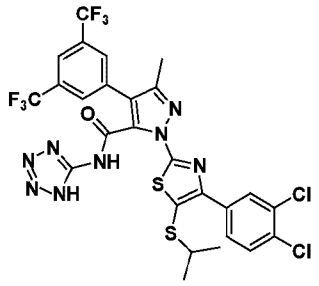
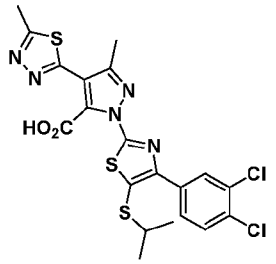
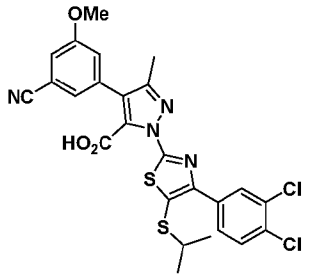
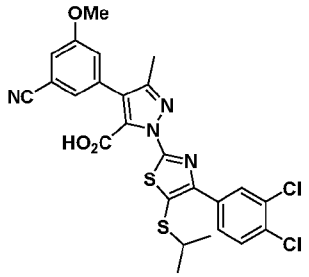
Ex.	Structure	Name	EC_{50}	Characterization
57		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3,5-dimethylisoxazol-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.0 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 2.51 (hept, *J* = 6.7 Hz, 1H), 2.28 (s, 3H), 2.12 (s, 3H), 2.09 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 523.0 $[M+H]^+$
58		4-(1H-benzo[d]imidazol-2-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.79 (d, *J* = 8.5 Hz, 1H), 7.68-7.64 (m, 2H), 7.28-7.24 (m, 2H), 3.42-3.29 (m, 1H), 2.60 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H).; MS (m/z): 544.1 $[M+H]^+$
59		4-(3-chloro-2-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 1.9 Hz, 1H), 7.99 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.49 (d, *J* = 8.2 Hz, 1H), 7.28 (t, *J* = 7.8 Hz, 1H), 7.18 (d, *J* = 6.7 Hz, 1H),3.42-3.29 (m, 1H), 2.17 (s, 3H), 2.06 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H).; MS (m/z): 551.9 $[M+H]^+$
60		4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.19-8.16 (m, 4H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 3.42-3.29 (m, 1H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 639.9 $[M+H]^+$
61		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-isopropylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 1.9 Hz, 1H), 8.03 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.39-7.34 (m, 2H), 7.30-7.24 (m, 2H),3.42-3.29 (m, 1H), 2.92 (hept, *J* = 6.8 Hz, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.8 Hz, 6H), 1.23 (d, *J* = 6.8 Hz, 3H); MS (m/z): 546.0 $[M+H]^+$

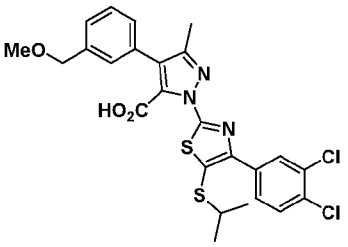
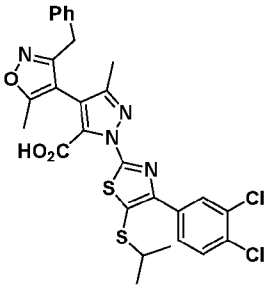
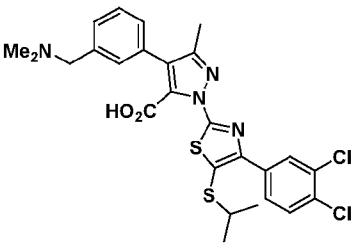
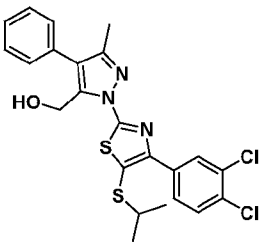
Ex.	Structure	Name	EC_{50}	Characterization
62		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-methoxy-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.02 (d, *J* = 8.5 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.17 (d, J = 8.3 Hz 1H), 7.09 (s, 1H), 6.98 (d, *J* = 8.3 Hz, 1H), 3.71 (s, 3H), 3.42-3.29 (m, 1H), 2.26 (s, 3H), 2.12 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 548.1 $[M+H]^+$
63		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(1H-imidazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.6, 2.1 Hz, 1H), 7.78 (d, *J* = 8.4 Hz, 1H), 7.32-7.28 (m, 2H),3.42-3.29 (m, 1H), 2.55 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H).; MS (m/z): 493.9 $[M+H]^+$
64		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(pyrazolo[1,5-a]pyridin-3-yl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.73 (d, *J* = 7.0 Hz, 1H), 8.21 (s, 1H), 8.12 (s, 1H), 8.03 (d, *J* = 8.5 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.66-7.61 (m, 1H), 7.28 (t, *J* = 7.2 Hz, 1H), 6.96 (t, *J* = 6.8 Hz, 1H),3.42-3.29 (m, 1H), 2.24 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H).; MS (m/z): 544.0 $[M+H]^+$
65		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(pyrazolo[1,5-a]pyrimidin-3-yl)-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 9.18 (d, *J* = 7.0 Hz, 1H), 8.62 (d, *J* = 2.4 Hz, 1H), 8.37 (s, 1H), 8.20 (s, 1H), 8.03 (d, *J* = 8.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.12 (dd, *J* = 7.0, 4.0 Hz, 1H),3.42-3.29 (m, 1H), 2.33 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H).; MS (m/z): 545.0 $[M+H]^+$
66		2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2',5-dimethyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.96 (s, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.65 (s, 1H), 3.89 (s, 3H), 3.40 – 3.32 (m, 1H), 2.35 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 507.9 $[M+1]^+$

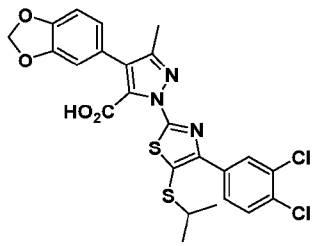
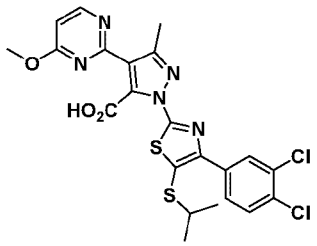
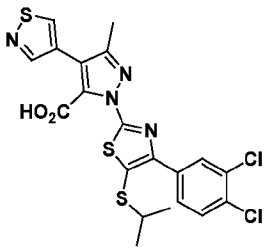
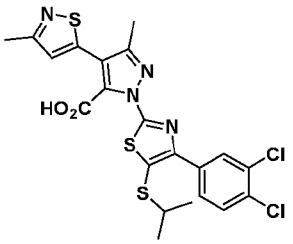
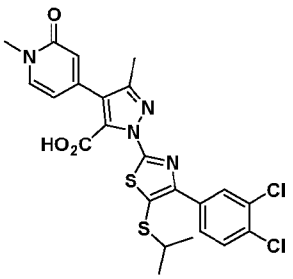
Ex.	Structure	Name	EC_{50}	Characterization
67		2-(4-(3,4-dichlorophenyl)-5-(isopropylsulfonyl)thiazol-2-yl)-2',5-dimethyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 8.04 (s, 1H), 7.97 (s, 1H), 7.84 – 7.77 (m, 2H), 7.67 (s, 1H), 3.88 (s, 3H),3.42-3.29 (m, 1H), 2.36 (s, 3H), 1.17 (d, *J* = 6.8 Hz, 6H).; MS (m/z): 539.9 $[M+H]^+$
68		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(1-methyl-1H-benzo[d]imidazol-2-yl)-1H-pyrazole-5-carboxylic acid	H	^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.0 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.70 (d, *J* = 7.9 Hz, 1H), 7.63 (d, *J* = 8.1 Hz, 1H), 7.33 (t, *J* = 7.6 Hz, 1H), 7.28 (t, *J* = 7.5 Hz, 1H), 3.73 (s, 3H), 3.33 (1H, below water signal), 2.27 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 558.0 $[M+H]^+$
69		4-(5-cyanopyridin-3-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.97 (d, *J* = 1.7 Hz, 1H), 8.89 (d, *J* = 2.1 Hz, 1H), 8.41 (t, *J* = 2.0 Hz, 1H), 8.12 (d, *J* = 2.0 Hz, 1H), 7.94 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.70 (d, *J* = 8.5 Hz, 1H), 3.33 (1H, below water signal), 2.26 (s, 3H), 1.17 (d, *J* = 6.7 Hz, 6H); MS (m/z): 530.0 $[M+H]^+$
70		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-ethoxypyridin-3-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.21 – 8.16 (m, 2H), 8.00 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.73 (dd, *J* = 7.3, 1.7 Hz, 1H), 7.07 (dd, *J* = 7.3, 5.0 Hz, 1H), 4.33 (q, *J* = 7.0 Hz, 2H), 3.33 (1H, below water signal), 2.19 (s, 3H), 1.28 (t, *J* = 7.0 Hz, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 549.0 $[M+H]^+$
71		2'-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2,5,5'-trimethyl-3,4'-bi(2H-pyrazole)-3'-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.04-7.98 (m, 1H), 7.78 (d, *J* = 8.6 Hz, 1H), 6.11 (s, 1H), 3.61 (s, 3H), 3.35 (hept, J = 6.6 Hz, 1H), 2.18 (s, 3H), 2.15 (s, 3H), 1.24 (d, *J* = 6.6 Hz, 6H); MS (m/z): 522.0 $[M+H]^+$

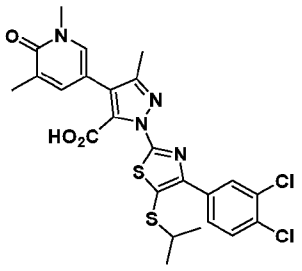
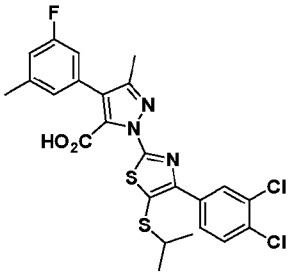
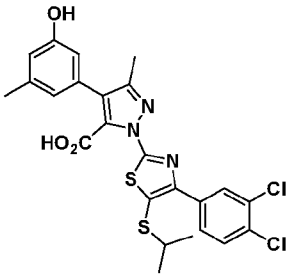
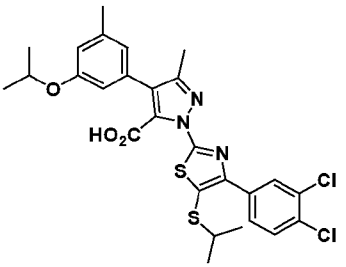
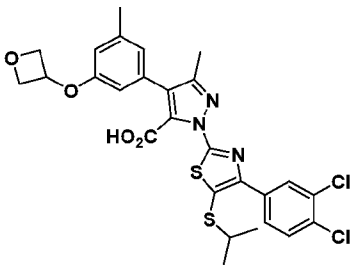
Ex.	Structure	Name	EC_{50}	Characterization
72		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(pyrimidin-5-yl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 9.13 (s, 1H), 8.98 (s, 2H), 8.24 (d, *J* = 2.0 Hz, 1H), 8.05 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 3.34 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 505.9 $[M+H]^+$.
73		4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxamide	I	^{1}H NMR (500 MHz, DMSO) δ 8.39 (s, 1H), 8.24 (d, *J* = 2.1 Hz, 1H), 8.19 (s, 1H), 8.17 (s (br), 2H), 8.04 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 3.38 (hept, *J* = 6.7 Hz, 1H), 2.36 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 639.2 $[M+H]^+$
74		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(4,6-dimethylpyrimidin-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 8.32 (d, *J* = 1.9 Hz, 1H), 8.16 (dd, *J* = 8.5, 1.9 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.01 (s, 1H), 3.33 (1H, below water signal), 2.46 (s, 3H), 2.39 (s, 6H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 534.2 $[M+H]^+$
75		4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-N-(pyridin-2-ylmethyl)-1H-pyrazole-5-carboxamide	I	^{1}H NMR (500 MHz, DMSO) δ 9.62 (t, *J* = 5.9 Hz, 1H), 8.37 (d, *J* = 4.2 Hz, 1H), 8.17 (s, 1H), 8.14 (d, *J* = 2.1 Hz, 1H), 8.13 (s, 2H), 8.04 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.35 (td, *J* = 7.7, 1.8 Hz, 1H), 7.15 (dd, *J* = 7.2, 5.1 Hz, 1H), 6.95 (d, *J* = 7.8 Hz, 1H), 4.52 (d, *J* = 5.9 Hz, 2H), 3.38 (hept, J = 6.7 Hz, 1H), 2.37 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 730.1 [M+H]

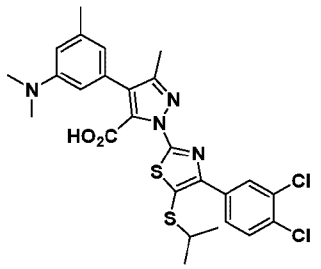
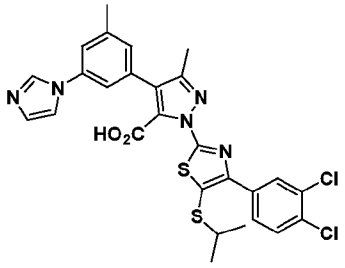
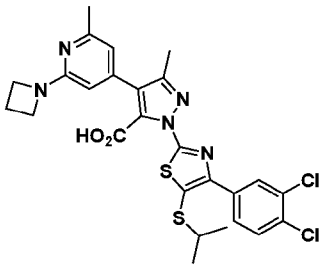
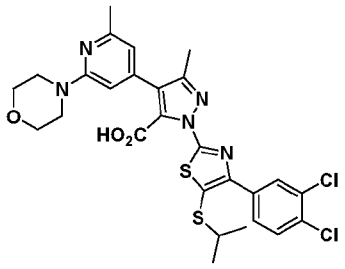
Ex.	Structure	Name	EC_{50}	Characterization
76		4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-N-(2-hydroxyethyl)-N,3-dimethyl-1H-pyrazole-5-carboxamide	I	^{1}H NMR (500 MHz, DMSO) (mixture of rotamers) δ 8.18-8.13 (m, 3H), 8.07 (s, 1H), 8.09 and 7.79 (dd, *J* = 8.5, 4.1 Hz, 1H, rotamers), (4.67 (t, *J* = 5.4 Hz) and 4.56 (t, *J* = 4.8 Hz), 1H, rotamers), 3.88 – 3.82 (m, 0.5H, one rotamer), 3.52 – 3.33 (m, 2.5H), 3.25 – 3.06 (m, 3H), 3.02 and 2.83 (s, 3H, rotamers), 2.41 and 2.40 (s, 3H, rotamers), 1.26 (d, *J* = 6.6 Hz, 6H); MS (m/z): 697.2 $[M+H]^+$
77		4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-N,3-dimethyl-N-(5-(trifluoromethyl)-1,3,4-thiadiazol-2-yl)-1H-pyrazole-5-carboxamide	I	^{1}H NMR (500 MHz, DMSO) δ 8.20 (s, 1H), 8.11 (s, 2H), 7.78 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.52 (d, *J* = 2.0 Hz, 1H), 7.51 (d, *J* = 8.5 Hz, 1H), 3.57 (s, 3H), 3.37 (hept, *J* = 6.7 Hz, 1H), 2.43 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 805.1 $[M+H]^+$
78		(4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)(3-(diethylamino)pyrrolidin-1-yl)methanone	I	^{1}H NMR (500 MHz, DMSO) 8.18 (s, 1H), 8.15-8.04 (m, 4H), 7.83-7.75 (m, 1H), 3.80-2.62 (m, 4H), 3.39 and 3.38 (hept, 1H, *J* = 6.7 hz, rotamers), 2.45-1.83 (m, 9H), 1.70-1.43 (m, 1H), 1.26 and 1.25 (d, 6H, *J* = 6.7 Hz, rotamers), 0.85-0.77 (m, 3H), 0.74-0.63 (m, 3H); MS (m/z): 764.5 $[M+H]^+$
79		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(pyrazin-2-yl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.97 (s, 1H), 8.71 (s, 1H), 8.58 (s, 1H), 8.23 (d, *J* = 1.9 Hz, 1H), 8.04 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.47 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 505.9 $[M+H]^+$

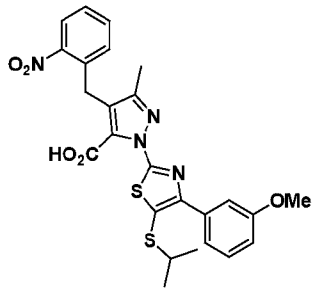
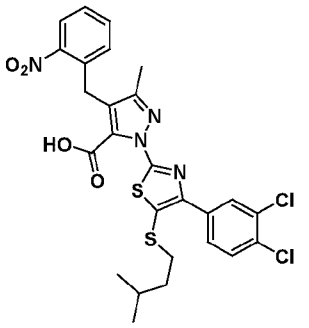
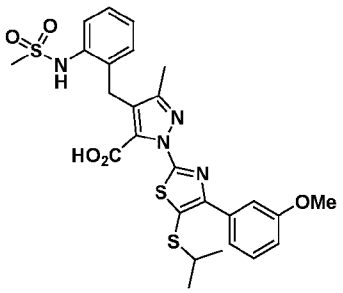
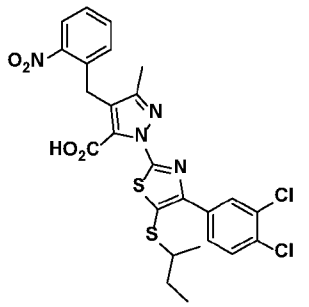
Ex.	Structure	Name	EC_{50}	Characterization
80		4-(3-cyano-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.73 (s, 1H), 7.70 (s, 1H), 7.63 (s, 1H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.40 (s, 3H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 543.0 $[M+H]^+$
81		4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-N-(1H-tetrazol-5-yl)-1H-pyrazole-5-carboxamide	I	^{1}H NMR (500 MHz, DMSO) δ 8.20-8.16 (m, 3H), 7.90 – 7.74 (m, 2H), 7.49 (d, *J* = 8.4 Hz, 1H), 3.38 (hept, *J* = 6.7 Hz, 1H), 2.41 (s, 3H), 1.26 (d, *J* = 6.7 Hz, 6H); MS (m/z): 707.0 $[M+H]^+$
82		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(5-methyl-1,3,4-thiadiazol-2-yl)-1H-pyrazole-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 2.1 Hz, 1H), 8.03 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.76 (s, 3H), 2.51 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 525.9 $[M+H]^+$
83		4-(3-cyano-5-methoxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 1.9 Hz, 1H), 8.02 (dd, *J* = 8.5, 1.9 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.52 (s, 1H), 7.46 (s, 1H), 7.40 (s, 1H), 3.85 (s, 3H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 559.0 $[M+H]^+$
84		4-(3-cyano-5-(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.35-8.30 (m, 2H), 8.28-8.22 (m, 2H), 8.08-8.04 (m, 1H), 7.77 (d, *J* = 8.4 Hz, 1H), 3.35 (hept, *J* = 6.5 Hz, 1H), 2.34 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 596.9 $[M+H]^+$

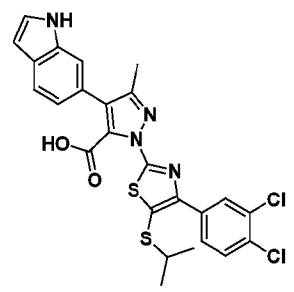
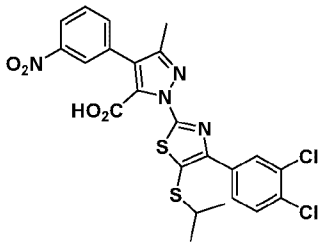
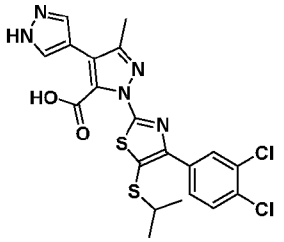
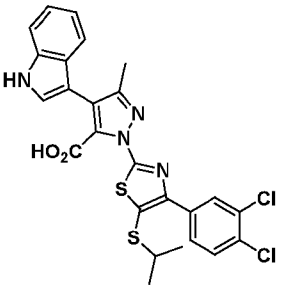
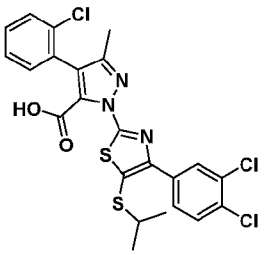
Ex.	Structure	Name	EC_{50}	Characterization
85		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-(methoxymethyl)phenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.25 (s, 1H), 8.06 (d, *J* = 8.2 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.46 – 7.37 (m, 3H), 7.30-7.25 (m, 1H), 7.10 (s (br), 2H), 4.44 (s, 3H), 3.33 (hept, *J* = 6.7 Hz, 1H), 2.28 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 548.1 $[M+H]^+$
86		4-(3-benzyl-5-methylisoxazol-4-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.0 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.22 – 7.12 (m, 3H), 7.01 – 6.97 (m, 2H), 3.97-3.84 (ABquartet, 2H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.25 (s, 3H), 1.70 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 599.1 $[M+H]^+$
87		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-((dimethylamino)methyl)phenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 8.26 (d, *J* = 2.1 Hz, 1H), 8.08 (dd, *J* = 8.4, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.55-7.53 (m, 2H), 7.41 (t, *J* = 7.7 Hz, 1H), 7.31 (d, J = 7.7 Hz, 1H), 3.89 (s, 2H), 3.33 (hept, J = 6.7 Hz, 1H), 2.28 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 561.1 $[M+H]^+$
88		(1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-phenyl-1H-pyrazol-5-yl)MeOH	J	^{1}H NMR (500 MHz, DMSO) δ 8.29 (d, *J* = 2.1 Hz, 1H), 8.07 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.79 (d, *J* = 8.5 Hz, 1H), 7.54 – 7.47 (m, 4H), 7.45 – 7.40 (m, 1H), 5.21 (t, *J* = 5.7 Hz, 1H), 4.86 (d, *J* = 5.7 Hz, 2H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.28 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 490.0 $[M+H]^+$

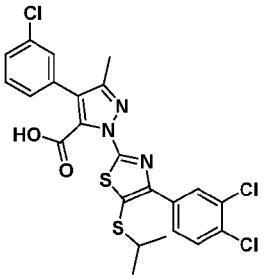
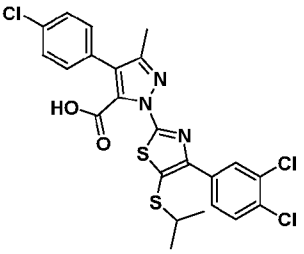
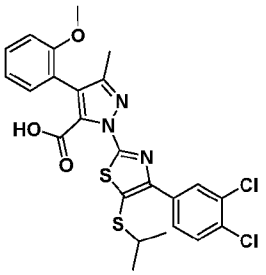
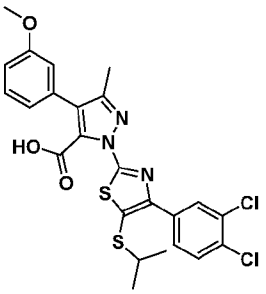
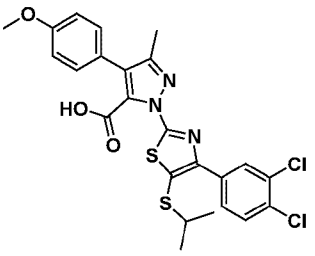
Ex.	Structure	Name	EC_{50}	Characterization
89		4-(benzo[d][1,3]dioxol-5-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 14.23 (s, 1H), 8.20 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.05-6.99 (m, 2H), 6.92 (dd, *J* = 8.0, 1.7 Hz,1H), 6.07 (s, 2H), 3.33 (hept, *J* = 6.7 Hz, 1H), 2.28 (s, 3H), 1.23 (d, *J* = 6.7 Hz,6H); MS (m/z): 547.9 $[M+H]^+$
90		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(4-methoxypyrimidin-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 8.53 (s, 1H), 8.27 (s, 1H), 8.06 (d, *J* = 7.9 Hz, 1H), 7.76 (d, *J* = 8.4 Hz, 1H), 6.78 (s, 1H), 3.96 (s, 3H), 3.34 (hept, *J* = 6.7 Hz, 1H), 2.61 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 536.0 $[M+H]^+$
91		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(isothiazol-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 9.14 (s, 1H), 8.84 (s, 1H), 8.24 (d, *J* = 2.1 Hz, 1H), 8.05 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 3.33 (hept, *J* = 6.7 Hz, 1H), 2.35 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 510.9 $[M+H]^+$
92		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methylisothiazol-5-yl)-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 2.1 Hz, 1H), 8.04 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.40 (s, 1H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.45 (s, 3H), 2.41 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 524.9 $[M+H]^+$
93		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(1-methyl-2-oxo-1,2-dihydropyridin-4-yl)-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 8.25 (s, 1H), 8.06 (d, *J* = 6.9 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.68 (d, *J* = 6.7 Hz, 1H), 6.49 (s, 1H), 6.49-6.45 (m, 1H), 3.33 (hept, *J* = 6.7 Hz, 1H), 3.42 (s, 3H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 535.0 $[M+H]^+$

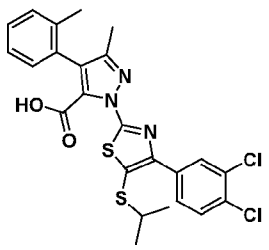
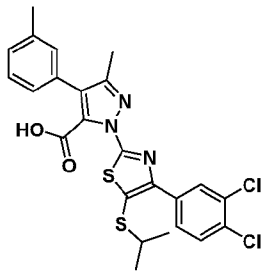
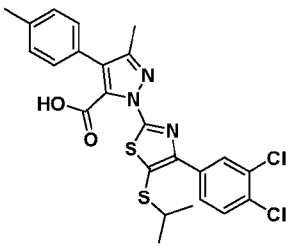
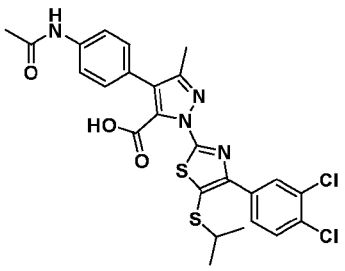
Ex.	Structure	Name	EC_{50}	Characterization
94		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(1,5-dimethyl-6-oxo-1,6-dihydropyridin-3-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.71 (d, *J* = 2.2 Hz, 1H), 7.41-7.39 (m, 1H), 3.48 (s, 3H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.28 (s, 3H), 2.03 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 549.0 $[M+H]^+$
95		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.13 (s, 1H), 7.11 (d, *J* = 9.9 Hz, 1H), 7.07 (d, *J* = 9.7 Hz, 1H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.36 (s, 3H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 536.0 $[M+H]^+$
96		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-hydroxy-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 8.24 (s, 1H), 8.06 (d, *J* = 8.8 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 6.72 (s, 1H), 6.69 (s, 1H), 6.55 (s, 1H), 3.33 (hept, *J* = 6.7 Hz, 1H), 2.26 (s, 3H), 2.24 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 533.9 $[M+H]^+$
97		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-isopropoxy-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.23 (s, 1H), 8.04 (d, *J* = 8.3 Hz, 1H), 7.75 (d, *J* = 8.3 Hz, 1H), 6.84-6.79 (m, 2H), 6.74 (s, 1H), 4.60 (hept, *J* = 6.0 Hz, 1H), 2.30 (s, 3H), 2.30 (s, 3H), 1.28 (d, *J* = 6.0 Hz, 6H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 576.2 $[M+H]^+$
98		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methyl-5-(oxetan-3-yloxy)phenyl)-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.22 (s, 1H), 8.03 (d, *J* = 7.0 Hz, 1H), 7.76 (d, *J* = 8.6 Hz, 1H), 6.91 (s, 1H), 6.68-6.62 (m, 2H), 5.27 (q, *J* = 5.1 Hz, 1H), 4.94 (t, *J* = 6.9 Hz, 1H), 4.56 (dd, *J* = 7.6, 5.1 Hz, 2H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 2.30 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 590.2 $[M+H]^+$

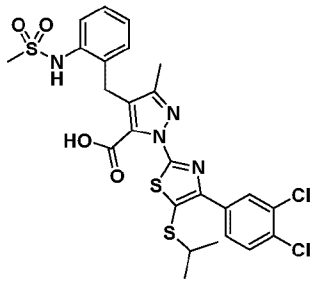
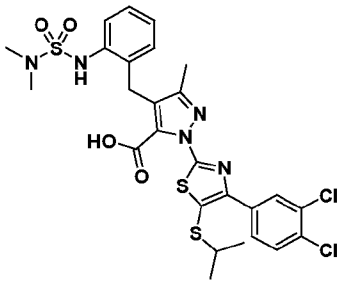
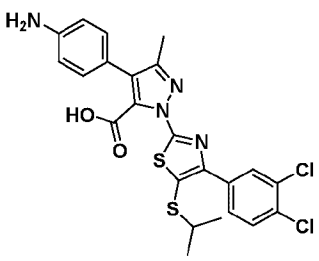
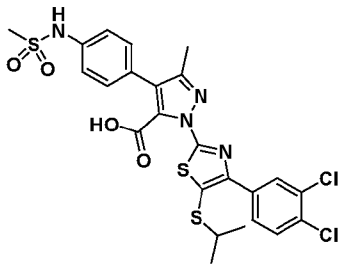
Ex.	Structure	Name	EC_{50}	Characterization
99		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-(dimethylamino)-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.14 (d, *J* = 2.0 Hz, 1H), 7.95 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.70 (d, *J* = 8.5 Hz, 1H), 6.52-6.49 (m, 2H), 6.48 (s, 1H), 3.29 (hept, *J* = 6.7 Hz, 1H), 2.83 (s, 6H), 2.24 (s, 3H), 2.21 (s, 3H), 1.17 (d, *J* = 6.7 Hz, 6H); MS (m/z): 561.0 $[M+H]^+$
100		4-(3-(1H-imidazol-1-yl)-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.14 (d, *J* = 2.1 Hz, 1H), 7.96 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.70-7.67 (m, 2H), 7.48 (m, 1H), 7.46 (m, 1H), 7.20 (s, 1H), 7.06 (s, 1H), 3.29 (hept, *J* = 6.7 Hz, 1H), 2.35 (s, 3H), 2.27 (s, 3H), 1.18 (d, *J* = 6.7 Hz, 6H); MS (m/z): 584.1 $[M+H]^+$
101		4-(2-(azetidin-1-yl)-6-methylpyridin-4-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.30 (d, *J* = 2.1 Hz, 1H), 8.12 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 6.70 (s, 1H), 6.40 (s, 1H), 3.42 – 3.29 (m, 1H), 3.89 (t, *J* = 7.4 Hz, 4H), 2.33 – 2.27 (m, 2H), 2.29 (s, 3H), 2.28 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 574.1 $[M+H]^+$
102		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-morpholinopyridin-4-yl)-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 1.9 Hz, 1H), 8.03 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 6.66 (s, 1H), 6.64 (s, 1H), 3.72 – 3.68 (m, 4H), 3.48 – 3.43 (m, 4H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.35 (s, 3H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 604.0 $[M+H]^+$

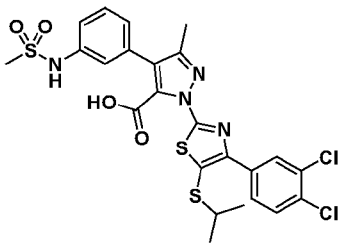
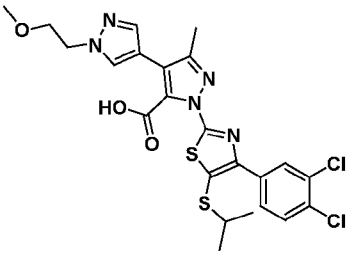
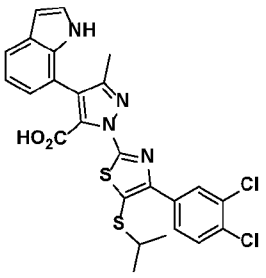
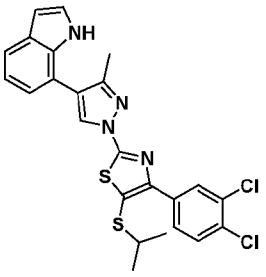
Ex.	Structure	Name	EC_{50}	Characterization
103		1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	G	^{1}H NMR (500 MHz, DMSO) δ 13.96 (s, 1H), 8.00 (dd, *J* = 8.1, 1.2 Hz, 1H), 7.65 (td, *J* = 7.6, 1.3 Hz, 1H), 7.58 – 7.48 (m, 2H), 7.38 (t, *J* = 8.0 Hz, 1H), 7.22 (d, *J* = 6.9 Hz, 1H), 6.99 (ddd, *J* = 8.3, 2.6, 0.9 Hz, 1H), 4.24 (s, 2H), 3.80 (s, 3H), 3.36 – 3.28 (m, 1H), 2.08 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 525.1 $[M+1]^+$
104		1-(4-(3,4-dichlorophenyl)-5-(isopentylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 8.13 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.1, 1.3 Hz, 1H), 7.92 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5Hz, 1H), 7.64 (td, *J* = 7.6, 1.3 Hz, 1H), 7.53 – 7.47 (m, 1H), 7.23 (m, 1H), 4.22 (s, 2H), 2.97-2.91 (m, 2H), 2.05 (s, 3H), 1.64-1.56 (m, 1H), 1.45-1.39 (m, 2H), 0.81 (d, *J* = 6.6 Hz, 6H). MS (m/z): 591.0 $[M+1]^+$
105		1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carboxylic acid	G	^{1}H NMR (500 MHz, DMSO) δ 8.20 (br s, 1H), 7.61 – 7.55 (m, 2H), 7.45 (dd, *J* = 8.1, 1.1 Hz, 1H), 7.41 (d, *J* = 6.2 Hz, 1H), 7.37 (t, *J* = 8.2 Hz, 1H), 7.22 – 7.14 (m, 1H), 7.07 (td, *J* = 7.4, 1.3 Hz, 1H), 6.98 – 6.93 (m, 1H), 3.95 (s, 2H), 3.80 (s, 3H), 2.55 (s, 3H), 2.05 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H). MS (m/z): 573.1 $[M+1]^+$
106		1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.25 (d, *J* = 2.0 Hz, 1H), 8.03 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.95 – 7.91 (m, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.59 (t, *J* = 7.0 Hz, 1H), 7.44 (t, *J* = 7.5 Hz, 1H), 7.29 (d, *J* = 7.7 Hz, 1H), 4.14 (s, 2H), 3.12 – 3.06 (m, 1H), 1.93 (s, 3H), 1.60 – 1.45 (m, 2H), 1.21 (d, *J* = 6.8 Hz, 3H), 0.90 (t, *J* = 7.4 Hz, 3H). MS (m/z): 577.0 $[M+1]^+$

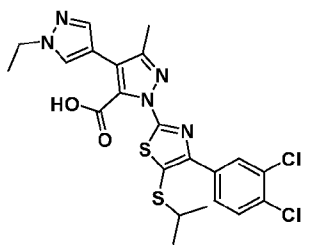
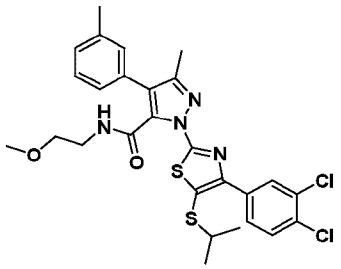
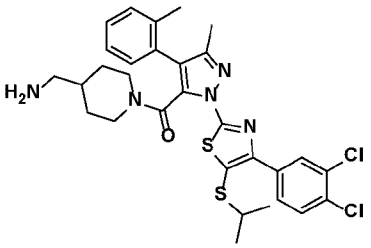
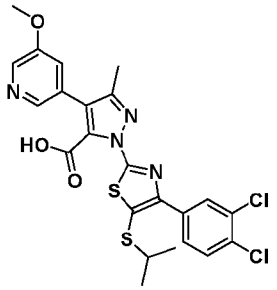
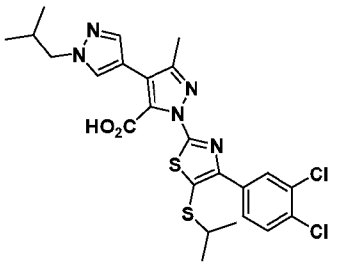
Ex.	Structure	Name	EC_{50}	Characterization
107		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(1H-indol-6-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 11.20 (s, 1H), 8.24 (d, *J* = 2.0 Hz, 1H), 8.04 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.58 (d, *J* = 8.2 Hz, 1H), 7.53 (s, 1H), 7.41 – 7.34 (m, 1H), 7.10 (dd, *J* = 8.2, 1.5 Hz, 1H), 6.46-6.44 (m, 1H), 3.38-3.32 (m, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 543.0 $[M+1]^+$
108		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-nitrophenyl)-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.36 (s, 1H), 8.24-8.20 (m, 2H), 8.04 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.99-7.95 (m, 1H), 7.79-7.73 (m, 2H), 3.43 – 3.31 (m, 1H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 549.1 $[M+1]^+$
109		2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-methyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 8.24 (d, *J* = 1.8 Hz, 1H), 8.05 (dd, *J* = 8.5, 1.8 Hz, 1H), 7.91-7.80 (m, 2H), 7.74 (d, *J* = 8.5 Hz, 1H), 2.55 – 2.51 (m, 1H), 2.35 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 493.9 $[M+1]^+$
110		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(1H-indol-3-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 11.33 (s, 1H), 8.24 (s, 1H), 8.05 (m, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.48 (d, *J* = 8.1 Hz, 1H), 7.43 (m, 2H), 7.12 (t, *J* = 7.4 Hz, 1H), 7.02 (t, *J* = 7.4 Hz, 1H), 3.46-3.25 (m,1H), 2.22 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 543.0 $[M+1]^+$
111		4-(2-chlorophenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.60 (d, *J* = 7.2 Hz, 1H), 7.49 – 7.39 (m, 3H), 3.42 – 3.29 (m, 1H), 2.12 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 537.9 $[M+1]^+$

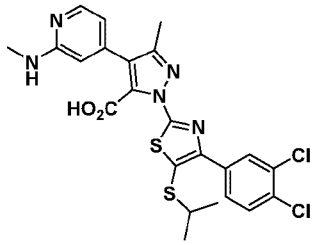
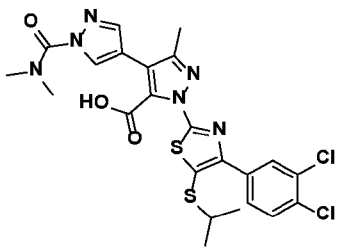
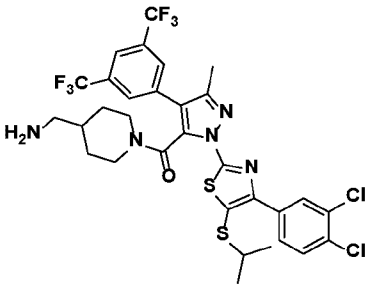
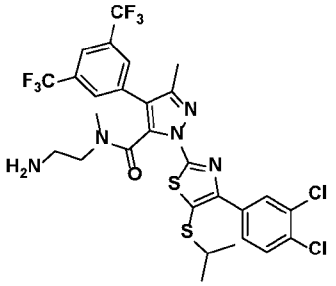
Ex.	Structure	Name	EC_{50}	Characterization
112		4-(3-chlorophenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.57-7.53 (m, 1H), 7.52 – 7.42 (m, 3H), 3.39-3.25 (m, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 538.0 $[M+1]^+$
113		4-(4-chlorophenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.54 – 7.48 (m, 4H), 3.39 – 3.28 (m, 1H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 538.0 $[M+1]^+$
114		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-methoxyphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 1.9 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.40-7.34 (m, 1H), 7.32-7.27 (m, 1H), 7.10 (d, *J* = 8.3 Hz, 1H), 7.00 (t, *J* = 7.4 Hz, 1H), 3.75 (s, 3H), 3.40 – 3.30 (m, 1H), 2.13 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 534.1 $[M+1]^+$
115		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-methoxyphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 1.9 Hz, 1H), 8.03 (dd, *J* = 8.5, 1.9 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.36 (t, *J* = 8.0 Hz, 1H), 7.09 – 7.03 (m, 2H), 6.94 (d, *J* = 8.0 Hz, 1H), 3.78 (s, 3H), 3.42 – 3.29 (m, 1H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 534.1 $[M+1]^+$
116		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(4-methoxyphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.72 (d, *J* = 8.5 Hz, 1H), 7.43 – 7.38 (m, 2H), 7.03-6.98 (m, 2H), 3.79 (s, 3H), 3.48 – 3.24 (m, 1H), 2.27 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 534.1 $[M+1]^+$

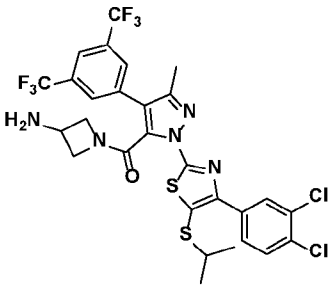
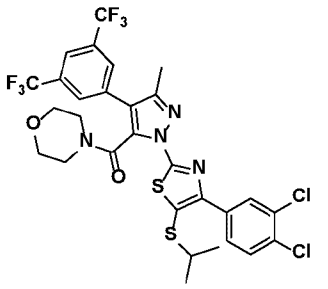
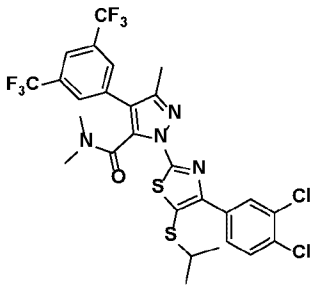
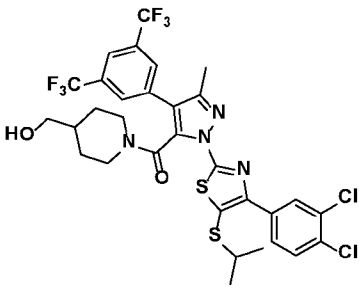
Ex.	Structure	Name	EC_{50}	Characterization
117		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-o-tolyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.0 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.34 – 7.28 (m, 2H), 7.27 – 7.20 (m, 1H), 7.18-7.15 (m, 1H), 3.40 – 3.28 (m, 1H), 2.14 (s, 3H), 2.04 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 518.1 $[M+1]^+$
118		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-m-tolyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 2.0 Hz, 1H), 8.03 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.35-7.23 (m, 3H), 7.18 (d, *J* = 7.2 Hz, 1H), 3.42 – 3.28 (m, 1H), 2.36 (s, 3H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 518.1 $[M+1]^+$
119		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-p-tolyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 2.0 Hz, 1H), 8.03 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.36 (d, *J* = 8.0 Hz, 2H), 7.25 (d, *J* = 8.0 Hz, 2H), 3.43-3.24 (m, 1H), 2.34 (s, 3H), 2.28 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 518.1 $[M+1]^+$
120		4-(4-acetamidophenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	H	^{1}H NMR (500 MHz, DMSO) δ 10.05 (s, 1H), 8.21 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.64 (d, *J* = 8.5 Hz, 2H), 7.39 (d, *J* = 8.5 Hz, 2H), 3.42 – 3.28 (m, 1H), 2.28 (s, 3H), 2.06 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 561.0 $[M+1]^+$.

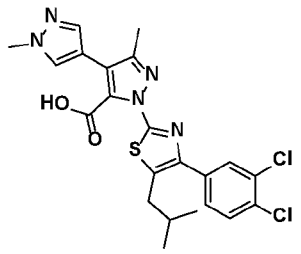
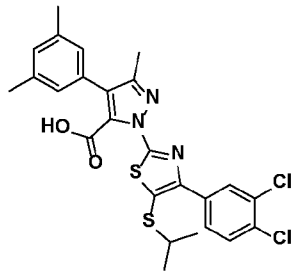
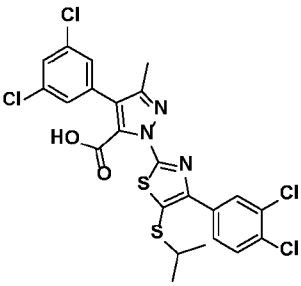
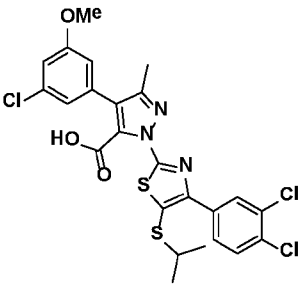
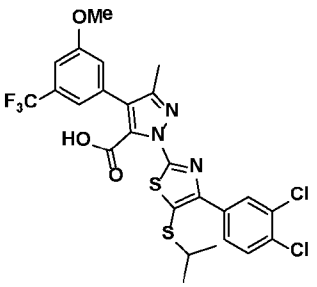
Ex.	Structure	Name	EC_{50}	Characterization
121		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carboxylic acid	H	^{1}H NMR (500 MHz, MeOD) δ 8.38 (d, *J* = 2.0Hz, 1H), 8.25 – 8.19 (s, 1H), 8.11 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.59 (d, *J* = 8.5 Hz, 1H), 7.53 (d, *J* = 6.9 Hz, 1H), 7.32 (d, *J* = 7.7 Hz, 1H), 7.26 (t, *J* = 7.7 Hz, 1H), 7.17 (t, *J* = 6.9 Hz, 1H), 4.12 (s, 2H), 3.32-3.25 (m, 1H), 2.76 (s, 3H), 2.09 (s, 3H), 1.30 (d, *J* = 6.7 Hz, 6H). MS (m/z): 611.1 $[M+1]^+$
122		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-(N,N-dimethylsulfamoylamino)benzyl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.17 (d, *J* = 2.1 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.38 (d, *J* = 7.2 Hz, 1H), 7.24-7.20 (m, 1H), 7.18-7.08 (m, 1H), 6.93-6.85 (bs, 1H), 4.06 (s, 2H), 3.42-3.24 (m,1H), 2.74 (s, 6H), 2.02 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 640.2 $[M+1]^+$.
123		4-(4-aminophenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, MeOD) δ 8.44 (s, 1H), 8.19 (s, 1H), 8.17-8.13 (m, 1H), 7.58 (d, *J* = 8.5 Hz, 1H), 7.31 (d, *J* = 8.5 Hz, 2H), 6.81 (d, *J* = 8.5 Hz, 2H), 3.31 – 3.23 (m, 1H), 2.32 (s, 2H), 1.30 (d, *J* = 6.7 Hz, 6H). MS (m/z): 519.0 $[M+1]^+$.
124		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(4-(methylsulfonamido)phenyl)-1H-pyrazole-5-carboxylic acid	H	^{1}H NMR (500 MHz, DMSO) δ 9.85 (bs, 1H), 8.23 (d, *J* = 1.7 Hz, 1H), 8.04 (dd, *J* = 8.5, 1.7 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.47 (d, *J* = 8.4 Hz, 2H), 7.25 (d, *J* = 8.4 Hz, 2H), 7.09 (bs, 1H), 3.41-3.26 (m, 1H), 3.04 (s, 3H), 2.28 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 597.0 $[M+1]^+$

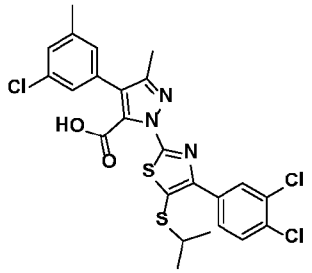
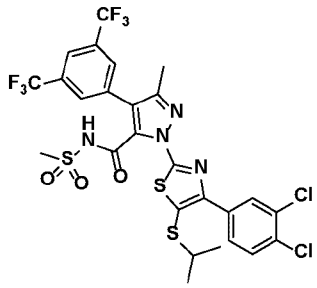
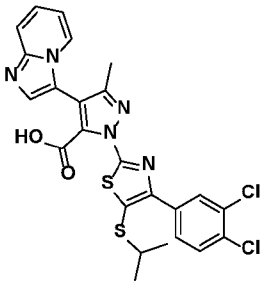
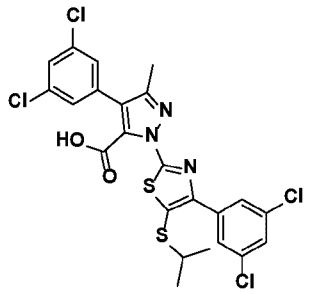
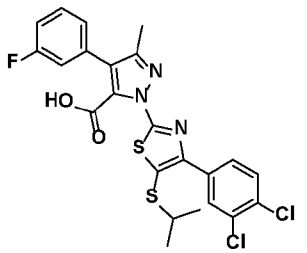
Ex.	Structure	Name	EC_{50}	Characterization
125		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-(methylsulfonamido)phenyl)-1H-pyrazole-5-carboxylic acid	H	^{1}H NMR (500 MHz, DMSO) δ 9.85 (s, 1H), 8.23 (s, 1H), 8.03 (dd, *J* = 8.5, 1.9 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.43 – 7.33 (m, 2H), 7.24 (d, *J* = 7.5 Hz, 1H), 7.15 (d, *J* = 7.9 Hz, 1H), 3.41-3.25 (m, 1H), 3.05 (s, 3H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 597.0 $[M+1]^+$.
126		2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2'-(2-methoxyethyl)-5-methyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid	D	^{1}H NMR (500 MHz, MeOD) δ 8.40 (d, *J* = 2.1 Hz, 1H), 8.12 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.93 (d, *J* = 0.6 Hz, 1H), 7.78 (d, *J* = 0.6 Hz, 1H), 7.57 (d, *J* = 8.5 Hz, 1H), 4.33 (t, *J* = 5.3 Hz, 2H), 3.76 (t, *J* = 5.3 Hz, 2H), 3.33 (s, 3H), 3.30-3.23 (m, 1H), 2.39 (s, 3H), 1.28 (d, *J* = 6.7 Hz, 6H). MS (m/z): 552.0 $[M+1]^+$.
127		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(1H-indol-7-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.27 (s, 1H), 8.08 (d, *J* = 8.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.59 – 7.50 (m, 1H), 7.31 (t, *J* = 2.8 Hz, 1H), 7.17 – 6.98 (m, 3H), 6.48 (dd, *J* = 2.8, 1.7 Hz, 1H), 3.41 – 3.30 (m, 1H), 2.14 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H). MS (m/z): 543.0 $[M+1]^+$.
128		2-(4-(1H-indol-7-yl)-3-methyl-1H-pyrazol-1-yl)-4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazole	D	^{1}H NMR (500 MHz, DMSO) δ 11.02 (s, 1H), 8.78 (s, 1H), 8.34 (d, *J* = 2.1 Hz, 1H), 8.14 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.78 (d, *J* = 8.5 Hz, 1H), 7.58 (d, *J* = 7.5 Hz, 1H), 7.35 (t, *J* = 2.8 Hz, 1H), 7.19 – 7.02 (m, 2H), 6.53 (dd, *J* = 3.0, 1.8 Hz, 1H), 3.42 – 3.31 (m, 1H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 499.1 $[M+1]^+$

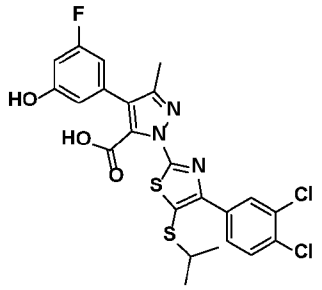
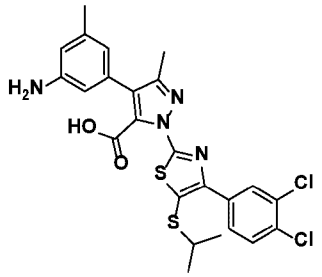
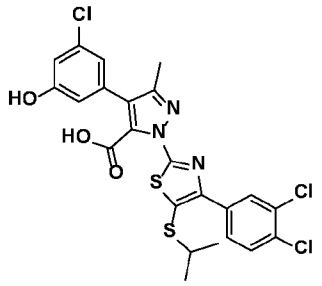
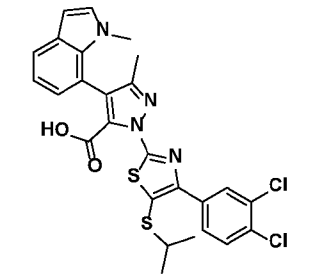
Ex.	Structure	Name	EC_{50}	Characterization
129		2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2'-ethyl-5-methyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.04-7.99 (m, 2H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.66 (d, *J* = 0.7 Hz, 1H), 4.18 (q, *J* = 7.3 Hz, 2H), 3.40 – 3.29 (m, 1H), 2.36 (s, 3H), 1.40 (t, *J* = 7.3 Hz, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 522.0 $[M+1]^+$
130		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-N-(2-methoxyethyl)-3-methyl-4-m-tolyl-1H-pyrazole-5-carboxamide	H	^{1}H NMR (500 MHz, DMSO) δ 8.99 (t, *J* = 5.5 Hz, 1H), 8.17 (d, *J* = 2.1 Hz, 1H), 8.09 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.79 (d, *J* = 8.5 Hz, 1H), 7.33 (t, *J* = 7.5 Hz, 1H), 7.30 – 7.25 (m, 2H), 7.19 (d, *J* = 7.5 Hz, 1H), 3.40 – 3.33 (m, 4H), 3.33-3.30 (m, 1H), 3.10 (s, 3H), 2.35 (s, 3H), 2.32 (s, 3H), 1.21 (d, *J* = 6.7 Hz, 6H). MS (m/z): 575.1 $[M+1]^+$.
131		(4-(aminomethyl)piperidin-1-yl)(1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-o-tolyl-1H-pyrazol-5-yl)methanone	B	^{1}H NMR (500 MHz, DMSO) Complex mixture of rotamers; MS (m/z): 614.2 $[M+1]^+$
132		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(5-methoxypyridin-3-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.30 (s, 1H), 8.28 (s, 1H), 8.21 (s, 1H), 8.02 (d, *J* = 8.5 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.52 (s, 1H), 3.87 (s, 3H), 3.50-3.21 (m, 1H), 2.34 (s, 3H), 1.24 d, *J* = 6.7 Hz, 6H). MS (m/z): 535.0 $[M+1]^+$.
133		2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2'-isobutyl-5-methyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.13 (d, *J* = 2.0 Hz, 1H), 7.95 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.91 (s, 1H), 7.70 (d, *J* = 8.5 Hz, 1H), 7.61 (s, 1H), 3.90 (d, *J* = 7.2 Hz, 2H), 3.32 – 3.20 (m, 1H), 2.29 (s, 3H), 2.12 – 1.99 (m, 1H), 1.17 (d, *J* = 6.7 Hz, 6H), 0.79 (d, *J* = 6.7 Hz, 6H). MS (m/z): 550.0 $[M+1]^+$

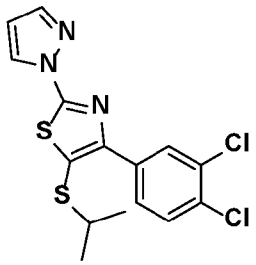
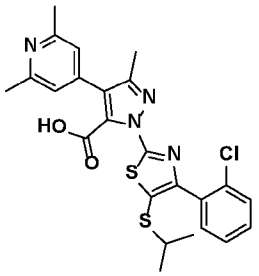
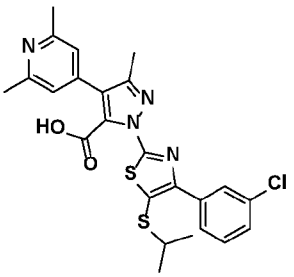
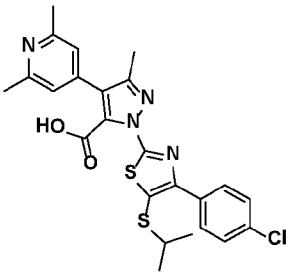
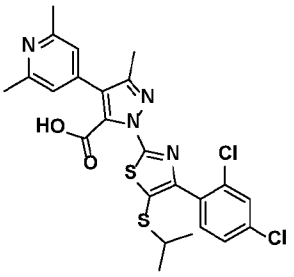
Ex.	Structure	Name	EC_{50}	Characterization
134		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-(methylamino)pyridin-4-yl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.24 (s, 1H), 8.08-8.03 (m, 1H), 7.99-7.96 (m, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 6.67 – 6.51 (m, 3H), 3.37-3.26 (m, 1H), 2.77 (d, *J* = 4.6 Hz, 3H), 2.30 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 533.9 $[M+1]^+$
135		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-1'-(dimethylcarbamoyl)-3-methyl-1H,1'H-[4,4'-bipyrazole]-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 8.39 (d, *J* = 0.8 Hz, 1H), 8.25 (s, 1H), 8.09-8.03 (m, 2H), 7.75 (d, *J* = 8.5 Hz, 1H), 3.34-3.28 (m, 1H), 3.14 (s, 6H), 2.35 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 565.1 $[M+1]^+$
136		(4-(aminomethyl)piperidin-1-yl)(4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)methanone	B	^{1}H NMR (500 MHz, DMSO) δ 8.20 (s, 1H), 8.14 (d, *J* = 2.0 Hz, 1H), 8.10-8.06 (m, 2H), 8.04 (s, 1H), 7.81 (d, 8.5 Hz, 1H), 4.57-4.48 (m, 1H), 3.59-3.48 (m, 1H), 3.41-3.31 (m, 1H), 3.03-2.90 (m, 1H), 2.77 – 2.59 (m, 2H), 2.41 (s, 3H), 2.26-2.17 (m, 1H), 2.15-1.96 (m, 1H), 1.89 – 1.79 (m, 1H), 1.66-1.50 (m, 1H), 1.48-1.30 (m, 2H), 1.27-1.5 (m, 6H), 0.76-0.60 (m,1H), 0.28-0.15 (m 1H). MS (m/z): 738.0 $[M+1]^+$
137		N-(2-aminoethyl)-4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-N,3-dimethyl-1H-pyrazole-5-carboxamide	B	^{1}H NMR (500 MHz, DMSO) δ 8.18 (s, 0.5H), 8.16 (s, 0.5H), 8.15 (d, *J* = 2.1 Hz, 0.5H), 8.13 (s, 1H), 8.12 (d, *J* = 2.1 Hz, 0.5H), 8.10 (dd, *J* = 2.1, 8.5 Hz, 0.5H), 8.08 (s, 1H), 8.03 (dd, *J* = 2.1, 8.5 Hz, 0.5H), 7.80 (d, *J* = 8.5 Hz, 0.5H), 7.79 (d, *J* = 8.5 Hz, 0.5H), 3.77-3.68 (m, 0.5H), 3.43-3.34 (m, 1.5H), 3.14-2.99 (m, 2H), 2.98 (s, 1.5H), 2.80 (s, 1.5H), 2.66-2.57 (m, 1.5H), 2.47-2.27 (m, 1.5H), 2.41 (s, 3H), 1.27-1.23 (m, 6H). MS (m/z): 696.2 $[M+1]^+$

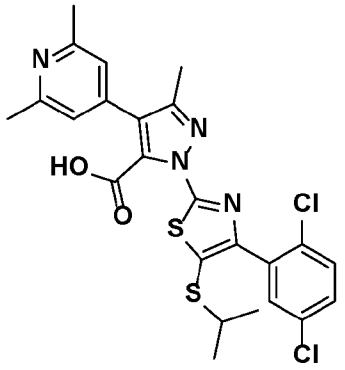
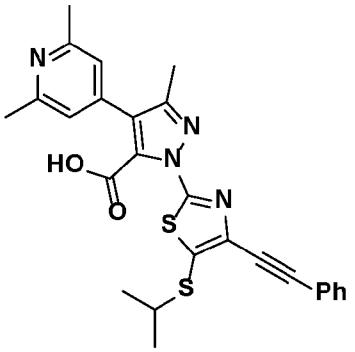
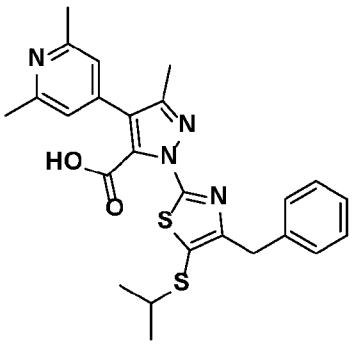
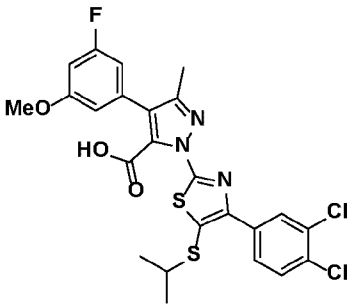
Ex.	Structure	Name	EC_{50}	Characterization
138		(3-aminoazetidin-1-yl)(4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)methanone	D	^{1}H NMR (500 MHz, DMSO) δ 9.65 (d, *J* = 7.4 Hz, 1H), 8.24 (s, 1H), 8.17 (s, 1H), 8.14 (s, 2H), 8.10 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 2.0, 8.5 Hz, 1H), 7.80 (d, *J* = 8.5 Hz, 1H), 4.70-4.58 (m, 1H), 3.61-3.53 (m, 2H), 3.43 – 3.28 (m, 3H), 2.38 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 694.2 [M+1]+
139		(4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)(morpholino)methanone	D	^{1}H NMR (500 MHz, DMSO) δ 8.22 (s, 1H), 8.13 (d, *J* = 2.1 Hz, 1H), 8.08 (s, 2H), 8.04 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.82 (d, *J* = 8.5 Hz, 1H), 3.84-3.77 (m, 1H), 3.73-3.66 (m, 1H), 3.48 – 3.44 (m, 1H), 3.42-3.36 (m, 1H), 3.35-3.19 (m, 4H), 3.04-2.96 (m, 1H), 2.40 (s, 3H), 1.27-1.23 (m, 6H). MS (m/z): 709.1 $[M+1]^+$
140		4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-N,N,3-trimethyl-1H-pyrazole-5-carboxamide	I	^{1}H NMR (500 MHz, DMSO) δ 8.17 (s, 1H), 8.14 (d, *J* = 2.1 Hz, 1H), 8.09-8.06 (m, 3H), 7.81 (d, *J* = 8.5 Hz, 1H), 3.43 – 3.34 (m, 1H), 2.99 (s, 3H), 2.80 (s, 3H), 2.42 (s, 3H), 1.26 (d, *J* = 6.7 Hz, 6H). MS (m/z): 667.1 $[M+1]^+$
141		(4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)(4-(hydroxymethyl)piperidin-1-yl)methanone	I	^{1}H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.14 (d, *J* = 2.0 Hz, 1H), 8.10 – 8.05 (m, 2H), 8.03 (s, 1H), 7.81 (d, *J* = 8.5 Hz, 1H), 4.58-4.51 (m, 1H), 4.49-4.43 (m, 1H), 4.11-4.06 (m, 1H), 3.56-3.50 (m, 1H), 3.42-3.34 (m, 1H), 3.07-2.93 (m, 2H), 2.76-2.64 (m, 1H), 2.41 (s, 3H), 1.82-1.74 (m, 1H), 1.63-1.44 (m, 2H), 1.27-1.24 (m, 6H), 0.78-0.65 (m, 1H), 0.31-0.17(m, 1H). MS (m/z): 737.1 $[M+1]^+$

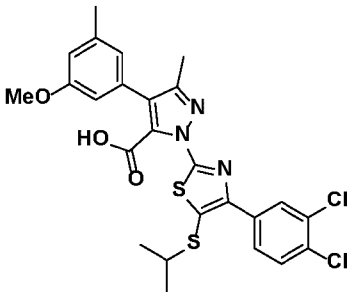
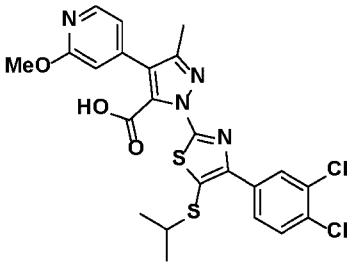
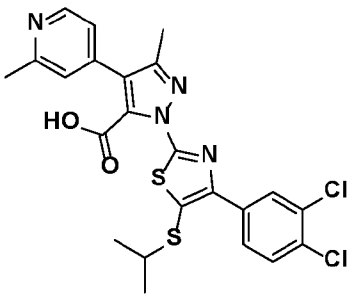
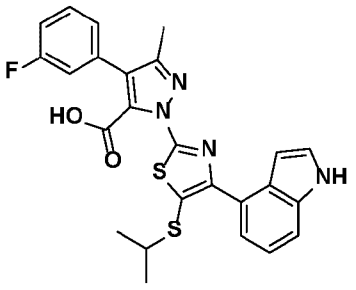
Ex.	Structure	Name	EC_{50}	Characterization
142		1-(4-(3,4-dichlorophenyl)-5-isobutylthiazol-2-yl)-1',3-dimethyl-1H,1'H-[4,4'-bipyrazole]-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.94 (s, 1H), 7.79 (d, *J* = 2.0 Hz, 1H), 7.74 (d, *J* = 8.4 Hz, 1H), 7.64 (s, 1H), 7.60 (dd, *J* = 8.4, 2.0 Hz, 1H), 3.88 (s, 3H), 2.84 (d, *J* = 7.1 Hz, 2H), 2.34 (s, 3H), 1.93 – 1.82 (m, 1H), 0.93 (d, *J* = 6.6 Hz, 6H). MS (m/z): 490.0 $[M+1]^+$
143		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3,5-dimethylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.17 (s, 1H), 8.03-7.96 (m, 1H), 7.68 (d, *J* = 8.4 Hz, 1H), 7.02 (s, 2H), 6.90 (s, 1H), 3.30-3.25 (m, 1H), 2.23 (s, 6H), 2.20 (s, 3H), 1.17 (d, *J* = 6.7 Hz, 6H). MS (m/z): 532.1 $[M+1]^+$.
144		4-(3,5-dichlorophenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 777 (d, *J* = 8.5 Hz, 1H), 7.68-7.65(m, 1H), 7.54 (d, *J* = 1.9 Hz, 2H), 3.42 – 3.32 (m, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 571.8 $[M+1]^+$
145		4-(3-chloro-5-methoxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.23 (d, *J* = 1.7 Hz, 1H), 8.04 (dd, *J* = 8.4, 1.7 Hz, 1H), 7.73 (d, *J* = 8.4 Hz, 1H), 7.13 (s, 1H), 7.05 (s, 1H), 7.02 (s, 1H), 3.80 (s, 3H), 3.38 – 3.32 (m, 1H), 2.30 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 568.0 $[M+1]^+$
146		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-methoxy-5-(trifluoromethyl)phenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.38 (s, 1H), 7.35 (s, 1H), 7.28 (s, 1H), 3.88 (s, 3H), 3.40 – 3.32 (m, 1H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 601.9 $[M+1]^+$

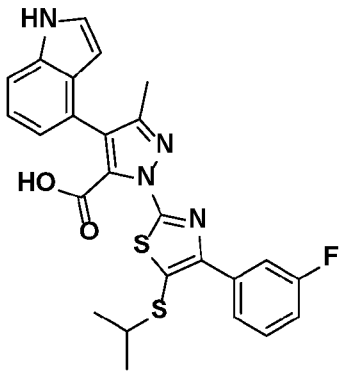
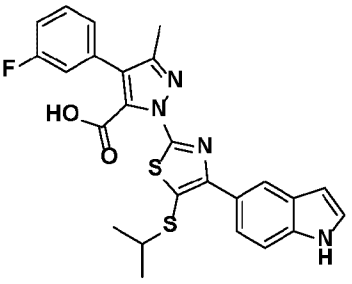
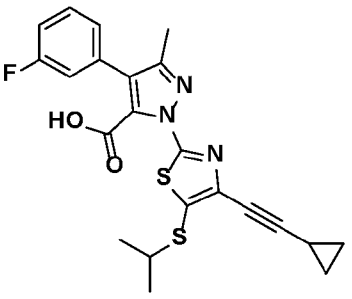
Ex.	Structure	Name	EC_{50}	Characterization
147		4-(3-chloro-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.32 (s, 1H), 7.30 (s, 1H), 7.25 (s, 1H), 3.41 – 3.31 (m, 1H), 2.36 (s, 3H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 552.0 $[M+1]^+$.
148		4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-N-(methylsulfonyl)-1H-pyrazole-5-carboxamide	I	^{1}H NMR (500 MHz, DMSO) δ 8.26 (s, 1H), 8.18 (s, 2H), 8.15-8.06 (m, 2H), 7.70 (d, *J* = 8.5 Hz, 1H), 7.33 – 7.28 (m, 1H), 3.43 – 3.31 (m, 1H), 2.92 (bs, 3H), 2.37 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 717.1 $[M+1]^+$.
149		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(imidazo[1,2-a]pyridin-3-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.25 (d, *J* = 6.7 Hz, 1H), 8.21 (d, *J* = 2.0 Hz, 1H), 8.03 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.69 (s, 1H), 7.65 (d, *J* = 9.1 Hz, 1H), 7.36 – 7.28 (m, 1H), 6.93 (t, *J* = 6.8 Hz, 1H), 3.43 – 3.33 (m, 1H), 2.16 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H). MS (m/z): 544.1 [M+1]+
150		4-(3,5-dichlorophenyl)-1-(4-(3,5-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.02-8.00 (m, 2H), 7.70-7.68 (m, 1H), 7.65-6.63 (m, 1H), 7.57-7.53 (m, 2H), 3.40 – 3.33 (m, 1H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 571.9 $[M+1]^+$.
151		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	A,B	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.53-7.47 (m, 1H), 7.36-7.30 (m, 2H), 7.25-7.18 (m, 1H), 3.38-3.33 (m, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 522.0 $[M+1]^+$

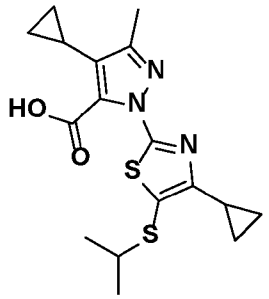
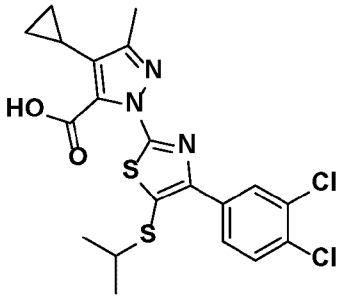
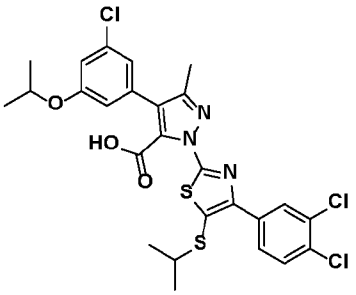
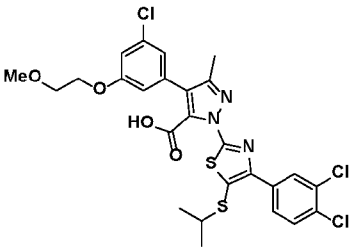
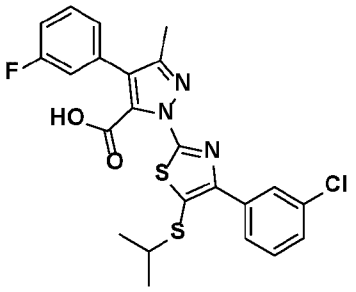
Ex.	Structure	Name	EC_{50}	Characterization
152		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-hydroxyphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 10.05 (s, 1H), 8.24 (d, *J* = 2.1 Hz, 1H), 8.04 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.09 (bs, 1H), 6.80 – 6.73 (m, 2H), 6.56-6.49 (m, 1H), 3.39 – 3.31 (m, 1H), 2.28 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 538.0 $[M+1]^+$
153		4-(3-amino-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 1.9 Hz, 1H), 8.03 (dd, *J* = 8.5, 1.9 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 6.43 (s, 1H), 6.39 (s, 2H), 3.41 – 3.32 (m, 1H), 2.26 (s, 3H), 2.18 (s, 3H), 1.24 (d, *J* = 6.7, 6H). MS (m/z): 533.0 $[M+1]^+$
154		4-(3-chloro-5-hydroxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 10.06 (s, 1H), 8.26 (d, *J* = 2.1 Hz, 1H), 8.07 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.15 (bs, 1H), 7.01 (s, 1H), 6.88 (s, 1H), 6.76 (s, 1H), 3.42 – 3.34 (m, 1H), 2.27 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 554.0 $[M+1]^+$
155		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(1-methyl-1H-indol-7-yl)-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.60 (d, *J* = 7.2 Hz, 1H), 7.28 (d, *J* = 3.1 Hz, 1H), 7.10 – 7.03 (m, 1H), 6.91 (dd, *J* = 7.1, 0.9 Hz, 1H), 6.48 (d, *J* = 3.1 Hz, 1H), 3.47 (s, 3H), 3.42 – 3.34 (m, 1H), 2.04 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H). MS (m/z): 557.0 $[M+1]^+$

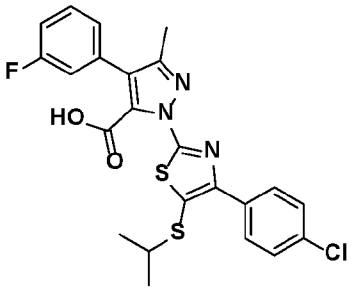
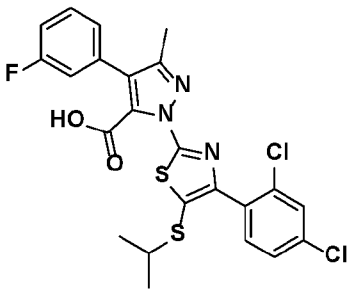
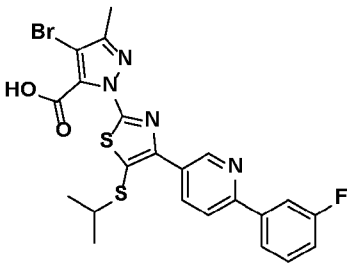
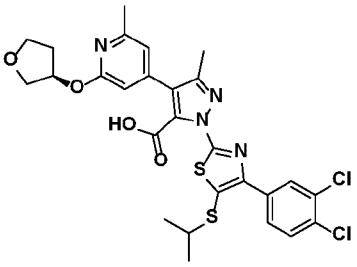
Ex.	Structure	Name	EC_{50}	Characterization
156		4-(3,4-dichlorophenyl)-5-(isopropylthio)-2-(1H-pyrazol-1-yl)thiazole	J	^{1}H NMR (500 MHz, $CDCl_3$) δ 8.38 (dd, *J* = 2.6, 0.6 Hz, 1H), 8.24 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.4, 2.1 Hz, 1H), 7.74 (dd, *J* = 1.7, 0.6 Hz, 1H), 7.50 (d, *J* = 8.4 Hz, 1H), 6.50 (dd, *J* = 2.6, 1.7 Hz, 1H), 3.26-3.17 (m, 1H), 1.27 (d, *J* = 6.7 Hz, 6H). MS (m/z): 369.9 $[M+1]^+$.
157		1-(4-(2-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.59-7.56 (m, 1H), 7.51-7.42 (m, 3H), 7.11 (s, 2H), 3.24-3.17(m, 1H), 2.45 (s, 6H), 2.32 (s, 3H), 1.15 (d, *J* = 6.7 Hz, 6H). MS (m/z): 499.3 $[M+1]^+$.
158		1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.04 – 7.97 (m, 2H), 7.55-7.46 (m, 2H), 7.16 (s, 2H), 3.38 – 3.30 (m, 1H), 2.46 (s, 6H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 499.4 $[M+1]^+$
159		1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.06 – 8.01 (m, 2H), 7.55 – 7.51 (m, 2H), 7.15 (s, 2H), 3.38-3.29 (m, 1H), 2.45 (s, 6H), 2.32 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 499.4 $[M+1]^+$
160		1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 7.77 (d, *J* = 2.1 Hz, 1H), 7.55 (dd, *J* = 8.3, 2.1 Hz, 1H), 7.49 (d, *J* = 8.3 Hz, 1H), 7.12 (s, 2H), 3.25-3.16 (m, 1H), 2.44 (s, 6H), 2.31 (s, 3H), 1.15 (d, *J* = 6.7 Hz, 6H). MS (m/z): 533.4 $[M+1]^+$

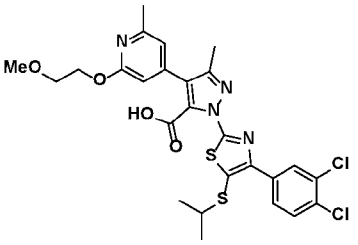
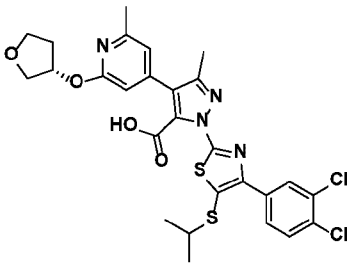
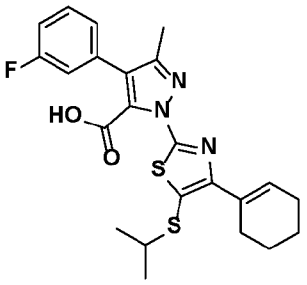
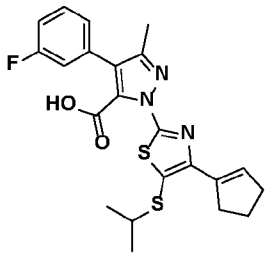
Ex.	Structure	Name	EC_{50}	Characterization
161		1-(4-(2,5-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 7.63 (d, *J* = 8.5 Hz, 1H), 7.59 – 7.54 (m, 2H), 7.13 (s, 2H), 3.26-3.15 (m, 1H), 2.44 (s, 6H), 2.31 (s, 3H), 1.16 (d, *J* = 6.7 Hz, 6H). MS (m/z): 533.4 $[M+1]^+$
162		4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(phenylethynyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, MeOD) δ 7.57 – 7.49 (m, 2H), 7.42 – 7.38 (m, 3H), 7.36 (s, 2H), 3.49 – 3.39 (m, 1H), 2.55 (s, 6H), 2.38 (s, 3H), 1.38 (d, *J* = 6.7 Hz, 6H); MS (m/z): 489.3 $[M+1]^+$.
163		1-(4-benzyl-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 7.23 – 7.19 (m, 4H), 7.14 – 7.10 (m, 1H), 7.05 (s, 2H), 4.01 (s, 2H), 3.12 (dt, *J* = 13.4, 6.7 Hz, 1H), 2.39 (s, 6H), 2.23 (s, 3H), 1.16 (d, *J* = 6.7 Hz, 6H). MS (m/z): 479.1 $[M+1]^+$
164		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-methoxyphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 1.8 Hz, 1H), 8.03 (dd, *J* = 8.5, 1.8 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 6.94 – 6.89 (m, 2H), 6.86 (d, *J* = 11.5 Hz, 1H), 3.80 (s, 3H), 3.35 (sept, J = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 552.1 $[M+1]^+$

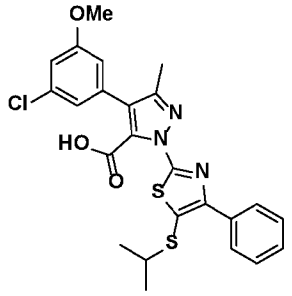
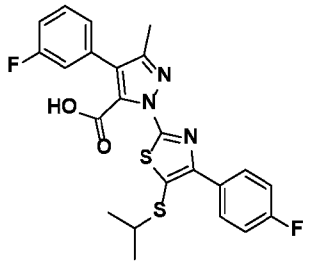
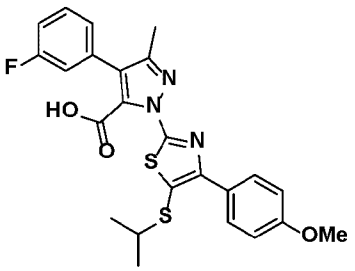
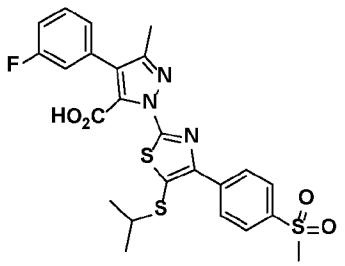
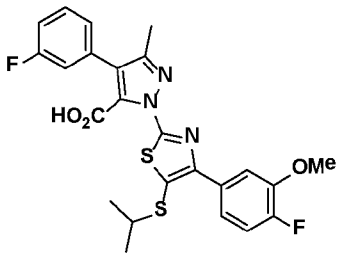
Ex.	Structure	Name	EC_{50}	Characterization
165		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-methoxy-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.24 (s, 1H), 8.09 – 8.03 (m, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 6.91 – 6.85 (m, 2H), 6.74 (s, 1H), 3.75 (s, 3H), 3.33 (sept, *J* = 6.7 Hz, 1H), 2.31 (s, 3H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 548.1 $[M+1]^+$.
166		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-methoxypyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.24 (d, *J* = 5.1 Hz, 1H), 8.20 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.08 (d, *J* = 5.2 Hz, 1H), 6.90 (s, 1H), 3.89 (s, 3H), 3.35 (sept, *J* = 6.7, 1H), 2.34 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 535.0 $[M+1]^+$.
167		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methylpyridin-4-yl)-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.52 (d, *J* = 5.2 Hz, 1H), 8.20 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.35 (s, 1H), 7.30 – 7.26 (m, 1H), 3.35 (sept, *J* = 6.7 Hz, 1H), 2.52 (s, 3H), 2.34 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 519.0 $[M+1]^+$.
168		1-(4-(1H-indol-4-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 11.09 (s, 1H), 7.38 (m, 2H), 7.28 – 7.23 (m, 4H), 7.11 – 7.05 (m, 2H), 3.13 (dt, *J* = 13.4, 6.7 Hz, 1H), 2.24 (s, 3H), 1.06 (d, *J* = 6.7 Hz, 6H). MS (m/z): 493.1 $[M+1]^+$.

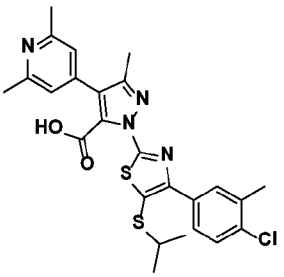
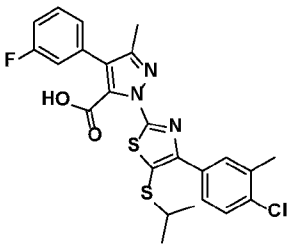
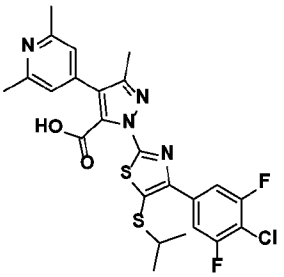
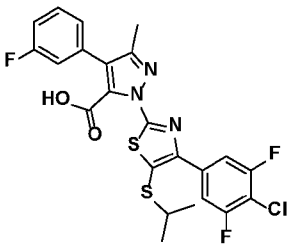
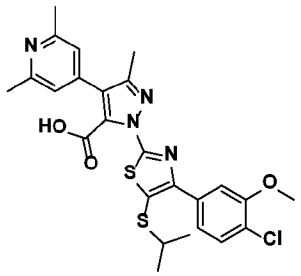
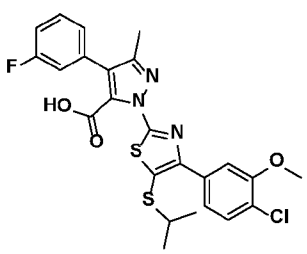
Ex.	Structure	Name	EC_{50}	Characterization
169		1-(4-(3-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(1H-indol-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 11.17 (br, 1H), 7.61 – 7.57 (m, 1H), 7.55 – 7.50 (m, 1H), 7.46 (d, *J* = 8.1 Hz, 1H), 7.32 (d, *J* = 7.5 Hz, 4H), 7.27 – 7.21 (m, 1H), 7.19 – 7.14 (m, 1H), 3.22 (dt, *J* = 13.3, 6.7 Hz, 1H), 2.32 (s, 3H), 1.14 (d, *J* = 6.7 Hz, 6H). MS (m/z): 493.1 $[M+1]^+$.
170		1-(4-(1H-indol-5-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, DMSO) δ 11.24 (br, 1H), 8.20 (s, 1H), 7.80 (d, *J* = 8.5 Hz, 1H), 7.52 (dd, *J* = 13.4, 6.8 Hz, 1H), 7.46 (d, *J* = 8.5 Hz, 1H), 7.42 – 7.39 (m, 1H), 7.38 – 7.30 (m, 2H), 7.27 – 7.19 (m, 1H), 6.52 (s, 1H), 2.31 (d, *J* = 12.4 Hz, 3H), 1.22 (t, *J* = 5.7 Hz, 6H) (CH peak from iso-Pr is overlapped with water peak from DMSO) MS (m/z): 493.1 $[M+1]^+$.
171		1-(4-(cyclopropylethynyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, MeOD) δ 7.40 (td, *J* = 7.9, 6.0 Hz, 1H), 7.33 – 7.23 (m, 2H), 7.04 (ddd, *J* = 8.0, 3.1, 1.3 Hz, 1H), 3.40 – 3.31 (m, 1H), 2.30 (s, 3H), 1.49 (ddd, *J* = 10.0, 6.6, 4.2 Hz, 1H), 1.32 (d, *J* = 6.7 Hz, 6H), 1.00 – 0.87 (m, 2H), 0.82 – 0.73 (m, 2H); MS (m/z): 442.1 $[M+1]^+$.

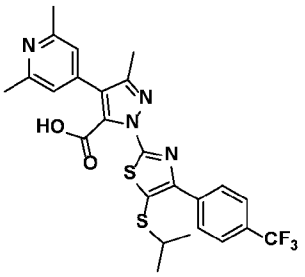
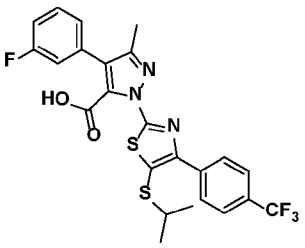
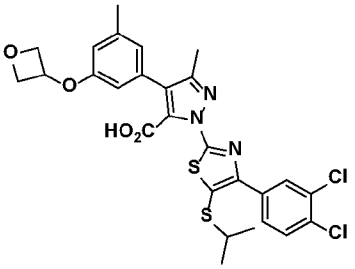
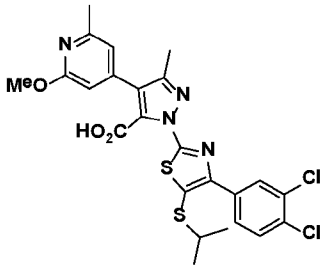
Ex.	Structure	Name	EC_{50}	Characterization
172		4-cyclopropyl-1-(4-cyclopropyl-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	J	^{1}H NMR (500 MHz, MeOD) δ 3.15 (hept, *J* = 6.7 Hz, 1H), 2.33 (tt, *J* = 8.2, 4.9 Hz, 1H), 2.28 (s, 3H), 1.65 (tt, *J* = 8.5, 5.4 Hz, 1H), 1.29 (d, *J* = 6.7 Hz, 6H), 0.97 (ddd, *J* = 7.8, 4.9, 2.5 Hz, 2H), 0.94 – 0.89 (m, 2H), 0.85 (ddd, *J* = 8.5, 6.2, 4.2 Hz, 2H), 0.71 – 0.66 (m, 2H); MS (m/z): 364.3 $[M+1]^+$.
173		4-cyclopropyl-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.1 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 3.36-3.25 (m, 1H), 2.26 (s, 3H), 1.70-1.63 (m, 1H), 1.22 (d, *J* = 6.7 Hz, 6H), 0.88-0.79 (m, 2H), 0.69 – 0.61 (m, 2H). MS (m/z): 468.1 [M+1]+
174		4-(3-chloro-5-isopropoxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.22 (s, 1H), 8.04 (d, *J* = 8.4 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.08 (s, 1H), 6.99 (s, 2H), 4.67 (d, *J* = 6.0 Hz, 1H), 3.35 (sept, J - 6.7 Hz, 1H), 2.30 (s, 3H), 1.29 (d, *J* = 6.0 Hz, 6H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 596.0 $[M+1]^+$.
175		4-(3-chloro-5-(2-methoxyethoxy)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.24 (s, 1H), 8.06 (d, *J* = 8.2 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.15 (s, 1H), 7.07 (s, 1H), 7.01 (s, 1H), 4.16 – 4.12 (m, 2H), 3.68 – 3.65 (m, 2H), 3.35 (sept, J = 6.7 Hz, 1H), 3.31 (s, 3H), 2.30 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 611.9 $[M+1]^+$
176		1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.04-8.01 (m, 1H), 8.00-7.96 (m, 1H), 7.55-7.46 (m, 3H), 7.39-7.30 (m, 2H), 7.25-7.16 (m, 1H), 3.40 – 3.29 (m, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 488.1 [M+1]

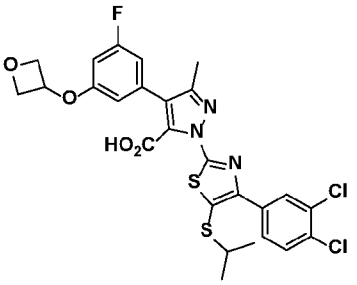
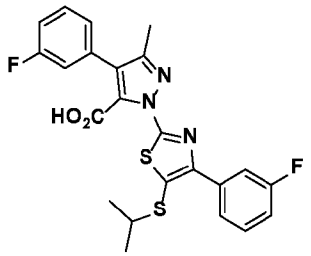
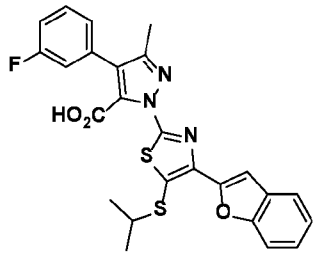
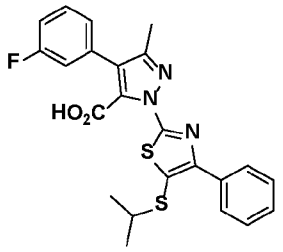
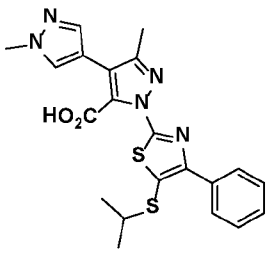
Ex.	Structure	Name	EC_{50}	Characterization
177		1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.06 – 8.02 (m, 2H), 7.56 – 7.47 (m, 3H), 7.37-7.30 (m, 2H), 7.24-7.17 (m, 1H), 3.36 – 3.27 (m, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 488.1 $[M+1]^+$.
178		1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.77 (d, *J* = 2.1 Hz, 1H), 7.55 (dd, *J* = 8.3, 2.1 Hz, 1H), 7.52 – 7.45 (m, 2H), 7.34-7.27 (m, 2H), 7.22-7.15 (m, 1H), 3.25-3.15 (m, 1H), 2.30 (s, 3H), 1.15 (d, *J* = 6.7 Hz, 6H). MS (m/z): 522.0 $[M+1]^+$
179		4-bromo-1-(4-(6-(3-fluorophenyl)pyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 9.29 (d, *J* = 1.9 Hz, 1H), 8.50 (dd, *J* = 8.3, 2.3 Hz, 1H), 8.20 – 8.11 (m, 1H), 8.03 (d, *J* = 7.9 Hz, 1H), 7.98 (d, *J* = 10.2 Hz, 1H), 7.57 (dd, *J* = 14.1, 8.1 Hz, 1H), 7.30 (td, *J* = 8.4, 2.0 Hz, 1H), 3.37 – 3.29 (m, 1H), 2.21 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 533.1 $[M+1]^+$
180		(R)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-((tetrahydrofuran-3-yl)oxy)pyridin-4-yl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.22 (s, 1H), 8.04 (d, *J* = 8.3 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 6.97 (s, 1H), 6.72 (s, 1H), 5.53 – 5.48 (m, 1H), 3.93 (dd, *J* = 10.2, 4.8 Hz, 1H), 3.89 – 3.82 (m, 1H), 3.80 – 3.73 (m, 2H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.41 (s, 3H), 2.33 (s, 3H), 2.29 – 2.18 (m, 1H), 2.06 – 1.98 (m, 1H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 605.2 $[M+1]^+$

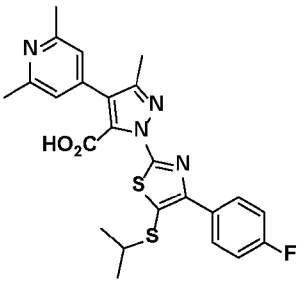
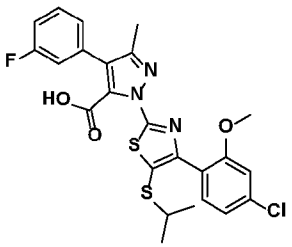
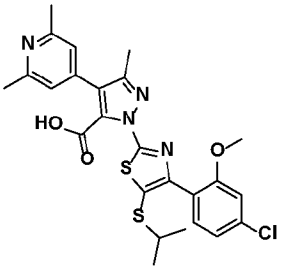
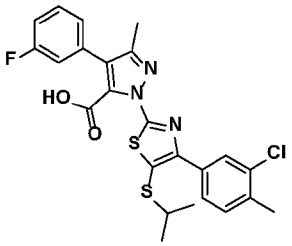
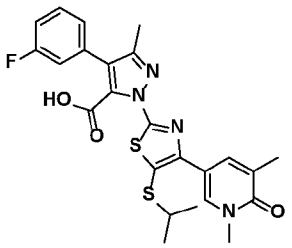
Ex.	Structure	Name	EC_{50}	Characterization
181		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-(2-methoxyethoxy)-6-methylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.22 (s, 1H), 8.04 (d, *J* = 8.4 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 6.96 (s, 1H), 6.72 (s, 1H), 4.40 – 4.35 (m, 2H), 3.69 – 3.64 (m, 2H), 3.35 (sept, *J* = 6.7 Hz, 1H), 2.41 (s, 3H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 592.9 $[M+1]^+$
182		(S)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-((tetrahydrofuran-3-yl)oxy)pyridin-4-yl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.21 (s, 1H), 8.03 (d, *J* = 10.5 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 6.96 (s, 1H), 6.69 (s, 1H), 5.55 – 5.49 (m, 1H), 3.94 (dd, *J* = 10.2, 4.8 Hz, 1H), 3.90 – 3.82 (m, 1H), 3.81 – 3.74 (m, 2H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.42 (s, 3H), 2.34 (s, 3H), 2.30 – 2.20 (m, 1H), 2.06 – 1.98 (m, 1H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 605.1 $[M+1]^+$.
183		1-(4-(cyclohex-1-en-1-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 7.52 (dd, *J* = 14.5, 8.1 Hz, 1H), 7.32 – 7.27 (m, 2H), 7.24 (t, *J* = 8.5 Hz, 1H), 6.41 – 6.37 (m, 1H), 3.28 (m, 1H), 2.46 – 2.41 (m, 2H), 2.29 (s, 3H), 2.21 (ddd, *J* = 9.8, 6.4, 3.4 Hz, 2H), 1.72 – 1.65 (m, 2H), 1.63 – 1.57 (m, 2H), 1.26 (d, *J* = 6.7 Hz, 6H); MS (m/z): 458.3 $[M+1]^+$.
184		1-(4-(cyclopent-1-en-1-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 7.54 – 7.47 (m, 1H), 7.31 (t, *J* = 7.8 Hz, 2H), 7.22 (t, *J* = 8.2 Hz, 1H), 6.58 (t, *J* = 2.0 Hz, 1H), 3.30 – 3.25 (m, 1H), 2.83 (t, *J* = 6.5 Hz, 2H), 2.49 – 2.45 (m, 2H), 2.29 (s, 3H), 1.94 (dt, *J* = 14.6, 7.4 Hz, 2H), 1.27 (d, *J* = 6.7 Hz, 6H); MS (m/z): 444.3 $[M+1]^+$

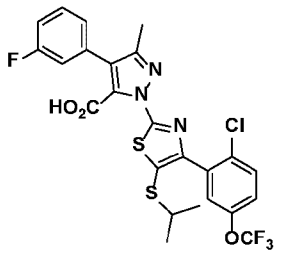
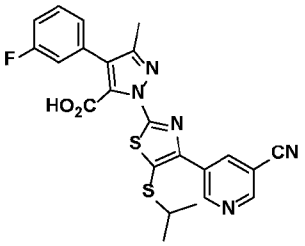
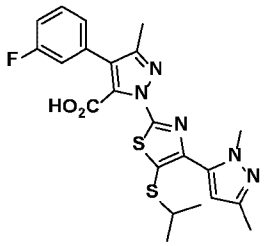
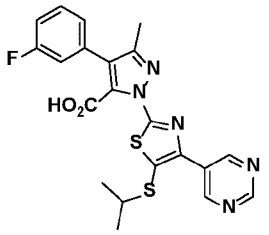
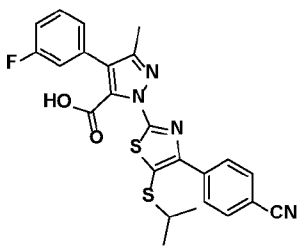
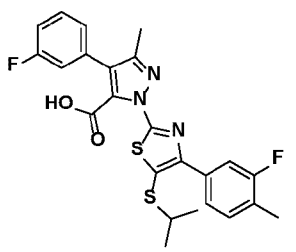
Ex.	Structure	Name	EC_{50}	Characterization
185		4-(3-chloro-5-methoxyphenyl)-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.02 (d, *J* = 7.5 Hz, 2H), 7.47 (t, *J* = 7.5 Hz, 2H), 7.40 (t, *J* = 7.3 Hz, 1H), 7.17 – 6.96 (m, 3H), 3.80 (s, 3H), 3.35 – 3.20 (m, 1H), 2.30 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H). MS (m/z): 500.1 $[M+1]^+$.
186		4-(3-fluorophenyl)-1-(4-(4-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.10 – 8.01 (m, *J* = 8.7, 5.6 Hz, 2H), 7.59 – 7.43 (m, *J* = 6.6 Hz, 1H), 7.42 – 7.26 (m, *J* = 8.9 Hz, 4H), 7.25 – 7.14 (m, 1H), 3.32 – 3.24 (m, 1H), 2.30 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 472.1 $[M+1]^+$.
187		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.00 (s, 2H), 7.54 – 7.11 (m, 4H), 7.02 (d, *J* = 8.9 Hz, 2H), 3.81 (s, 3H), 3.37 – 3.24 (m, 1H), 2.30 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 484.1 $[M+1]^+$.
188		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(methylsulfonyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 8.24 (d, *J* = 8.4 Hz, 2H), 8.01 (d, *J* = 8.6 Hz, 2H), 7.55 – 7.43 (m, *J* = 6.9 Hz, 1H), 7.43 – 7.30 (m, *J* = 10.8 Hz, 2H), 7.25 – 7.13 (m, *J* = 9.8 Hz, 1H), 3.42 – 3.35 (m, *J* = 13.6, 6.9 Hz, 1H), 3.27 (s, 3H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 532.3 $[M+1]^+$.
189		1-(4-(4-fluoro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 7.95 – 7.86 (m, 1H), 7.73 – 7.65 (m, 1H), 7.51 – 7.44 (m, 1H), 7.40 – 7.27 (m, 2H), 7.22 – 7.13 (m, 1H), 3.90 (s, 3H), 3.37 – 3.24 (m, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 502.4 $[M+1]^+$

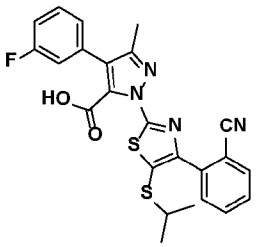
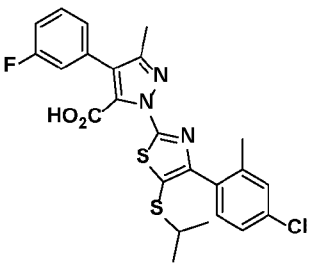
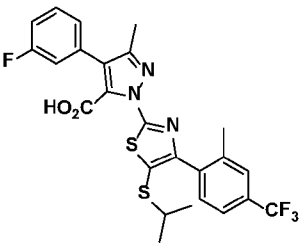
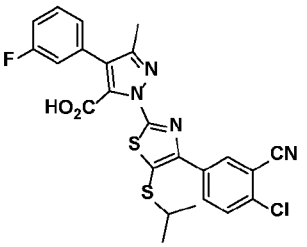
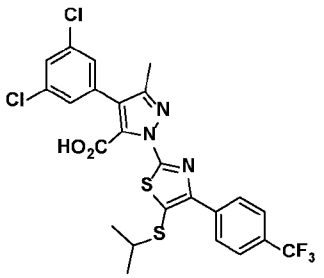
Ex.	Structure	Name	EC_{50}	Characterization
190		1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.94 (d, *J* = 1.9 Hz, 1H), 7.87 (dd, *J* = 8.4, 1.9 Hz, 1H), 7.50 (d, *J* = 8.4 Hz, 1H), 7.16 (s, 2H), 3.34 – 3.27 (m, 1H), 2.46 (s, 6H), 2.39 (s, 3H), 2.33 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 513.2 $[M+1]^+$
191		1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.94 (m, 1H), 7.86 (dd, *J* = 8.4, 1.9 Hz, 1H), 7.53 – 7.46 (m, 2H), 7.37-7.30 (m, 2H), 7.25-7.17 (m, 1H), 3.37-3.25 (m, 1H), 2.39 (s, 3H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 502.2 $[M+1]^+$
192		1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.97 (s, 1H), 7.95 (s, 1H), 7.18 (s, 2H), 3.43 – 3.32 (m, 1H), 2.45 (s, 6H), 2.33 (s, 3H), 1.26 (d, *J* = 6.7 Hz, 6H). MS (m/z): 535.2 $[M+1]^+$
193		1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.97 (s, 1H), 7.95 (s, 1H), 7.52-7.45 (m,1H), 7.39-7.32 (m, 2H), 7.23-7.16 (m, 1H), 3.44 – 3.32 (m, 1H), 2.31 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H). MS (m/z): 524.2 $[M+1]^+$
194		1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.86-7.83 (m, 1H), 7.71 (dd, *J* = 8.4, 1.8 Hz, 1H), 7.51 (d, *J* = 8.4 Hz, 1H), 7.16 (s, 2H), 3.91 (s, 3H), 3.43 – 3.31 (m, 1H), 2.46 (s, 6H), 2.33 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H). MS (m/z): 529.3 $[M+1]^+$
195		1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 7.89-7.85 (m, 1H), 7.73-7.69 (m, 1H), 7.54 – 7.45 (m, 2H), 7.40-7.31 (m, 2H), 7.24-7.16 (m, 1H), 3.91 (s, 3H), 3.41 – 3.31 (m, 1H), 2.31 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H). MS (m/z): 518.3 $[M+1]^+$.

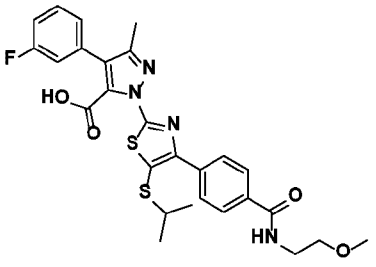
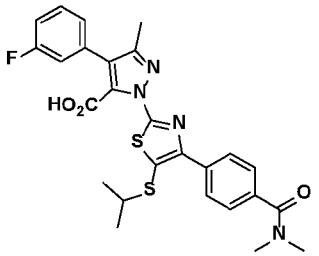
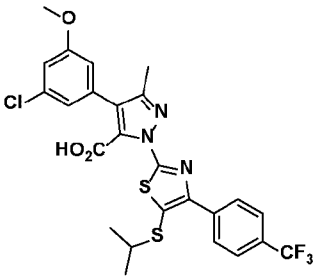
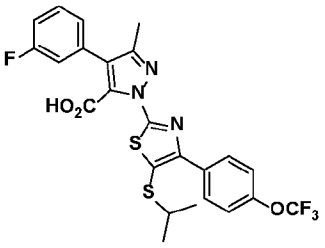
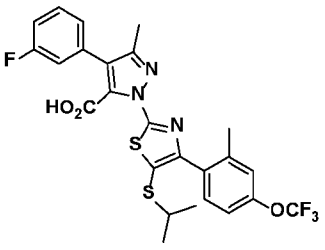
Ex.	Structure	Name	EC_{50}	Characterization
196		4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 8.3 Hz, 2H), 7.83 (d, *J* = 8.3 Hz, 2H), 7.16 (s, 2H), 3.44 – 3.31 (m, 1H), 2.46 (s, 6H), 2.33 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 533.4 $[M+1]^+$
197		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 8.3 Hz, 2H), 7.83 (d, *J* = 8.3 Hz, 2H), 7.53-7.46 (m, 1H), 7.38-7.31 (m, 2H), 7.25-7.18 (m, 1H), 3.44 – 3.31 (m, 1H), 2.30 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 522.3 $[M+1]^+$
198		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methyl-5-(oxetan-3-yloxy)phenyl)-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 1.7 Hz, 1H), 8.04 (dd, *J* = 8.5, 1.8 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.17 (s, 1H), 6.89 (s, 2H), 5.33 (d, *J* = 5.2 Hz, 1H), 4.95 (t, *J* = 7.0 Hz, 2H), 4.56 (dd, *J* = 8.0, 4.9 Hz, 2H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 610.0 $[M+1]^+$
199		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-methoxy-6-methylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.78 (d, *J* = 8.5 Hz, 1H), 6.94 (s, 1H), 6.68 (s, 1H), 3.87 (s, 3H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.44 (s, 3H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 549.4 $[M+1]^+$.

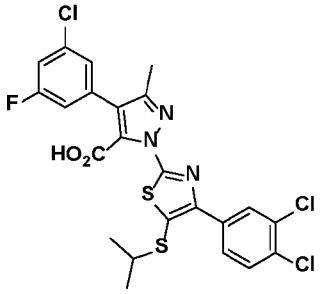
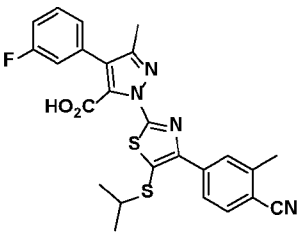
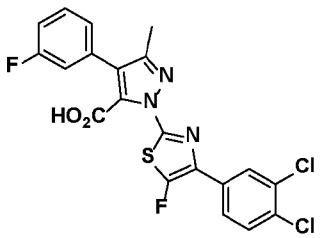
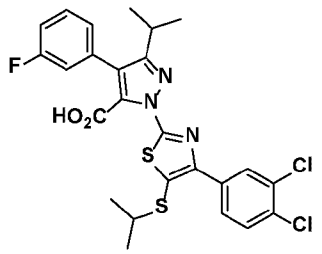
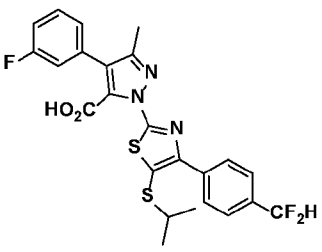
Ex.	Structure	Name	EC_{50}	Characterization
200		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-(oxetan-3-yloxy)phenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 1.9 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 6.94 (d, *J* = 8.8 Hz, 1H), 6.76 (d, *J* = 10.7 Hz, 1H), 6.71 (s, 1H), 5.33 (quint., *J* = 5.3 Hz, 1H), 4.94 (t, *J* = 6.7 Hz, 2H), 4.57 (dd, *J* = 7.2, 5.0 Hz, 2H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 594.3 $[M+1]^+$
201a		4-(3-fluorophenyl)-1-(4-(3-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, MeOD) δ 8.09 – 8.04 (m, 1H), 8.02 – 7.96 (m, 1H), 7.47 – 7.40 (m, 2H), 7.39 – 7.35 (m, 1H), 7.34 – 7.29 (m, 1H), 7.12 – 7.02 (m, 2H), 3.31 – 3.24 (m, 1H), 2.35 (s, 3H), 1.29 (d, *J* = 6.7 Hz, 6H); MS (m/z): 472.4 $[M+1]^+$.
201b		1-(4-(benzofuran-2-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, MeOD) δ 7.66 (d, *J* = 7.7 Hz, 1H), 7.56 – 7.52 (m, 1H), 7.51 (d, *J* = 0.9 Hz, 1H), 7.47 – 7.40 (m, 1H), 7.38 (dt, *J* = 7.7, 1.2 Hz, 1H), 7.36 – 7.31 (m, 2H), 7.29 – 7.23 (m, 1H), 7.10 – 7.03 (m, 1H), 3.50 – 3.41 (m, 1H), 2.36 (s, 3H), 1.39 (d, *J* = 6.7 Hz, 6H); MS (m/z): 494.3 $[M+1]^+$.
202		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.01 (d, *J* = 7.2 Hz, 2H), 7.47 (t, *J* = 7.5 Hz, 3H), 7.43 – 7.29 (m, 3H), 7.18 (s, 1H), 3.33 (1H, below water signal), 2.30 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 454.4 $[M+1]^+$
203		1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-1',3-dimethyl-1H,1'H-[4,4'-bipyrazole]-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 8.02 – 7.97 (m, 2H), 7.95 (s, 1H), 7.64 (d, *J* = 0.7 Hz, 1H), 7.52 – 7.45 (m, 2H), 7.44 – 7.38 (m, 1H), 3.89 (s, 3H), 3.33 (1H, below water signal), 2.35 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 440.4 $[M+1]^+$.

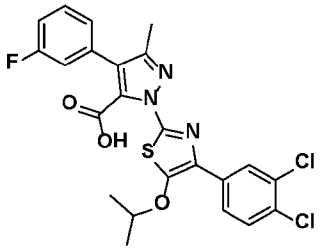
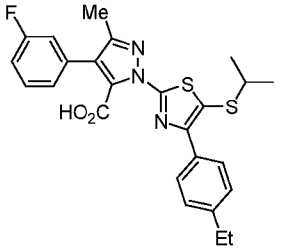
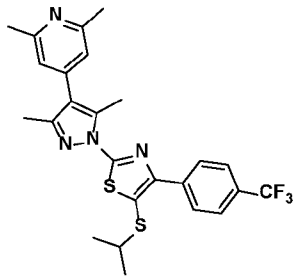
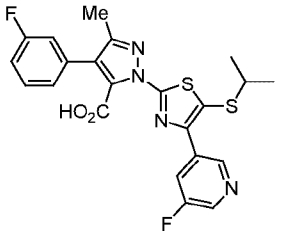
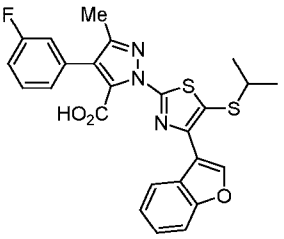
Ex.	Structure	Name	EC_{50}	Characterization
204		4-(2,6-dimethylpyridin-4-yl)-1-(4-(4-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.09 – 8.02 (m, 2H), 7.32 (t, *J* = 8.9 Hz, 2H), 7.14 (s, 2H), 3.33 (1H, below water signal), 2.46 (s, 6H), 2.33 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 483.2 $[M+1]^+$.
205		1-(4-(4-chloro-2-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.52-7.42 (m, 1H), 7.36 – 7.25 (m, 3H), 7.23-7.14 (m, 2H), 7.10 (dd, *J* = 8.1, 2.0 Hz, 1H), 3.79 (s, 3H), 3.24 – 3.12 (m, 1H), 2.29 (s, 3H), 1.14 (d, *J* = 6.7 Hz, 6H). MS (m/z): 518.1 [M+1]+
206		1-(4-(4-chloro-2-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.28 (d, *J* = 8.1 Hz, 1H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.13 – 7.08 (m, 3H), 3.79 (s, 3H), 3.23-3.14 (m, 1H), 2.45 (s, 6H), 2.31 (s, 3H), 1.14 (d, *J* = 6.7 Hz, 6H). MS (m/z): 529.2 [M+1]+
207		1-(4-(3-chloro-4-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 14.36 (s, 1H), 8.04 (d, *J* = 1.6 Hz, 1H), 7.90 (dd, *J* = 8.0, 1.6 Hz, 1H), 7.54-7.47 (m, 1H), 7.45 (d, *J* = 8.0 Hz, 1H), 7.37-7.30 (m, 2H), 7.25-7.18 (m, 1H), 3.35-3.30 (m, 1H), 2.37 (s, 3H), 2.30 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 502.1 [M+1]+
208		1-(4-(1,5-dimethyl-6-oxo-1,6-dihydropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 8.18-8.11 (m, 1H), 8.04 (bs, 1H), 7.50-7.43 (m, 1H), 7.40-7.32 (m, 2H), 7.21-7.14 (m, 1H), 3.48 (s, 3H), 3.35-3.24 (m, 1H), 2.30 (s, 3H), 2.05 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 499.2 [M+1]+.

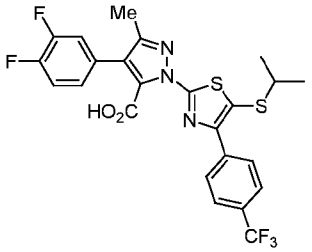
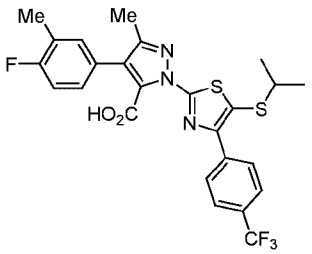
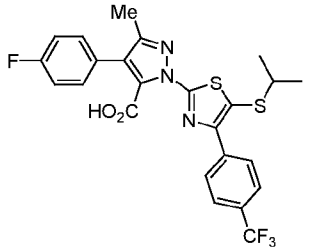
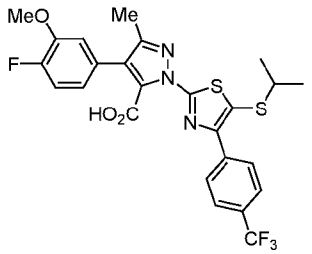
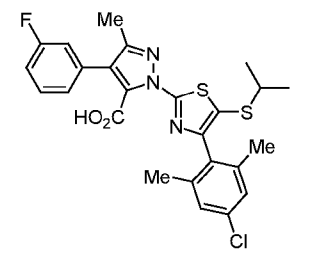
Ex.	Structure	Name	EC_{50}	Characterization
209		1-(4-(2-chloro-5-(trifluoromethoxy)phenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 14.10 (s, 1H), 7.76 – 7.71 (m, 1H), 7.57 – 7.46 (m, 3H), 7.35 – 7.26 (m, 2H), 7.26 – 7.17 (m, 1H), 3.21 (hept, *J* = 6.7 Hz, 1H), 2.31 (s, 3H), 1.15 (d, *J* = 6.7 Hz, 6H); MS (m/z): 572.1 $[M+1]^+$
210		1-(4-(5-cyanopyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 9.11 (s, 1H), 8.97 (d, *J* = 2.0 Hz, 1H), 8.73 (s, 1H), 8.16 (s, 1H), 7.63 (s, 1H), 7.42 (s, 1H), 7.27 (s, 2H), 7.13 (s, 1H), 3.28 (sept, *J* = 6.7 Hz, 1H), 2.25 (s, 3H), 1.16 (d, *J* = 6.7 Hz, 6H); MS (m/z): 498.2 $[M+1]^+$.
211		1-(4-(1,3-dimethyl-1H-pyrazol-5-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 7.56 – 7.50 (m, 1H), 7.33 – 7.24 (m, 3H), 6.53 (s, 1H), 3.82 (s, 3H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 2.19 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 472.2 $[M+1]^+$
212		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(pyrimidin-5-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 9.36 (s, 2H), 9.23 (s, 1H), 7.56-7.47 (m, 1H), 7.38-7.31 (m, 2H), 7.26-7.17 (m, 1H), 3.45 – 3.33 (m, 1H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 456.1 $[M+1]^+$.
213		1-(4-(4-cyanophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, MeOD) δ 8.38-8.34 (m, 2H), 7.81-7.76 (m, 2H), 7.48-7.42 (m, 1H), 7.34 – 7.30 (m, 1H), 7.29 – 7.24 (m, 1H), 7.13-7.07 (m, 1H), 3.37 – 3.26 (m, 1H), 2.34 (s, 3H), 1.28 (d, *J* = 6.7 Hz, 6H). MS (m/z): 479.1 [M+1]+
214		1-(4-(3-fluoro-4-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.83-7.80 (m, 1H), 7.77-7.71 (m,1H), 7.55 – 7.49 (m, 1H), 7.39 (t, *J* = 8.1 Hz, 1H), 7.36-7.29 (m, 2H), 7.27-7.21 (m, 1H), 3.37 – 3.31 (m, 1H), 2.31 (s, 3H), 2.29 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 486.3 [M+1]+

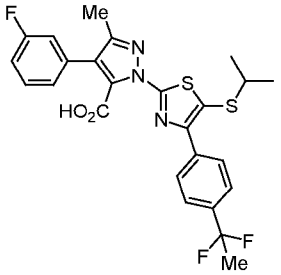
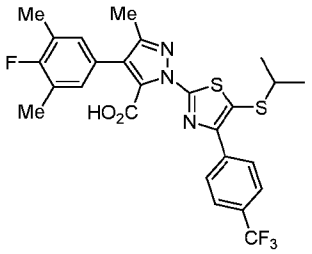
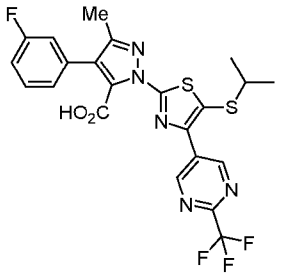
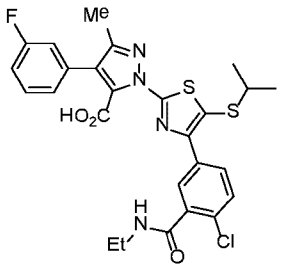
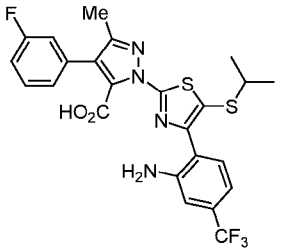
Ex.	Structure	Name	EC_{50}	Characterization
215		1-(4-(2-cyanophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	E	^{1}H NMR (500 MHz, DMSO) δ 14.07 (bs, 1H), 7.94-7.89 (m, 1H), 7.79-7.72 (m, 1H), 7.63-7.57 (m, 2H), 7.47-7.39 (m, 1H), 7.30-7.20 (m, 2H), 7.19-7.08 (m, 1H), 3.20-3.09 (m, 1H), 2.25 (s, 3H), 1.05 (d, *J* = 6.7 Hz, 6H). MS (m/z): 479.0 [M+1]+
216		1-(4-(4-chloro-2-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 7.49 (s, 1H), 7.43 (s, 1H), 7.37 – 7.32 (m, 2H), 7.32 – 7.17 (m, 3H), 3.18 (hept, *J* = 6.7 Hz, 1H), 2.30 (s, 3H), 2.23 (s, 3H), 1.14 (d, *J* = 6.7 Hz, 6H). MS (m/z): 502.1 $[M+H]^+$.
217		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(2-methyl-4-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 7.72 (s, 1H), 7.64 (d, *J* = 8.1 Hz, 1H), 7.55 (d, *J* = 8.0 Hz, 1H), 7.54 – 7.47 (m, 1H), 7.33 – 7.26 (m, 2H), 7.26 – 7.19 (m, 1H), 3.21 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 2.30 (s, 3H), 1.15 (d, *J* = 6.7 Hz, 6H); MS (m/z): 536.2 $[M+1]^+$.
218		1-(4-(4-chloro-3-cyanophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, $CDCl_3$) δ 8.45 (s, 1H), 8.38 (d, *J* = 8.2 Hz, 1H), 7.88 (d, *J* = 8.6 Hz, 1H), 7.52 – 7.44 (m, 1H), 7.42 – 7.33 (m, 2H), 7.22 – 7.14 (m, 1H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 512.9 $[M+1]^+$
219		4-(3,5-dichlorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 8.2 Hz, 2H), 7.85 (d, *J* = 8.2 Hz, 2H), 7.65 (s, 1H), 7.55 (d, *J* = 1.8 Hz, 2H), 3.41 – 3.28 (m, 1H), 2.32 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 571.9 $[M+1]^+$

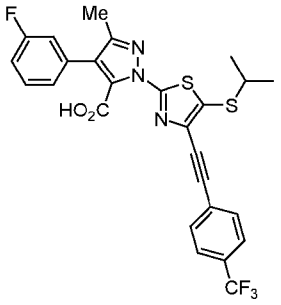
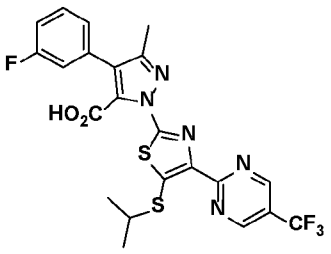
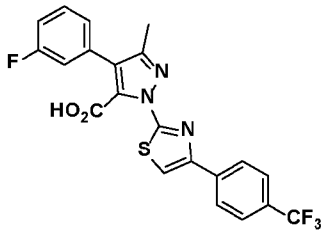
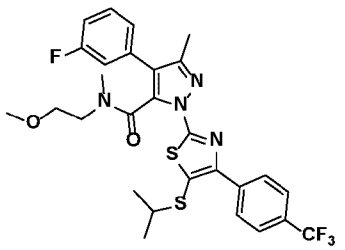
Ex.	Structure	Name	EC_{50}	Characterization
220		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-((2-methoxyethyl)carbamoyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 8.60 (t, *J* = 5.3 Hz, 1H), 8.08 (d, *J* = 8.4 Hz, 2H), 7.95 – 7.89 (m, 2H), 7.54-7.47 (m, 1H), 7.40-7.30 (m, 2H), 7.25-7.16 (m, 1H), 3.50 – 3.41 (m, 4H), 3.36 – 3.30 (m, 1H), 3.28 (s, 3H), 2.32 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H). MS (m/z): 555.2 [M+1]+.
221		1-(4-(4-(dimethylcarbamoyl)phenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 8.07 (d, *J* = 8.2 Hz, 2H), 7.53 – 7.44 (m, 3H), 7.39-7.30 (m, 2H), 7.24-7.14 (m, 1H), 3.41 – 3.26 (m, 1H), 3.00 (s, 3H), 2.94 (s, 3H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 525.2 $[M+1]^+$
222		4-(3-chloro-5-methoxyphenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 8.3 Hz, 2H), 7.83 (d, *J* = 8.3 Hz, 2H), 7.12 (s, 1H), 7.04 (s, 2H), 3.81 (s, 3H), 3.40 – 3.27 (m, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 568.1 [M+1]+
222		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethoxy)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.11 (d, *J* = 8.8 Hz, 2H), 7.55 – 7.45 (m, 3H), 7.36 – 7.29 (m, 2H), 7.23 (t, *J* = 8.2 Hz, 1H), 3.34 (hept, J = 6.7 Hz, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 538.0 $[M+1]^+$
224		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(2-methyl-4-(trifluoromethoxy)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 7.54 – 7.48 (m, 1H), 7.45 (d, *J* = 8.4 Hz, 1H), 7.35 (s, 1H), 7.32 – 7.20 (m, 4H), 3.20 (hept, *J* = 6.7 Hz, 1H), 2.31 (s, 3H), 2.25 (s, 3H), 1.15 (d, *J* = 6.7 Hz, 6H); MS (m/z): 552.1 $[M+1]^+$

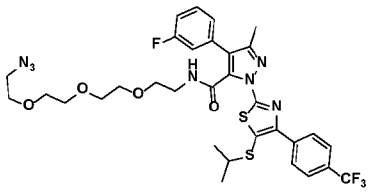
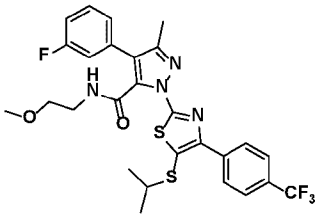
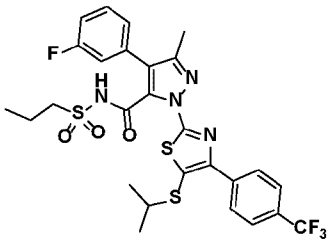
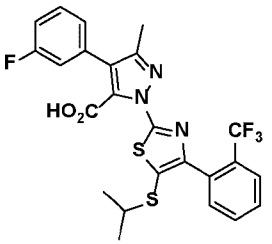
Ex.	Structure	Name	EC_{50}	Characterization
225		4-(3-chloro-5-fluorophenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.48 (d, *J* = 8.7 Hz, 1H), 7.42 (s, 1H), 7.39 – 7.33 (m, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 555.8 $[M+1]^+$
226		1-(4-(4-cyano-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.04 (s, 1H), 8.01 (d, *J* = 8.0 Hz, 1H), 7.86 (d, *J* = 8.0 Hz, 1H), 7.52-7.44 (m, 1H), 7.40-7.31 (m, 2H), 7.24-7.16 (m, 1H), 3.43 – 3.29 (m, 1H), 2.54 (s, 3H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 493.1 $[M+1]^+$
227		1-(4-(3,4-dichlorophenyl)-5-fluorothiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 7.92 (t, *J* = 1.1 Hz, 1H), 7.76 (d, *J* = 1.1 Hz, 2H), 7.48 (dd, *J* = 14.4, 8.0 Hz, 1H), 7.41 – 7.30 (m, *J* = 15.4, 9.1 Hz, 2H), 7.19 (t, *J* = 7.6 Hz, 1H), 3.33 (1H, below water signal), 2.29 (s, 3H); MS (m/z): 466.9 $[M+1]^+$.
228		1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-isopropyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, MeOD) δ 8.45 (d, *J* = 2.0 Hz, 1H), 8.14 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.55 (d, *J* = 8.5 Hz, 1H), 7.45 – 7.37 (m, 1H), 7.33 – 7.29 (m, 1H), 7.28 – 7.22 (m, 1H), 7.06 (td, *J* = 8.1, 2.1 Hz, 1H), 3.29 – 3.24 (m, 1H), 3.15 – 3.09 (m, 1H), 1.32 – 1.21 (m, 12H); MS (m/z): 552.02 $[M+1]^+$
229		1-(4-(4-(difluoromethyl)phenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.13 (d, *J* = 8.2 Hz, 2H), 7.67 (d, *J* = 8.3 Hz, 2H), 7.53 – 7.47 (m, 1H), 7.37 – 7.30 (m, 2H), 7.25 – 7.20 (m, 1H), 7.09 (t, *J* = 55.0 Hz, 1H), 3.33 (1H, below water signal), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 504.2 $[M+1]^+$.

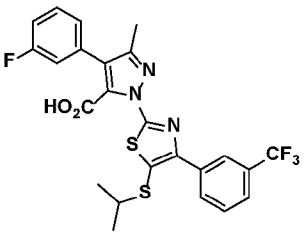
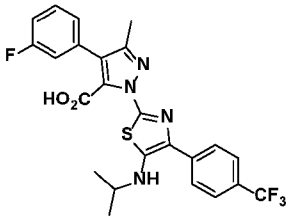
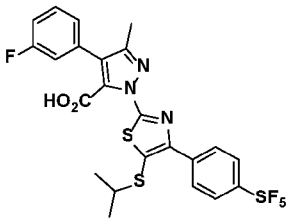
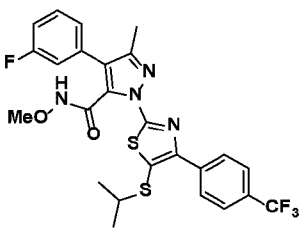
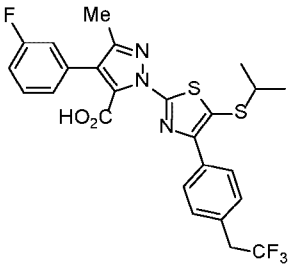
Ex.	Structure	Name	EC_{50}	Characterization
230		1-(4-(3,4-dichlorophenyl)-5-isopropoxythiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz,) δ 8.12 (s, 1H), 7.96 (d, *J* = 8.4 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.50 (dd, *J* = 14.4, 7.6 Hz, 1H), 7.42 (d, *J* = 10.0 Hz, 1H), 7.38 (d, *J* = 7.7 Hz, 1H), 7.19 (s, 1H), 4.52 (dt, *J* = 11.8, 6.0 Hz, 1H), 2.32 (s, 3H), 1.47 (d, *J* = 6.0 Hz, 6H); MS (m/z): 506.07 [M+1]+.
231		1-(4-(4-ethylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.93 (d, *J* = 8.2 Hz, 2H), 7.50 (dd, *J* = 14.6, 7.7 Hz, 1H), 7.35-7.29 (m, 4H), 7.21 (t, *J* = 8.8 Hz, 1H), 2.65 (q, *J* = 7.7 Hz, 2H), 2.31 (s, 3H), 1.22 (dd, *J* = 8.3, 7.2 Hz, 9H); MS (m/z): 482.18 $[M+1]^+$
232		2-(4-(2,6-dimethylpyridin-4-yl)-3,5-dimethyl-1H-pyrazol-1-yl)-5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazole	E	^{1}H NMR (500 MHz, $CDCl_3$) δ 8.25 (d, *J* = 8.2 Hz, 2H), 7.69 (d, *J* = 8.3 Hz, 2H), 6.89 (s, 2H), 3.25 (h, *J* = 6.7 Hz, 1H), 2.74 (s, 3H), 2.59 (s, 6H), 2.31 (s, 3H), 1.28 (d, *J* = 6.7 Hz, 6H). MS (m/z): 503.17 $[M+1]^+$
233		4-(3-fluorophenyl)-1-(4-(5-fluoropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 9.16 (s, 1H), 8.63 (d, *J* = 2.7 Hz, 1H), 8.28 – 8.24 (m, 1H), 7.48 – 7.38 (m, 3H), 7.11 (t, *J* = 7.9 Hz, 1H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 473.07 $[M+1]^+$
234		1-(4-(benzofuran-3-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	I	MS (m/z): 494.19 $[M+1]^+$

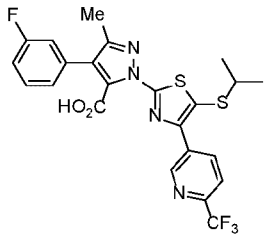
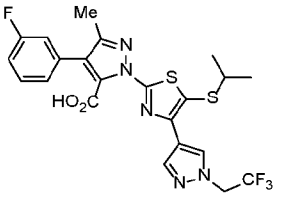
Ex.	Structure	Name	EC_{50}	Characterization
235		4-(3,4-difluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.25 (d, *J* = 8.2 Hz, 2H), 7.80 (d, *J* = 8.3 Hz, 2H), 7.61 (ddd, *J* = 12.0, 7.9, 1.9 Hz, 1H), 7.46 (dt, *J* = 10.7, 8.7 Hz, 1H), 7.36 (s, 1H), 2.28 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 540.22 $[M+1]^+$
236		4-(4-fluoro-3-methylphenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.24 (d, *J* = 8.2 Hz, 2H), 7.78 (d, *J* = 8.3 Hz, 2H), 7.40 (dd, *J* = 7.4, 1.5 Hz, 1H), 7.36 – 7.30 (m, 1H), 7.18 – 7.12 (m, 1H), 2.25 (s, 3H), 2.25 (s, 3H), 1.21 (d, *J* = 6.7 Hz, 6H); MS (m/z): 536.26 $[M+1]^+$
237		4-(4-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, MeOD) δ 8.43 (d, *J* = 8.1 Hz, 2H), 7.72 (d, *J* = 8.3 Hz, 2H), 7.59 – 7.55 (m, 2H), 7.17 – 7.11 (m, 2H), 2.33 (s, 3H), 1.28 (d, *J* = 6.7 Hz, 6H); MS (m/z): 522.18 $[M+1]^+$
238		4-(4-fluoro-3-methoxyphenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, MeOD) δ 8.45 (d, *J* = 8.2 Hz, 2H), 7.72 (d, *J* = 8.3 Hz, 2H), 7.36 (dd, *J* = 8.3, 2.0 Hz, 1H), 7.16 – 7.03 (m, 3H), 3.92 (s, 3H), 3.28 (dt, *J* = 13.3, 6.7 Hz, 1H), 2.35 (s, 3H), 1.29 (d, *J* = 6.7 Hz, 6H); MS (m/z): 552.14 $[M+1]^+$
239		1-(4-(4-chloro-2,6-dimethylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 7.50 (dd, *J* = 14.2, 7.7 Hz, 1H), 7.30 – 7.20 (m, 5H), 3.20 (dt, *J* = 13.2, 6.6 Hz, 1H), 2.30 (s, 3H), 2.06 (s, 6H), 1.19 (d, *J* = 6.7 Hz, 6H); MS (m/z): 516.24 $[M+1]^+$.

Ex.	Structure	Name	EC_{50}	Characterization
240		1-(4-(4-(1,1-difluoroethyl)phenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.09 (d, *J* = 8.5 Hz, 2H), 7.66 (d, *J* = 8.5 Hz, 2H), 7.54 – 7.49 (m, 1H), 7.32 (t, *J* = 7.7 Hz, 2H), 7.24 (t, *J* = 7.9 Hz, 1H), 2.32 (s, 3H), 2.01 (t, *J* = 18.9 Hz, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 518.22 $[M+1]^+$.
241		4-(4-fluoro-3,5-dimethylphenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 8.1 Hz, 2H), 7.82 (d, *J* = 8.3 Hz, 2H), 7.19 (d, *J* = 6.9 Hz, 2H), 2.28 (s, 3H), 2.25 (s, 3H), 2.25 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 550.18 $[M+1]^+$
242		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(2-(trifluoromethyl)pyrimidin-5-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 9.60 (s, 2H), 7.51 (dd, *J* = 15.1, 8.0 Hz, 1H), 7.36 (t, *J* = 8.8 Hz, 2H), 7.22 (t, *J* = 8.8 Hz, 1H), 2.33 (s, 3H), 1.27 (d, *J* = 6.7 Hz, 6H); MS (m/z): 524.25 $[M+1]^+$
243		1-(4-(4-chloro-3-(ethylcarbamoyl)phenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	I	^{1}H NMR (500 MHz, DMSO) δ 8.43 (t, *J* = 5.6 Hz, 1H), 7.99 – 7.94 (m, 2H), 7.52 (d, *J* = 8.4 Hz, 1H), 7.43 (dd, *J* = 14.6, 7.8 Hz, 1H), 7.26 (t, *J* = 9.9 Hz, 2H), 2.24 (s, 3H), 1.18 (d, *J* = 6.7 Hz, 6H), 1.05 (t, *J* = 7.2 Hz, 3H); MS (m/z): 559.14 $[M+1]^+$
244		1-(4-(2-amino-4-(trifluoromethyl)phenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 7.52 – 7.43 (m, 2H), 7.34 (dd, *J* = 15.6, 9.5 Hz, 2H), 7.21 – 7.14 (m, 1H), 7.11 (s, 1H), 6.87 (d, *J* = 8.0 Hz, 1H), 2.30 (s, 3H), 1.16 (d, *J* = 6.7 Hz, 6H); MS (m/z): 537.23 $[M+1]^+$

Ex.	Structure	Name	EC_{50}	Characterization
245		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-((4-(trifluoromethyl)phenyl) ethynyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	1H NMR (500 MHz, DMSO) δ 7.85 – 7.74 (m, 5H), 7.46 (dd, J = 14.4, 7.7 Hz, 1H), 7.36 (dd, J = 18.1, 9.2 Hz, 2H), 3.49 (dt, J = 13.3, 6.6 Hz, 1H), 2.29 (s, 3H), 1.34 (d, J = 6.7 Hz, 6H); MS (m/z): 546.22 [M+1]+
246		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(5-(trifluoromethyl)pyrimidin-2-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 9.36 (s, 2H), 7.47 (dd, *J* = 14.5, 7.6 Hz, 1H), 7.36 (d, *J* = 9.3 Hz, 1H), 7.33 (d, *J* = 7.7 Hz, 1H), 7.21 – 7.15 (m, 1H), 3.57 (dt, *J* = 13.3, 6.7 Hz, 1H), 2.29 (s, 3H), 1.40 (d, *J* = 6.6 Hz, 6H); MS (m/z): 524.1 $[M+1]^+$
247		4-(3-fluorophenyl)-3-methyl-1-(4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.13 (d, *J* = 8.3 Hz, 2H), 7.81 (d, *J* = 8.3 Hz, 2H), 7.50 (dd, *J* = 14.6, 7.2 Hz, 1H), 7.35 (t, *J* = 9.9 Hz, 2H), 7.21 (t, *J* = 8.6 Hz, 1H), 2.32 (s, 3H). MS (m/z): 448.1 $[M+1]^+$
248		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-N-(2-methoxyethyl)-N,3-dimethyl-1H-pyrazole-5-carboxamide	K	^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 8.2 Hz, 2H), 8.14 (d, *J* = 8.2 Hz, 2H), 7.92 – 7.87 (m, 4H), 7.56 – 7.49 (m, 2H), 7.36 – 7.20 (m, 6H), 3.97 – 3.89 (m, 1H), 3.49 – 3.42 (m, 1H), 3.41 – 3.34 (m, , 2H), 3.24 – 3.17 (m, 2H), 3.07 (s, 3H), 3.02 (s, 2H), 2.91 (s, 2H), 2.82 (s, 3H), 2.54 – 2.52 (m, 1H), 2.39 (s, 3H), 2.38 (s, 2H), 1.24 (dd, *J* = 6.6, 2.8 Hz, 11H). MS (m/z): 593.2 $[M+1]^+$

Ex.	Structure	Name	EC_{50}	Characterization
249		N-(2-(2-(2-(2-azidoethoxy)ethoxy)ethoxy)ethyl)-4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxamide	K	^{1}H NMR (500 MHz, MeOD) δ 8.27 (d, *J* = 8.2 Hz, 2H), 7.75 (d, *J* = 8.3 Hz, 2H), 7.47 (td, *J* = 8.0, 6.1 Hz, 1H), 7.32 – 7.28 (m, 1H), 7.26 – 7.20 (m, 1H), 7.16 – 7.10 (m, 1H), 3.60 – 3.56 (m, 2H), 3.56 – 3.50 (m, 4H), 3.50 – 3.41 (m, 6H), 3.31 (3H, below MeOH signal),3.30 – 3.24 (m, 2H), 2.37 (s, 3H), 1.27 (d, *J* = 6.7 Hz, 6H). MS (m/z): 722.3 $[M+1]^+$.
250		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-N-(2-methoxyethyl)-3-methyl-1H-pyrazole-5-carboxamide	D	^{1}H NMR (500 MHz, DMSO) δ 9.04 (t, *J* = 5.6 Hz, 1H), 8.18 (d, *J* = 8.1 Hz, 2H), 7.88 (d, *J* = 8.2 Hz, 2H), 7.54 – 7.47 (m, 1H), 7.36 – 7.28 (m, 2H), 7.25 – 7.19 (m, 1H), 3.41 – 3.33 (m, 3H), 3.28 (t, *J* = 5.8 Hz, 2H), 3.05 (s, 3H), 2.35 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 579.1 $[M+1]^+$
251		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-N-(propylsulfonyl)-1H-pyrazole-5-carboxamide	K	^{1}H NMR (500 MHz, MeOD) δ 8.37 (d, *J* = 8.1 Hz, 2H), 7.72 (d, *J* = 8.3 Hz, 2H), 7.46 (td, *J* = 8.0, 6.2 Hz, 1H), 7.35 – 7.31 (m, 1H), 7.30 – 7.25 (m, 1H), 7.11 (td, *J* = 8.2, 1.8 Hz, 1H), 3.30 – 3.20 (m, *J* = 13.4, 6.7 Hz, 1H), 3.13 – 3.05 (m, 2H), 2.34 (s, 3H), 1.55 – 1.44 (m, 2H), 1.26 (d, *J* = 6.7 Hz, 6H), 0.73 (t, *J* = 7.5 Hz, 3H). MS (m/z): 627.1 $[M+1]^+$
252		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(2-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, DMSO) δ 13.97 (s, 1H), 7.88-7.83 (m, 1H), 7.80-7.75 (m, 1H), 7.73-7.67 (m, 1H), 7.57 – 7.42 (m, 2H), 7.36 – 7.13 (m, 3H), 3.25 – 3.12 (m, 1H), 2.30 (s, 3H), 1.16 (d, *J* = 6.7 Hz, 6H). MS (m/z): 522.0 $[M+1]^+$

Ex.	Structure	Name	EC_{50}	Characterization
253		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(3-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, DMSO) δ 8.40 (bs, 1H), 8.31-8.25 (m, 1H), 7.81-7.77 (m, 1H), 7.76-7.71 (m, 1H), 7.54-7.46 (m, 1H), 7.39-7.30 (m, 2H), 7.26-7.16 (m, 1H), 3.39-3.28 (m, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 521.9 $[M+1]^+$
254		4-(3-fluorophenyl)-1-(5-(isopropylamino)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	C	^{1}H NMR (500 MHz, MeOD) δ 8.10 (d, *J* = 8.4 Hz, 2H), 7.67 (d, *J* = 8.4 Hz, 2H), 7.49-7.43 (m, 1H), 7.30-7.27 (m, 1H), 7.25 – 7.21 (m, 1H), 7.15-7.09 (m, 1H), 3.44-3.38 (m, 1H), 2.33 (s, 3H), 1.32 (d, *J* = 6.3 Hz, 6H). MS (m/z): 505.2 $[M+1]^+$
255		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(pentafluoro-λ^6-sulfaneyl)phenyl)thiazol -2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	A	^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 8.8 Hz, 2H), 8.00 (d, *J* = 8.8 Hz, 2H), 7.53-7.46 (m, 1H), 7.38-7.30 (m, 2H), 7.24-7.16 (m, 1H), 3.45 – 3.29 (m, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 580.0 $[M+1]^+$
256		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl) thiazol-2-yl)-N-methoxy-3-methyl-1H-pyrazole-5-carboxamide	D	^{1}H NMR (500 MHz, DMSO) δ 11.96 – 11.82 (bs, 1H), 8.19 (d, *J* = 8.3 Hz, 2H), 7.86 (d, *J* = 8.3 Hz, 2H), 7.64 – 7.45 (m, 1H), 7.37 – 7.19 (m, 3H), 3.57 (s, 3H), 3.41-3.32 (m, 1H), 2.36 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 551.1 $[M+1]^+$
257		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(2,2,2-trifluoroethyl)phenyl)thi azol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 8.02 (d, *J* = 8.2 Hz, 2H), 7.50-7.45 (m, 3H), 7.39-7.33 (m, 2H), 7.22-7.16 (m, 1H), 3.71 (q, *J* = 11.6 Hz, 2H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 536.2 $[M+1]^+$

Ex.	Structure	Name	EC_{50}	Characterization
258		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(6-(trifluoromethyl)pyridin-3-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	B	^{1}H NMR (500 MHz, DMSO) δ 9.32 (d, *J* = 1.7 Hz, 1H), 8.67 (dd, *J* = 8.2, 1.8 Hz, 1H), 7.98 (d, *J* = 8.2 Hz, 1H), 7.49 (q, *J* = 10.0 Hz, 1H), 7.37-7.34 (m, 2H), 7.21-7.18 (m, 1H), 3.40-3.35 (m, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 523.1 $[M+1]^+$
259		4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(1-(2,2,2-trifluoroethyl)-1H-pyrazol-4-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid	D	^{1}H NMR (500 MHz, MeOD) δ 8.51 (s, 1H), 8.39 (s, 1H), 7.43-7.31 (m, 3H), 7.05-7.02 (m, 1H), 4.98 (q, *J* = 8.6 Hz, 2H), 3.28-3.24 (m, 1H), 2.33 (s, 3H), 1.31 (d, *J* = 6.7 Hz, 6H). MS (m/z): 526.0 $[M+1]^+$

[46] The compounds described herein may in certain embodiments contain one or more asymmetric carbon atoms, so that the compounds can exist in different stereoisomeric forms. These compounds can be, for example, racemates, chiral non-racemic or diastereomers. In these situations, the single enantiomers, i.e., optically active forms, can be obtained by asymmetric synthesis or by resolution of the racemates. Resolution of the racemates can be accomplished, for example, by conventional methods such as crystallization in the presence of a resolving agent; chromatography, using, for example a chiral hPLC column; or derivatizing the racemic mixture with a resolving reagent to generate diastereomers, separating the diastereomers via chromatography, and removing the resolving agent to generate the original compound in enantiomerically enriched form. Any of the above procedures can be repeated to increase the enantiomeric purity of a compound.

[47] When the compounds described herein contain olefinic double bonds or other centers of geometric asymmetry, and unless otherwise specified, it is intended that the compounds include the cis, trans, Z- and E- configurations. Likewise, all tautomeric forms are also intended to be included.

[48] In certain embodiments of the methods, compounds and uses as otherwise described herein, the compound is not one of compounds 1-187 of the table above.

[49] In certain embodiments of the methods, compounds and uses as otherwise described herein, the compound is in the form of an N-oxide. But in certain embodiments as described above, the compound is not in the form of an N-oxide.

[50] In certain embodiments of the methods, compounds and uses as otherwise described herein, the compound is in the form of a pharmaceutically-acceptable salt of a

compound or N-oxide as described herein. The person of ordinary skill in the art will appreciate that a variety of pharmaceutically-acceptable salts may be provided, as described in additional detail below. The person of ordinary skill in the art will appreciate that the phrase "optionally in the form of a pharmaceutically acceptable salt or N-oxide, or a solvate or hydrate" includes compounds in the form of a pharmaceutically acceptable salt of an N-oxide. But in certain embodiments as described above, the compound is not in the form of a pharmaceutically acceptable salt.

[51] In certain embodiments of the methods, compounds and uses as otherwise described herein, a compound is in the form of a solvate (e.g., a hydrate) of a compound, N-oxide or salt as described herein. The person of ordinary skill in the art will appreciate that a variety of solvates and/or hydrates may be formed. The person of ordinary skill in the art will appreciate that the phrase "optionally in the form of a pharmaceutically acceptable salt or N-oxide, or a solvate or hydrate" includes compounds in the form of solvates and hydrates of base compounds, pharmaceutically acceptable salts and N-oxides as described above. But in certain embodiments as described above, the compound is not in the form of a solvate or hydrate.

[52] In the methods, compounds and uses described herein, a compound can usefully be provided in the form of a pharmaceutical composition comprising a compound, N-oxide, salt, solvate or hydrate according to any one of the preceding aspects or embodiments described herein, together with a pharmaceutically acceptable excipient, diluent, or carrier. The pharmaceutical composition can be, for example, in the form of a tablet, a capsule, or a parenteral formulation, but the person of ordinary skill in the art will appreciate that the compound can be provided in a wide variety of pharmaceutical compositions.

[53] As noted above, mutations that allow for increased and more efficient utilization of scarce nutrients are favored during tumor formation. Oncogenic Ras stimulates both glucose uptake via enhanced expression of GLUT1, and utilization of glucose by anabolic pathways and conversion into glutathione, a key cellular antioxidant. Ras also regulates glutamine metabolism, specifically directing glucose and glutamine carbon into pathways that support biosynthesis, redox homeostasis and ultimately cell survival and growth.

[54] In addition to these effects on cellular metabolism, Ras has also been described to have effects on progression of the cell along the cell cycle. Specifically, Ras has been implicated as having a role in the transit across the restriction point in early G1 and again in G2. Ras activity at the G1 restriction point is particularly important as this event is the key integration point for growth factor signaling that commits the cell to further division or entry into the G0 or quiescent phase. Ras coordinates growth factor signaling to regulate levels of cyclins, cyclin dependent kinases and antagonistic cyclin dependent kinase inhibitors.

[55] For additional information, see generally Hanahan D, Weinberg RA (2011) Hallmarks of cancer: the next generation. *Cell* 144(5):646–674; Ward PS, Thompson CB (2012) Metabolic Reprogramming: A Cancer Hallmark Even Warburg Did Not Anticipate. *Cancer Cell* 21(3):297–308; Prabakaran S (2016) Kras rewires metabolic networks. *Sci Signal* 9(418):ec56-ec56; Kerr EM, Gaude E, Turrell FK, Frezza C, Martins CP (2016) Mutant Kras copy number defines metabolic reprogramming and therapeutic susceptibilities. *Nature* 531(7592):110–113; Flier JS, Mueckler MM, Usher P, Lodish HF (1987) Elevated levels of glucose transport and transporter messenger RNA are induced by ras or src oncogenes. *Science* 235(4795):1492–1495; Yun J, et al. (2009) Glucose Deprivation Contributes to the Development of KRAS Pathway Mutations in Tumor Cells. *Science* 325(5947):1555–1559; Son J, et al. (2013) Glutamine supports pancreatic cancer growth through a KRAS-regulated metabolic pathway. *Nature* 496(7443):101–105; Kim MH, Kim H (2013) Oncogenes and tumor suppressors regulate glutamine metabolism in cancer cells. *J Cancer Prev* 18(3):221–226; Gaglio D, et al. (2011) Oncogenic K-Ras decouples glucose and glutamine metabolism to support cancer cell growth. *Mol Syst Biol* 7:523; Hitomi M, Stacey DW (1999) Cellular ras and cyclin D1 are required during different cell cycle periods in cycling NIH 3T3 cells. *Mol Cell Biol* 19(7):4623–4632; Hitomi M, Stacey DW (2001) Ras-dependent cell cycle commitment during G2 phase. *FEBS Lett* 490(3):123–131; Foster DA, Yellen P, Xu L, Saqcena M (2010) Regulation of G1 Cell Cycle Progression: Distinguishing the Restriction Point from a Nutrient-Sensing Cell Growth Checkpoint(s). *Genes Cancer* 1(11):1124–1131; Massagué J (2004) G1 cell-cycle control and cancer. *Nature* 432(7015):298–306; Pardee AB (1974) A restriction point for control of normal animal cell proliferation. *Proc Natl Acad Sci U S A* 71(4):1286–1290; Martinsson H-S, Starborg M, Erlandsson F, Zetterberg A (2005) Single cell analysis of G1 check points-the relationship between the restriction point and phosphorylation of pRb. *Exp Cell Res* 305(2):383–391; Larsson O, Zetterberg A (1995) Existence of a commitment program for mitosis in early G1 in tumour cells. *Cell Prolif* 28(1):33–43; Yen A, Pardee AB (1978) Exponential 3T3 cells escape in mid-G1 from their high serum requirement. *Exp Cell Res* 116(1):103–113; Novák B, Tyson JJ (2004) A model for restriction point control of the mammalian cell cycle. *J Theor Biol* 230(4):563–579; Weber JD, Hu W, Jefcoat SC, Raben DM, Baldassare JJ (1997) Ras-stimulated Extracellular Signal-related Kinase 1 and RhoA Activities Coordinate Platelet-derived Growth Factor-induced G1 Progression through the Independent Regulation of Cyclin D1 and p27KIP1. *J Biol Chem* 272(52):32966–32971; Kawada M, et al. (1997) Induction of p27Kip1 degradation and anchorage independence by Ras through the MAP kinase signaling pathway. *Oncogene* 15(6):629–637; Deng X, Mercer SE, Shah S, Ewton DZ, Friedman E (2004) The cyclin-dependent kinase inhibitor p27Kip1 is stabilized in G(0) by Mirk/dyrk1B kinase. *J Biol Chem* 279(21):22498–22504; Ladha MH, Lee KY, Upton TM,

Reed MF, Ewen ME (1998) Regulation of exit from quiescence by p27 and cyclin D1-CDK4. *Mol Cell Biol* 18(11):6605–6615; Fan J, Bertino JR (1997) K-ras modulates the cell cycle via both positive and negative regulatory pathways. *Oncogene* 14(21):2595–2607.

[56] Ras-related oncogenes, *KRAS* (also known as k-Ras or V-Ki-ras2 Kirsten rat sarcoma viral oncogene homolog) in particular, have also been shown to have direct effects on cellular metabolism. The outcome is a global rewiring of the metabolic circuits. KRAS has been noted to have pleiotropic effects on glucose utilization, glutathione synthesis, and redox balance and glutamine metabolism. Glutathione, an ubiquitous intracellular peptide, has diverse functions including modulation of cell proliferation, detoxification, and antioxidant defense (Lu, Shelly C., *Mol Aspects Med.* 2009; 30(1-2): 42–59). Increased glutathione levels have been associated with an early proliferative response (for example, stimulating cells to shift from G0 to G1 phase of the cell cycle), and are essential for the cell to enter the S phase (*Id.*). Glutathione has also been implicated in the regulation of cell death, likely modulating both apoptosis and necrosis (*Id.*). In addition, increased leves of glutathione have been reported in many tumors and have been implicated to confer drug and/or radiation resistance and impede chemotherapy (*Id.*). Thus, inhibitors of glutathione synthesis present unique chemotherapeutic targets.

[57] Without intending to be bound by theory, the inventors believe that the compounds described herein are active against cancer cells by arresting the cell cycle at the G0/G1 phase. Accordingly, as suggested above, the compounds described herein can be employed in a variety of methods and uses. For example, in certain embodiments of the disclosure, a method for treating a hyperproliferative disorder in a subject in need thereof includes administering to the subject an effective amount of a compound as described herein. In other embodiments of the disclosure, a compound as described herein is provided for use in the treatment of hyperproliferative disorder. Other embodiments of the disclosure provide a compound as described herein for the preparation of a medicament for the treatment of a hyperproliferative disorder. In each of these embodiments, the hyperproliferative disorder can be, for example, a cancer.

[58] The inventors have determined that, in certain embodiments, the presently described compounds inhibit the progression of the cell cycle in cancer cells. Accordingly, another embodiment of the disclosure provides a method for inhibiting cell cycle progression in a cancer cell, the method comprising contacting the cancer cell with an effective amount of a compound as described herein. In certain such embodiments, the cell cycle progression is inhibited at the G0/G1 phase.

[59] Inhibiting cell cycle progression at the G0/G1 phase can in certain embodiments induce apoptosis of a cancer cell. Accordingly, another embodiment of the disclosure provides a method for inducing apoptosis in a cancer cell, such as a hematopoietic cancer

cell. The method includes contacting the cancer cell with an effective amount of a compound as described herein. However, in other embodiments, for example, in certain solid tumors, apoptosis may not be necessary for there to be an important therapeutic effect.

[60] The inventors have determined that the compounds described herein can, in certain embodiments, induce a cytotoxic effect on a cancer cell (e.g., through the apoptotic mechanism described above, or through an alternative mechanism). Accordingly, another embodiment of the disclosure provides a method for inducing a cytotoxic effect on a cancer cell. The method includes contacting the cancer cell with an effective amount of a compound as described herein.

[61] The inventors have determined that the compounds described herein can, in certain embodiments, inhibit glutathione synthesis in a cancer cell. Accordingly, another embodiment of the disclosure provides a method for inhibiting glutathione synthesis in a cancer cell. The method includes contacting the cancer cell with an effective amount of a compound as described herein.

[62] The methods, compounds and uses described herein can be employed with respect to a variety of different cancers or with respect to cells of a variety of different types of cancer. For example, in certain embodiments of the methods, compounds and uses as otherwise described herein, the cancer is a hematopoietic cancer. In other embodiments, the cancer is a solid tumor.

[63] In certain embodiments of the methods, compounds and uses as otherwise described herein, the cancer is a lymphoma (e.g., Burkitt's lymphoma, Hodgkin's lymphoma, non-Hodgkin's lymphoma, hairy cell lymphoma, mantle cell lymphoma, T-cell lymphoma, cutaneous T-cell lymphoma, B-cell lymphoma, diffuse large B-cell lymphoma, double-hit lymphoma, Waldenström macroglobulinemia, primary central nervous System (CNS) lymphoma, and intravascular large B-cell lymphoma (ILBCL)). In other such embodiments, the cancer is a leukemia (e.g., acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), acute myeloblastic leukemia, chronic lymphocytic leukemia (CLL), chronic myelogenous leukemia (CML), chronic neutrophilic leukemia (CNL), chronic myelomonocytic leukaemia (CMML), aggressive NK-cell leukemia, acute biphenotypic leukaemia, and polycythemia vera), acute and chronic T-cell and B-cell leukemia). In other such embodiments, the cancer is a plasma cell neoplasm (e.g., multiple myeloma).

[64] However, the person of ordinary skill in the art will appreciate from the disclosure provided herein that the methods, compounds and uses described herein can be employed with a variety of other types of cancer. For example, in certain embodiments of the methods, compounds and uses as otherwise described herein, the cancer is selected from appendix cancer, bone cancer (e.g., Ewing sarcoma, osteosarcoma and malignant fibrous histiocytoma), bronchial tumors, carcinoma of unknown primary, chronic myeloproliferative

neoplasms, colon and rectal cancer, head and neck cancer (including head and neck squamous cell carcinoma (HNSCC)), leukemia (e.g., acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), acute myeloblastic leukemia, chronic lymphocytic leukemia (CLL), chronic myelogenous leukemia (CML), chronic neutrophilic leukemia (CNL), chronic myelomonocytic leukaemia (CMML), aggressive NK-cell leukemia, acute biphenotypic leukaemia, and polycythemia vera), acute and chronic T-cell and B-cell leukemia), lymphoma (e.g., Burkitt lymphoma, Hodgkin's lymphoma, non-Hodgkin's lymphoma, hairy cell lymphoma, mantle cell lymphoma, T-cell lymphoma, cutaneous T-cell lymphoma, B-cell lymphoma, diffuse large B-cell lymphoma, double-hit lymphoma, Waldenström macroglobulinemia, primary central nervous System (CNS) lymphoma, and intravascular large B-cell lymphoma (ILBCL)), plasma cell neoplasms (e.g., multiple myeloma), myelodysplastic syndrome, myelodysplastic/myeloproliferative neoplasms and chronic myeloproliferative neoplasms, pancreatic cancer and pancreatic neuroendocrine tumors (e.g., islet cell tumors), small intestine cancer, soft tissue sarcoma, and squamous cell carcinoma.

[65] And in other embodiments of the methods, compounds and uses as otherwise described herein, the cancer is selected from adrenocortical carcinoma, adrenal cortex cancer, AIDS-related cancers (e.g., as Kaposi sarcoma, AIDS-related lymphoma, Burkitt lymphoma, and primary CNS lymphoma), anal cancer, appendix cancer, astrocytomas (e.g., childhood cerebellar or cerebral), bile duct cancer (e.g., cholangiocarcinoma), bladder cancer, bone cancer (e.g., Ewing sarcoma, osteosarcoma and malignant fibrous histiocytoma), brain tumors (e.g., glioblastoma multiforme, cerebellar astrocytoma, cerebral astrocytoma/malignant glioma, ependymoma, medulloblastoma, oligodendroglioma, supratentorial primitive neuroectodermal tumors, and visual pathway and hypothalamic glioma), brainstem glioma, breast cancer, bronchial tumors, gastrointestinal carcinoid tumor, carcinoid tumors, carcinoma of unknown primary, cardiac (heart) tumors, central nervous system caner (e.g., atypical teratoid/rhabdoid tumor, embryonal tumors, and germ cell tumors), cervical cancer, childhood cancers, chondrosarcoma, chronic myeloproliferative neoplasms, colon and rectal cancer, craniopharyngioma, desmoplastic small round cell tumor, ductal carcinoma in situ (DCIS), endometrial cancer, ependymoma, epitheliod hemangioendothelioma (EHE), esophageal cancer, esthesioneuroblastoma, extracranial germ cell tumor, extragonadal germ cell tumor, eye cancer (e.g., intraocular melanoma, and retinoblastoma), fallopian tube cancer, gallbladder cancer, gastric (stomach) cancer, gastrointestinal stromal tumors (GIST), gestational trophoblastic disease (GTD), gliomas, hairy cell leukemia, head and neck cancer (e.g., head and neck squamous cell carcinoma (HNSCC)), hepatocellular (liver) cancer, histiocytosis, langerhans cell, hypopharyngeal cancer, kidney cancer, langerhans cell histiocytosis, laryngeal cancer, laryngeal cancer and

papillomatosis, leukemia (e.g., acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), acute myeloblastic leukemia, chronic lymphocytic leukemia (CLL), chronic myelogenous leukemia (CML), chronic neutrophilic leukemia (CNL), chronic myelomonocytic leukaemia (CMML), aggressive NK-cell leukemia, acute biphenotypic leukaemia, and polycythemia vera), acute and chronic T-cell and B-cell leukemia), lip and oral cavity cancer, liver cancer, lung cancer (e.g., small cell lung cancer, non-small cell lung cancer (NSCLC), lung adenocarcinoma, carcinoma of the lung, and squamous carcinoma of the lung), lung carcinoid tumor, lymphoma (e.g., Burkitt lymphoma, Hodgkin's lymphoma, non-Hodgkin's lymphoma, hairy cell lymphoma, mantle cell lymphoma, T-cell lymphoma, cutaneous T-cell lymphoma, B-cell lymphoma, diffuse large B-cell lymphoma, double-hit lymphoma, Waldenström macroglobulinemia, primary central nervous System (CNS) lymphoma, and intravascular large B-cell lymphoma (ILBCL)), male breast cancer, meningiomas, mesothelioma, midline tract carcinoma involving *NUT* gene, mouth cancer, multiple endocrine neoplasia syndrome, plasma cell neoplasm (e.g., multiple myeloma), mycosis fungoides, myelodysplastic syndrome, myelodysplastic/myeloproliferative neoplasms and chronic myeloproliferative neoplasms, nasal cavity and paranasal sinus cancer, nasopharyngeal cancer (NPC), neuroblastoma, oral cancer, lip and oral cavity cancer and oropharyngeal cancer, ovarian cancer, pancreatic cancer and pancreatic neuroendocrine tumors (e.g., islet cell tumors), paraganglioma, parathyroid cancer, penile cancer, pharyngeal cancer, pheochromocytoma, pituitary tumor, pleuropulmonary blastoma, primary peritoneal cancer, prostate cancer, retinoblastoma, rhabdomyosarcoma, salivary gland cancer, Sézary syndrome, skin cancer (e.g., basal and squamous cell carcinoma, merkel cell carcinoma, and melanoma), small intestine cancer, soft tissue sarcoma, squamous cell carcinoma, stomach (gastric) cancer, testicular cancer, throat cancer, thymoma and thymic carcinoma, thyroid cancer, transitional cell cancer of the renal pelvis and ureter, urethral cancer, uterine cancer and uterine Sarcoma, vaginal cancer, vascular tumors, vulvar cancer, and Wilms tumor.

[66] For example, in a few particular embodiments of methods, compounds and uses as otherwise described herein, the cancer is a solid tumor. The solid tumor can be in various embodiments, for example, a lung cancer, a colorectal cancer, or a pancreatic cancer.

[67] In one particular embodiment of the methods, compounds and uses as otherwise described herein, the cancer is diffuse large B-cell lymphoma.

[68] The data provided herein demonstrates that the compounds are especially effective against cancers having a heterozygous mutant *KRAS* gene. *KRAS* mutations are found in >90% of pancreatic cancers, 50% of colon cancers and 25% of lung adenocarcinomas. Accordingly, in certain embodiments of the methods, compound and

uses as otherwise described herein, the cancer has a mutant *KRAS* gene, e.g., a heterozygous mutant.

[69] However, in certain embodiments of the methods, compounds and uses as otherwise described herein, the cancer or hyperproliferative disorder is not Burkitt lymphoma.

[70] The person of ordinary skill in the art will determine effective amounts and dosages of the compounds described herein based on this disclosure in view of the current state of the art.

Definitions

[71] Terms used herein may be preceded and/or followed by a single dash, "-", or a double dash, "=", to indicate the bond order of the bond between the named substituent and its parent moiety; a single dash indicates a single bond and a double dash indicates a double bond or a pair of single bonds in the case of a spiro-substituent. In the absence of a single or double dash it is understood that a single bond is formed between the substituent and its parent moiety; further, substituents are intended to be read "left to right" with reference to the chemical structure referred to unless a dash indicates otherwise. For example, arylalkyl, arylalkyl-, and -alkylaryl indicate the same functionality.

[72] For simplicity, chemical moieties are defined and referred to throughout primarily as univalent chemical moieties (*e.g.*, alkyl, aryl, etc.). Nevertheless, such terms are also used to convey corresponding multivalent moieties under the appropriate structural circumstances clear to those skilled in the art. For example, while an "alkyl" moiety can refer to a monovalent radical (*e.g.* CH_3-CH_2-), in some circumstances a bivalent linking moiety can be "alkyl," in which case those skilled in the art will understand the alkyl to be a divalent radical (*e.g.*, -CH_2-CH_2-), which is equivalent to the term "alkylene." (Similarly, in circumstances in which a divalent moiety is required and is stated as being "aryl," those skilled in the art will understand that the term "aryl" refers to the corresponding divalent moiety, arylene). All atoms are understood to have their normal number of valences for bond formation (*i.e.*, 4 for carbon, 3 for N, 2 for O, and 2, 4, or 6 for S, depending on the oxidation state of the S). Nitrogens in the presently disclosed compounds can be hypervalent, e.g., an N-oxide or tetrasubstituted ammonium salt. On occasion a moiety may be defined, for example, as –B-$(A)_a$, wherein a is 0 or 1. In such instances, when a is 0 the moiety is -B and when a is 1 the moiety is –B-A.

[73] As used herein, the term "alkyl" includes a saturated hydrocarbon having a designed number of carbon atoms, such as 1 to 10 carbons (i.e., inclusive of 1 and 10), 1 to 8 carbons, 1 to 6 carbons, 1 to 3 carbons, or 1, 2, 3, 4, 5 or 6. Alkyl group may be straight or branched and depending on context, may be a monovalent radical or a divalent radical (i.e.,

an alkylene group). For example, the moiety "-(C_1-C_6alkyl)-O-" signifies connection of an oxygen through an alkylene bridge having from 1 to 6 carbons and C_1-C_3alkyl represents methyl, ethyl, and propyl moieties. Examples of "alkyl" include, for example, methyl, ethyl, propyl, isopropyl, butyl, iso-, sec- and tert-butyl, pentyl, and hexyl.

[74] The term "alkoxy" represents an alkyl group of indicated number of carbon atoms attached to the parent molecular moiety through an oxygen bridge. Examples of "alkoxy" include, for example, methoxy, ethoxy, propoxy, and isopropoxy.

[75] The term "alkenyl" as used herein, unsaturated hydrocarbon containing from 2 to 10 carbons (i.e., inclusive of 2 and 10), 2 to 8 carbons, 2 to 6 carbons, or 2, 3, 4, 5 or 6, unless otherwise specified, and containing at least one carbon-carbon double bond. Alkenyl group may be straight or branched and depending on context, may be a monovalent radical or a divalent radical (i.e., an alkenylene group). For example, the moiety "-(C_2-C_6 alkenyl)-O-" signifies connection of an oxygen through an alkenylene bridge having from 2 to 6 carbons. Representative examples of alkenyl include, but are not limited to, ethenyl, 2-propenyl, 2-methyl-2-propenyl, 3-butenyl, 4-pentenyl, 5-hexenyl, 2-heptenyl, 2-methyl-1-heptenyl, 3-decenyl, and 3,7-dimethylocta-2,6-dienyl.

[76] The term "alkynyl" as used herein, unsaturated hydrocarbon containing from 2 to 10 carbons (i.e., inclusive of 2 and 10), 2 to 8 carbons, 2 to 6 carbons, or 2, 3, 4, 5 or 6 unless otherwise specified, and containing at least one carbon-carbon triple bond. Alkynyl group may be straight or branched and depending on context, may be a monovalent radical or a divalent radical (i.e., an alkynylene group). For example, the moiety "-(C_2-C_6 alkynyl)-O-" signifies connection of an oxygen through an alkynylene bridge having from 2 to 6 carbons. Representative examples of alkynyl include, but are not limited to, acetylenyl, 1-propynyl, 2-propynyl, 3-butynyl, 2-pentynyl, and 1-butynyl.

[77] The term "aryl" represents an aromatic ring system having a single ring (e.g., phenyl) which is optionally fused to other aromatic hydrocarbon rings or non-aromatic hydrocarbon or heterocycle rings. "Aryl" includes ring systems having multiple condensed rings and in which at least one is carbocyclic and aromatic, (e.g., 1,2,3,4-tetrahydronaphthyl, naphthyl). Examples of aryl groups include phenyl, 1-naphthyl, 2-naphthyl, indanyl, indenyl, dihydronaphthyl, fluorenyl, tetralinyl, and 6,7,8,9-tetrahydro-5*H*-benzo[a]cycloheptenyl. "Aryl" also includes ring systems having a first carbocyclic, aromatic ring fused to a nonaromatic heterocycle, for example, 1H-2,3-dihydrobenzofuranyl and tetrahydroisoquinolinyl. The aryl groups herein are unsubstituted or, when specified as "optionally substituted", can unless stated otherwise be substituted in one or more substitutable positions with various groups as indicated.

[78] The terms "halogen" or "halo" indicate fluorine, chlorine, bromine, and iodine. In certain embodiments of each and every embodiment as otherwise described herein, the

term “halogen” or “halo” refers to fluorine or chlorine. In certain embodiments of each and every embodiment described herein, the term “halogen” or “halo” refers to fluorine. The term “fluoroalkyl” indicates an alkyl group (i.e., as otherwise described herein) that is substiuted with at least one fluorine. “Fluoroalkyl” includes alkyl groups substituted with multiple fluorines, such as perfluoroalkyl groups. Examples of fluoroalkyl groups include fluoromethyl, difluoromethyl, trifluoromethyl, pentafluoroethyl, 2,2,2-trifluoroethyl, 1,1,1,3,3,3-hexafluoroprop-2-yl and 2,2,3,3,3-pentafluoroprop-1-yl.

[79] The term “heteroaryl” refers to an aromatic ring system containing at least one aromatic heteroatom selected from nitrogen, oxygen and sulfur in an aromatic ring. Most commonly, the heteroaryl groups will have 1, 2, 3, or 4 heteroatoms. The heteroaryl may be fused to one or more non-aromatic rings, for example, cycloalkyl or heterocycloalkyl rings, wherein the cycloalkyl and heterocycloalkyl rings are described herein. In one embodiment of the present compounds the heteroaryl group is bonded to the remainder of the structure through an atom in a heteroaryl group aromatic ring. In another embodiment, the heteroaryl group is bonded to the remainder of the structure through a non-aromatic ring atom. Examples of heteroaryl groups include, for example, pyridyl, pyrimidinyl, quinolinyl, benzothienyl, indolyl, indolinyl, pyridazinyl, pyrazinyl, isoindolyl, isoquinolyl, quinazolinyl, quinoxalinyl, phthalazinyl, imidazolyl, isoxazolyl, pyrazolyl, oxazolyl, thiazolyl, indolizinyl, indazolyl, benzothiazolyl, benzimidazolyl, benzofuranyl, furanyl, thienyl, pyrrolyl, oxadiazolyl, thiadiazolyl, benzo[1,4]oxazinyl, triazolyl, tetrazolyl, isothiazolyl, naphthyridinyl, isochromanyl, chromanyl, isoindolinyl, isobenzothienyl, benzoxazolyl, pyridopyridinyl, purinyl, benzodioxolyl, triazinyl, pteridinyl, benzothiazolyl, imidazopyridinyl, imidazothiazolyl, benzisoxazinyl, benzoxazinyl, benzopyranyl, benzothiopyranyl, chromonyl, chromanonyl, pyridinyl-*N*-oxide, isoindolinonyl, benzodioxanyl, benzoxazolinonyl, pyrrolyl *N*-oxide, pyrimidinyl *N*-oxide, pyridazinyl *N*-oxide, pyrazinyl *N*-oxide, quinolinyl *N*-oxide, indolyl *N*-oxide, indolinyl *N*-oxide, isoquinolyl *N*-oxide, quinazolinyl *N*-oxide, quinoxalinyl *N*-oxide, phthalazinyl *N*-oxide, imidazolyl *N*-oxide, isoxazolyl *N*-oxide, oxazolyl *N*-oxide, thiazolyl *N*-oxide, indolizinyl *N*-oxide, indazolyl *N*-oxide, benzothiazolyl *N*-oxide, benzimidazolyl *N*-oxide, pyrrolyl *N*-oxide, oxadiazolyl *N*-oxide, thiadiazolyl *N*-oxide, triazolyl *N*-oxide, tetrazolyl *N*-oxide, benzothiopyranyl S-oxide, benzothiopyranyl S,S-dioxide. Preferred heteroaryl groups include pyridyl, pyrimidyl, quinolinyl, indolyl, pyrrolyl, furanyl, thienyl and imidazolyl, pyrazolyl, indazolyl, thiazolyl and benzothiazolyl. In certain embodiments, each heteroaryl is selected from pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, imidazolyl, isoxazolyl, pyrazolyl, oxazolyl, thiazolyl, furanyl, thienyl, pyrrolyl, oxadiazolyl, thiadiazolyl, triazolyl, tetrazolyl, isothiazolyl, pyridinyl-*N*-oxide, pyrrolyl *N*-oxide, pyrimidinyl *N*-oxide, pyridazinyl *N*-oxide, pyrazinyl *N*-oxide, imidazolyl *N*-oxide, isoxazolyl *N*-oxide, oxazolyl *N*-oxide, thiazolyl *N*-oxide, pyrrolyl *N*-oxide, oxadiazolyl *N*-oxide, thiadiazolyl *N*-oxide, triazolyl *N*-oxide, and tetrazolyl *N*-

oxide. Preferred heteroaryl groups include pyridyl, pyrimidyl, quinolinyl, indolyl, pyrrolyl, furanyl, thienyl, imidazolyl, pyrazolyl, indazolyl, thiazolyl and benzothiazolyl. The heteroaryl groups herein are unsubstituted or, when specified as "optionally substituted", can unless stated otherwise be substituted in one or more substitutable positions with various groups, as indicated.

[80] The term "heterocycloalkyl" refers to a non-aromatic ring or ring system containing at least one heteroatom that is preferably selected from nitrogen, oxygen and sulfur, wherein said heteroatom is in a non-aromatic ring. The heterocycloalkyl may have 1, 2, 3 or 4 heteroatoms. The heterocycloalkyl may be saturated (i.e., a heterocycloalkyl) or partially unsaturated (i.e., a heterocycloalkenyl). Heterocycloalkyl includes monocyclic groups of three to eight annular atoms as well as bicyclic and polycyclic ring systems, including bridged and fused systems, wherein each ring includes three to eight annular atoms. The heterocycloalkyl ring is optionally fused to other heterocycloalkyl rings and/or non-aromatic hydrocarbon rings. In certain embodiments, the heterocycloalkyl groups have from 3 to 7 members in a single ring. In other embodiments, heterocycloalkyl groups have 5 or 6 members in a single ring. In some embodiments, the heterocycloalkyl groups have 3, 4, 5, 6 or 7 members in a single ring. Examples of heterocycloalkyl groups include, for example, azabicyclo[2.2.2]octyl (in each case also "quinuclidinyl" or a quinuclidine derivative), azabicyclo[3.2.1]octyl, 2,5-diazabicyclo[2.2.1]heptyl, morpholinyl, thiomorpholinyl, thiomorpholinyl S-oxide, thiomorpholinyl S,S-dioxide, 2-oxazolidonyl, piperazinyl, homopiperazinyl, piperazinonyl, pyrrolidinyl, azepanyl, azetidinyl, pyrrolinyl, tetrahydropyranyl, piperidinyl, tetrahydrofuranyl, tetrahydrothienyl, 3,4-dihydroisoquinolin-2(1*H*)-yl, isoindolindionyl, homopiperidinyl, homomorpholinyl, homothiomorpholinyl, homothiomorpholinyl S,S-dioxide, oxazolidinonyl, dihydropyrazolyl, dihydropyrrolyl, dihydropyrazinyl, dihydropyridinyl, dihydropyrimidinyl, dihydrofuryl, dihydropyranyl, imidazolidonyl, tetrahydrothienyl S-oxide, tetrahydrothienyl S,S-dioxide and homothiomorpholinyl S-oxide. Especially desirable heterocycloalkyl groups include morpholinyl, 3,4-dihydroisoquinolin-2(1*H*)-yl, tetrahydropyranyl, piperidinyl, aza-bicyclo[2.2.2]octyl, γ-butyrolactonyl (i.e., an oxo-substituted tetrahydrofuranyl), γ-butryolactamyl (i.e., an oxo-substituted pyrrolidine), pyrrolidinyl, piperazinyl, azepanyl, azetidinyl, thiomorpholinyl, thiomorpholinyl S,S-dioxide, 2-oxazolidonyl, imidazolidonyl, isoindolindionyl, piperazinonyl. The heterocycloalkyl groups herein are unsubstituted or, when specified as "optionally substituted", can unless stated otherwise be substituted in one or more substitutable positions with various groups, as indicated.

[81] The term "cycloalkyl" refers to a non-aromatic carbocyclic ring or ring system, which may be saturated (i.e., a cycloalkyl) or partially unsaturated (i.e., a cycloalkenyl). The cycloalkyl ring optionally fused to or otherwise attached (e.g., bridged systems) to other

cycloalkyl rings. Certain examples of cycloalkyl groups present in the disclosed compounds have from 3 to 7 members in a single ring, such as having 5 or 6 members in a single ring. In some embodiments, the cycloalkyl groups have 3, 4, 5, 6 or 7 members in a single ring. Examples of cycloalkyl groups include, for example, cyclohexyl, cyclopentyl, cyclobutyl, cyclopropyl, tetrahydronaphthyl and bicyclo[2.2.1]heptane. The cycloalkyl groups herein are unsubstituted or, when specified as "optionally substituted", may be substituted in one or more substitutable positions with various groups, as indicated.

[82] The term "ring system" encompasses monocycles, as well as fused and/or bridged polycycles.

[83] The term "oxo" means a doubly bonded oxygen, sometimes designated as =O or for example in describing a carbonyl "C(O)" may be used to show an oxo substituted carbon.

[84] The term "substituted," when used to modify a specified group or radical, means that one or more hydrogen atoms of the specified group or radical are each, independently of one another, replaced with the same or different substituent groups as defined below, unless specified otherwise.

[85] As used herein, the phrase "pharmaceutically acceptable salt" refers to both pharmaceutically acceptable acid and base addition salts and solvates. Such pharmaceutically acceptable salts include salts of acids such as hydrochloric, phosphoric, hydrobromic, sulfuric, sulfinic, formic, toluenesulfonic, methanesulfonic, nitric, benzoic, citric, tartaric, maleic, hydroiodic, alkanoic such as acetic, HOOC-$(CH_2)_n$-COOH where n is 0-4, and the like. Non-toxic pharmaceutical base addition salts include salts of bases such as sodium, potassium, calcium, ammonium, and the like. Those skilled in the art will recognize a wide variety of non-toxic pharmaceutically acceptable addition salts.

[86] One of ordinary skill in the art of medicinal chemistry also will appreciate that the disclosed structures are intended to include isotopically enriched forms of the present compounds. As used herein "isotopes" includes those atoms having the same atomic number but different mass numbers. As is known to those of skill in the art, certain atoms, such as hydrogen occur in different isotopic forms. For example, hydrogen includes three isotopic forms, protium, deuterium and tritium. As will be apparent to those of skill in the art upon consideration of the present compounds, certain compounds can be enriched at a given position with a particular isotope of the atom at that position. For example, compounds having a fluorine atom, may be synthesized in a form enriched in the radioactive fluorine isotope ^{18}F. Similarly, compounds may be enriched in the heavy isotopes of hydrogen: deuterium and tritium; and similarly can be enriched in a radioactive isotope of carbon, such as ^{13}C. Such isotopic variant compounds undergo different metabolic pathways and can be useful, for example, in studying the ubiquitination pathway and its role in disease. Of course,

in certain embodiments, the compound has substantially the same isotopic character as naturally-occuring materials.

[87] As used herein, the term "cell" is meant to refer to a cell that is *in vitro*, ex vivo or *in vivo*. In some embodiments, an ex vivo cell can be part of a tissue sample excised from an organism such as a mammal. In some embodiments, an *in vitro* cell can be a cell in a cell culture. In some embodiments, an *in vivo* cell is a cell living in an organism such as a mammal.

[88] As used herein, the terms "individual," "patient," or "subject" are used interchangeably, refers to any animal, including mammals, preferably mice, rats, other rodents, rabbits, dogs, cats, swine, cattle, sheep, horses, or primates, and most preferably humans.

[89] As used herein, the phrase "therapeutically effective amount" or "effective amount" refers to the amount of active compound or pharmaceutical agent that elicits the biological or medicinal response that is being sought in a tissue, system, animal, individual or human by a researcher, veterinarian, medical doctor or other clinician.

[90] In certain embodiments, an effective amount can be an amount suitable for

(i) inhibiting the progression the disease;

(ii) prophylactic use for example, preventing or limiting development of a disease, condition or disorder in an individual who may be predisposed or otherwise at risk to the disease, condition or disorder but does not yet experience or display the pathology or symptomatology of the disease;

(iii) inhibiting the disease; for example, inhibiting a disease, condition or disorder in an individual who is experiencing or displaying the pathology or symptomatology of the disease, condition or disorder;

(iv) ameliorating the referenced disease state, for example, ameliorating a disease, condition or disorder in an individual who is experiencing or displaying the pathology or symptomatology of the disease, condition or disorder (i.e., reversing or improving the pathology and/or symptomatology) such as decreasing the severity of disease; or

(v) eliciting the referenced biological effect.

[91] As used here, the terms "treatment" and "treating" means (i) ameliorating the referenced disease state, condition, or disorder (or a symptom thereof), such as, for example, ameliorating a disease, condition or disorder in an individual who is experiencing or displaying the pathology or symptomatology of the disease, condition or disorder (*i.e.*, reversing or improving the pathology and/or symptomatology) such as decreasing the severity of disease or symptom thereof, or inhibiting the progression of disease; or (ii)

eliciting the referenced biological effect (*e.g.,* inducing apoptosis, or inhibiting glutathione synthesis).

Pharmaceutical Formulations and Dosage Forms

[92] The compounds of the disclosure can be administered, for example, orally, topically, parenterally, by inhalation or spray or rectally in dosage unit formulations containing one or more pharmaceutically acceptable carriers, diluents or excipients. The term parenteral as used herein includes percutaneous, subcutaneous, intravascular (e.g., intravenous), intramuscular, or intrathecal injection or infusion techniques and the like. A medicament including a compound of the disclosure can be provided in any appropriate of the formulations and dosage forms as described herien.

[93] Pharmaceutical compositions can be made using the presently disclosed compounds. For example, in one embodiment, a pharmaceutical composition includes a pharmaceutically acceptable carrier, diluent or excipient, and compound as described above with reference to any one of structural formulae.

[94] In the pharmaceutical compositions disclosed herein, one or more compounds of the disclosure may be present in association with one or more pharmaceutically acceptable carriers, diluents or excipients, and, if desired, other active ingredients. The pharmaceutical compositions containing compounds of the disclosure may be in a form suitable for oral use, for example, as tablets, troches, lozenges, aqueous or oily suspensions, dispersible powders or granules, emulsion, hard or soft capsules, or syrups or elixirs.

[95] Compositions intended for oral use can be prepared according to any suitable method for the manufacture of pharmaceutical compositions and such compositions may contain one or more agents selected from the group consisting of sweetening agents, flavoring agents, coloring agents and preservative agents in order to provide pharmaceutically elegant and palatable preparations. Tablets contain the active ingredient in admixture with non-toxic pharmaceutically acceptable excipients that are suitable for the manufacture of tablets. These excipients can be for example, inert diluents, such as calcium carbonate, sodium carbonate, lactose, calcium phosphate or sodium phosphate; granulating and disintegrating agents, for example, corn starch, or alginic acid; binding agents, for example starch, gelatin or acacia, and lubricating agents, for example magnesium stearate, stearic acid or talc. The tablets can be uncoated or they can be coated by known techniques. In some cases such coatings can be prepared by suitable techniques to delay disintegration and absorption in the gastrointestinal tract and thereby provide a sustained action over a longer period. For example, a time delay material such as glyceryl monostearate or glyceryl distearate can be employed.

[96] Formulations for oral use can also be presented as hard gelatin capsules, wherein the active ingredient is mixed with an inert solid diluent, for example, calcium carbonate, calcium phosphate or kaolin, or as soft gelatin capsules wherein the active ingredient is mixed with water or an oil medium, for example peanut oil, liquid paraffin or olive oil.

[97] Formulations for oral use can also be presented as lozenges.

[98] Aqueous suspensions contain the active materials in admixture with excipients suitable for the manufacture of aqueous suspensions. Such excipients can be suspending agents, for example sodium carboxymethylcellulose, methylcellulose, hydropropylmethylcellulose, sodium alginate, polyvinylpyrrolidone, gum tragacanth and gum acacia; dispersing or wetting agents such as a naturally-occurring phosphatide, for example, lecithin, or condensation products of an alkylene oxide with fatty acids, for example polyoxyethylene stearate, or condensation products of ethylene oxide with long chain aliphatic alcohols, for example heptadecaethyleneoxycetanol, or condensation products of ethylene oxide with partial esters derived from fatty acids and a hexitol such as polyoxyethylene sorbitol monooleate, or condensation products of ethylene oxide with partial esters derived from fatty acids and hexitol anhydrides, for example polyethylene sorbitan monooleate. The aqueous suspensions may also contain one or more preservatives, for example ethyl, or n-propyl p-hydroxybenzoate, one or more coloring agents, one or more flavoring agents, and one or more sweetening agents, such as sucrose or saccharin.

[99] Oily suspensions can be formulated by suspending the active ingredients in a vegetable oil, for example arachis oil, olive oil, sesame oil or coconut oil, or in a mineral oil such as liquid paraffin. The oily suspensions may contain a thickening agent, for example beeswax, hard paraffin or cetyl alcohol. Sweetening agents and flavoring agents may be added to provide palatable oral preparations. These compositions may be preserved by the addition of an anti-oxidant such as ascorbic acid.

[100] Dispersible powders and granules suitable for preparation of an aqueous suspension by the addition of water provide the active ingredient in admixture with a dispersing or wetting agent, suspending agent and one or more preservatives. Suitable dispersing or wetting agents or suspending agents are exemplified by those already mentioned above. Additional excipients, for example sweetening, flavoring and coloring agents, can also be present.

[101] Pharmaceutical compositions can also be in the form of oil-in-water emulsions. The oily phase can be a vegetable oil or a mineral oil or mixtures of these. Suitable emulsifying agents can be naturally-occurring gums, for example gum acacia or gum tragacanth, naturally-occurring phosphatides, for example soy bean, lecithin, and esters or partial esters derived from fatty acids and hexitol, anhydrides, for example sorbitan

monooleate, and condensation products of the said partial esters with ethylene oxide, for example polyoxyethylene sorbitan monooleate. The emulsions can also contain sweetening and flavoring agents.

[102] In some embodiments, the pharmaceutically acceptable carrier, diluent, or excipient is not water. In other embodiments, the water comprises less than 50% of the composition. In some embodiments, composiitons comprising less than 50% water have at least 1%, 2%, 3%, 4% or 5% water. In other embodiments, the water content is present in the composition in a trace amount.

[103] In some embodiments, the pharmaceutically acceptable carrier, diluent, or excipient is not alcohol. In other embodiments, the alcohol comprises less than 50% of the composition. In some embodiments, composiitons comprising less than 50% alcohol have at least 1%, 2%, 3%, 4% or 5% alcohol. In other embodiments, the alcohol content is present in the composition in a trace amount.

[104] Syrups and elixirs can be formulated with sweetening agents, for example glycerol, propylene glycol, sorbitol, glucose or sucrose. Such formulations can also contain a demulcent, a preservative, flavoring, and coloring agents. The pharmaceutical compositions can be in the form of a sterile injectable aqueous or oleaginous suspension. This suspension can be formulated according to the known art using those suitable dispersing or wetting agents and suspending agents that have been mentioned above. The sterile injectable preparation can also be a sterile injectable solution or suspension in a non-toxic parentally acceptable diluent or solvent, for example as a solution in 1,3-butanediol. Among the acceptable vehicles and solvents that can be employed are water, Ringer's solution and isotonic sodium chloride solution. In addition, sterile, fixed oils can be employed as a solvent or suspending medium. For this purpose any bland fixed oil can be employed including synthetic mono- or diglycerides. In addition, fatty acids such as oleic acid find use in the preparation of injectables.

[105] Compounds of the disclosure can also be administered in the form of suppositories, e.g., for rectal administration of the drug. These compositions can be prepared by mixing the compound with a suitable non-irritating excipient that is solid at ordinary temperatures but liquid at the rectal temperature and will therefore melt in the rectum to release the drug. Such materials include cocoa butter and polyethylene glycols.

[106] Compounds of the disclosure can also be administered parenterally in a sterile medium. The drug, depending on the vehicle and concentration used, can either be suspended or dissolved in the vehicle. Advantageously, adjuvants such as local anesthetics, preservatives and buffering agents can be dissolved in the vehicle.

[107] The compositions can be formulated in a unit dosage form of the active ingredient. The term “unit dosage forms” refers to physically discrete units suitable as unitary

dosages for human subjects and other mammals, each unit containing a predetermined quantity of active material calculated to produce the desired therapeutic effect, in association with a suitable pharmaceutical excipient.

[108] The active compound can be effective over a wide dosage range and is generally administered in a pharmaceutically effective amount. It will be understood, however, that the amount of the compound actually administered will usually be determined by a physician, according to the relevant circumstances, including the condition to be treated, the chosen route of administration, the actual compound administered, the age, weight, and response of the individual patient, the severity of the patient's symptoms, and the like.

[109] For preparing solid compositions such as tablets, the principal active ingredient is mixed with a pharmaceutical excipient to form a solid preformulation composition containing a homogeneous mixture of a compound described herein. When referring to these preformulation compositions as homogeneous, the active ingredient is typically dispersed evenly throughout the composition so that the composition can be readily subdivided into equally effective unit dosage forms such as tablets, pills and capsules. This solid preformulation is then subdivided into unit dosage forms of the type described above containing from, for example, 0.1 to about 500 mg of the active ingredient of a compound described herein.

[110] The tablets or pills can be coated or otherwise compounded to provide a dosage form affording the advantage of prolonged action. For example, the tablet or pill can comprise an inner dosage and an outer dosage component, the latter being in the form of an envelope over the former. The two components can be separated by an enteric layer which serves to resist disintegration in the stomach and permit the inner component to pass intact into the duodenum or to be delayed in release. A variety of materials can be used for such enteric layers or coatings, such materials including a number of polymeric acids and mixtures of polymeric acids with such materials as shellac, cetyl alcohol, and cellulose acetate.

[111] The amount of compound or composition administered to a patient will vary depending upon what is being administered, the purpose of the administration, such as prophylaxis or therapy, the state of the patient, the manner of administration, and the like. In therapeutic applications, compositions can be administered to a patient already suffering from a disease in an amount sufficient to cure or at least partially arrest the symptoms of the disease and its complications. Effective doses will depend on the disease condition being treated as well as by the judgment of the attending clinician depending upon factors such as the severity of the disease, the age, weight and general condition of the patient, and the like.

[112] The compositions administered to a patient can be in the form of pharmaceutical compositions described above. These compositions can be sterilized by conventional

sterilization techniques, or may be sterile filtered. Aqueous solutions can be packaged for use as is, or lyophilized, the lyophilized preparation being combined with a sterile aqueous carrier prior to administration. The pH of the compound preparations typically will be between 3 and 11, more preferably from 5 to 9 and most preferably from 7 to 8. It will be understood that use of certain of the foregoing excipients, carriers, or stabilizers will result in the formation of pharmaceutical salts.

[113] The therapeutic dosage of the compounds can vary according to, for example, the particular use for which the treatment is made, the manner of administration of the compound, the health and condition of the patient, and the judgment of the prescribing physician. The proportion or concentration of a compound described herein in a pharmaceutical composition can vary depending upon a number of factors including dosage, chemical characteristics (*e.g.*, hydrophobicity), and the route of administration. For example, the compounds described herein can be provided in an aqueous physiological buffer solution containing about 0.1 to about 10% w/v of the compound for parenteral administration. Some typical dose ranges are from about 1 µg/kg to about 1 g/kg of body weight per day. In some embodiments, the dose range is from about 0.01 mg/kg to about 100 mg/kg of body weight per day. The dosage is likely to depend on such variables as the type and extent of progression of the disease or disorder, the overall health status of the particular patient, the relative biological efficacy of the compound selected, formulation of the excipient, and its route of administration. Effective doses can be extrapolated from dose-response curves derived from *in vitro* or animal model test systems.

[114] The compounds described herein can also be formulated in combination with one or more additional active ingredients which can include any pharmaceutical agent such as anti-viral agents, vaccines, antibodies, immune enhancers, immune suppressants, anti-inflammatory agents and the like.

[115] The person of ordinary skill in the art will formulate a compound as described into pharmaceutical formulations herein. for example, based on the physicochemical properties of the compound, the amount of the compound needed for a pharmaceutically effective amount, and the desired route of administration.

EXAMPLES

General Synthetic Methodologies

[116] Many general references providing commonly known chemical synthetic schemes and conditions useful for synthesizing the disclosed compounds are available (see, e.g., Smith and March, March's Advanced Organic Chemistry: Reactions, Mechanisms, and Structure, Fifth Edition, Wiley-Interscience, 2001; or Vogel, A Textbook of Practical Organic

Chemistry, Including Qualitative Organic Analysis, Fourth Edition, New York: Longman, 1978).

[117] Compounds as described herein can be purified by any of the means known in the art, including chromatographic means, such as HPLC, preparative thin layer chromatography, flash column chromatography and ion exchange chromatography. Any suitable stationary phase can be used, including normal and reversed phases as well as ionic resins. Most typically the disclosed compounds are purified via silica gel and/or alumina chromatography. See, e.g., Introduction to Modern Liquid Chromatography, 2nd Edition, ed. L. R. Snyder and J. J. Kirkland, John Wiley and Sons, 1979; and Thin Layer Chromatography, ed E. Stahl, Springer-Verlag, New York, 1969.

[118] During any of the processes for preparation of the subject compounds, it may be necessary and/or desirable to protect sensitive or reactive groups on any of the molecules concerned. This may be achieved by means of conventional protecting groups as described in standard works, such as J. F. W. McOmie, "Protective Groups in Organic Chemistry," Plenum Press, London and New York 1973, in T. W. Greene and P. G. M. Wuts, "Protective Groups in Organic Synthesis," Third edition, Wiley, New York 1999, in "The Peptides"; Volume 3 (editors: E. Gross and J. Meienhofer), Academic Press, London and New York 1981, in "Methoden der organischen Chemie," Houben-Weyl, 4.sup.th edition, Vol. 15/I, Georg Thieme Verlag, Stuttgart 1974, in H.-D. Jakubke and H. Jescheit, "Aminosauren, Peptide, Proteine," Verlag Chemie, Weinheim, Deerfield Beach, and Basel 1982, and/or in Jochen Lehmann, "Chemie der Kohlenhydrate: Monosaccharide and Derivate," Georg Thieme Verlag, Stuttgart 1974. The protecting groups may be removed at a convenient subsequent stage using methods known from the art.

[119] The compounds disclosed herein can be made using procedures familiar to the person of ordinary skill in the art in view of the particular preparative procedures described herein. One of skill in the art can adapt the reaction sequences descibed in examples below to fit the desired target molecule. Of course, in certain situations one of skill in the art will use different reagents to affect one or more of the individual steps or to use protected versions of certain of the substituents. Additionally, one skilled in the art would recognize that compounds of the disclosure can be synthesized using different routes altogether.

[120] Compounds suitable for use in the presently disclosed pharmaceutical compositions include compounds of Table 1, above. A variety of exemplary syntheses are provided below; the person of ordinary skill in the art will adapt the procedures described herein and/or other procedures familiar to the person of ordinary skill in the art, to make the compounds described herein.

[121] The following synthetic examples and biochemical data are intended to further illustrate certain embodiments and are not intended to limit the scope of the presently disclosed compounds.

Compound 1: methyl 1-(4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate

[122] methyl 2-(methoxyimino)-3-(2-nitrobenzyl)-4-oxopentanoate

[123] Methyl acetopyruvate (1.0 g, 6.94 mmol), methoxyhydroxylamine hydrochloride (0.58 g, 6.94 mmol) and molecular sieves (2.5 g) were placed in a flame dried round bottom flask equipped with a nitrogen inlet. Dry DMF (23 mL) was added and the round bottom flask was covered with foil and stirred overnight at room temperature. The reaction mixture was diluted with EtOAc (150 mL) and the organic phase was washed with water (3 x 50 mL) and brine (1 x 50 mL), dried with Na_2SO_4, filtered and concentrated under vacuum to afford the title compound (1.07 g, 6.16 mmol, 89%) as red liquid.

[124] methyl 2-(methoxyimino)-3-(2-nitrobenzyl)-4-oxopentanoate

[125] A mixture of ethyl 2-methoxyimino-4-oxooctanoate (3.38 g, 19.52 mmol), of *o*-Nitrobenzylbromide (4.22 g, 19.52 mmol), of freshly pulverized anhydrous potassium carbonate (3.24 g, 23.42 mmol), and of dry DMF (54.22 mL) was stirred vigorously for 24 h at rt. The reaction was neutralized with HCl 0.2 M and diluted in EtOAc. The phases were separated, the aqueous layer was extracted with EtOAc (2 x 200 mL), and then the combined organic layers were dried over Na_2SO_4, filtered and concentrated under vacuum. The crude product was purified by flash chromatography (dry packing) on silica gel using a solution of EtOAc in hexanes (0 to 20%). The product was then purified by reverse flash chromatography (C18, using a gradient 20 to 55% MeCN in H_2O) and afforded the title compound (2.62 g, 8.50 mmol, 44%) as white solid.

[126] 4-(3,4-dichlorophenyl)-2-hydrazinylthiazole

[127] A solution of thiosemicarbazide (2.0 g, 7.46 mmol) and of 3,4-dichlorophenacyl bromide (0.68 g, 7.46 mmol) in dioxane (75 mL) was stirred at room temperature overnight. An aqueous solution of saturated Na_2CO_3 was added. The reaction mixture was stirred vigorously for 1 h. The reaction mixture was dissolve in Et_2O and water was added. The aqueous layer was extracted with Et_2O (3x). The combined organic layers were dried over Na_2SO_4, filtered and concentrated under vacuum. The solid was triturated in Et_2O, filtered and washed with Et_2O, resulting in the title compound (1.31 g, 5.02 mmol, 67%) as beige solid.

[128] methyl 1-(4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate

[129] Methyl 2-(methoxyimino)-3-(2-nitrobenzyl)-4-oxopentanoate (60.0 mg, 0.19 mmol) was dissolved in MeOH (2 mL) and 4-(3,4-dichlorophenyl)-2-hydrazinylthiazole (56.0 mg, 0.21 mmol) was added followed by HCl 12 N (32 µL, 0.39 mmol) dropwise. The reaction mixture was heated to reflux overnight. The crude product was concentrated under vacuum and was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 70-90% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (9.5 mg, 0.02 mmol, 10%) as white solid after lyophilization.

[130] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.08 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.1, 1.1 Hz, 1H), 7.82 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.73 (d, *J* = 8.4 Hz, 1H), 7.69 (td, *J* = 7.6, 1.2 Hz, 1H), 7.57 – 7.51 (m, 1H), 7.33 (d, *J* = 7.5 Hz, 1H), 4.24 (s, 2H), 3.68 (s, 3H), 2.14 (s, 3H); MS (m/z): 503.12 $[M+1]^+$.

Compound 3: methyl 1-(4-(3,4-dichlorophenyl)-5-(ethylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate

[131] **1-(3,4-dichlorophenyl)-2-thiocyanatoethanone**

[132] Potassium thiocyanate (7.2 g, 74.6 mmol) was added to a stirred solution of 2-bromo-1-(3,4-dichlorophenyl)ethanone (10 g, 37 mmol) in MeCN (93 mL) at rt. The reaction mixture was heated to reflux (90 °C) for 1 h, then cooled to room temperature and diluted with water (100 mL). The aqueous layer was extracted with EtOAc (3 x 100 mL) The combined organic layers were washed with brine (300 mL), dried over $MgSO_4$, filtered and concentrated *in vacuo* to give the title compound, which was used without further purification.

[133] **2-chloro-4-(3,4-dichlorophenyl)thiazole**

[134] A mixture of 1-(3,4-dichlorophenyl)-2-thiocyanatoethanone (49.6 g, 0.20 mol) and 4 M HCl in dioxane (302 mL, 1.21 mol) in dioxane (200 mL) was stirred for 16 h at rt. The reaction mixture was concentrated *in vacuo* and the residue was diluted with sat. aq. $NaHCO_3$ (400 mL) and extracted with EtOAc (3 x 400 mL). The combined organic layers were washed with brine (500 mL), dried over $MgSO_4$, filtered and concentrated *in vacuo* and afforded the title compound (45.5 g, 0.17 mol, 85%) as beige solid.

[135] **2-chloro-4-(3,4-dichlorophenyl)-5-(ethylthio)thiazole**

[136] A 2.5 M solution of *n*-BuLi in hexanes (2.0 mL, 5.0 mmol) was added to a THF solution (12 mL) of 2-chloro-4-(3,4-dichlorophenyl)thiazole (1.06 g, 4 mmol) at -78 °C. The reaction mixture was stirred at the same temperature for 2 h. Diethyl disulfide (0.98 g, 8 mmol) was added to the reaction and after 10 min, an aqueous saturated solution of NH_4Cl (25 mL) was added. The reaction mixture was extracted with EtOAc (3 x 25 mL). The combined organic layers were washed with brine (75 mL), and dried with Na_2SO_4, filtered and evaporated under reduced pressure. The crude product was purified by flash

chromatography (dry packing) on silica gel using a solution of EtOAc in hexanes (5 to 10% gradient) and afforded the title compound (1.27 g, 3.92 mmol, 98%) as red liquid.

[137] 4-(3,4-dichlorophenyl)-5-(ethylthio)-2-hydrazinylthiazole

[138] DIPEA (0.32 g, 2.5 mmol) was added to a solution of hydrazine hydrochloride (0.17 g, 2.5 mmol) and 2-chloro-4-(3,4-dichlorophenyl)-5-(ethylthio)thiazole (0.41 g, 1.3 mmol) to NMP (2.5 mL) in a glass microwave vial. The tube was sealed and the reaction was heated to 150 °C for 2 h with microwave radiation. The reaction mixture was diluted with water (10 mL) and extracted with EtOAc (3 x 10 mL). The combined organic layer were washed with brine (50 mL), and dried with Na_2SO_4, filtered and evaporated under reduced pressure. The product was purified by reverse flash chromatography (C18, using a gradient 20 to 70% MeCN in H_2O) and afforded the title compound (0.31 g, 0.96 mmol, 76%) as green oil.

[139] methyl 1-(4-(3,4-dichlorophenyl)-5-(ethylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate

[140] Methyl 2-(methoxyimino)-3-(2-nitrobenzyl)-4-oxopentanoate (100.0 mg, 0.32 mmol) was dissolved in MeOH (3 mL).4-(3,4-dichlorophenyl)-5-(ethylthio)-2-hydrazinylthiazole (104.0 mg, 0.32 mmol) was added and then HCl 12 N (108 µL, 1.30 mmol) was added dropwise to the reaction mixture. The reaction mixture was heated to reflux overnight. The crude product was concentrated under vacuum and was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 70-90% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (100.0 mg, 0.18 mmol, 55%) as white solid after lyophilization.

[141] ^{1}H NMR (500 MHz, DMSO) δ 8.06 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.1, 1.3 Hz, 1H), 7.91 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.68 (td, *J* = 7.6, 1.3 Hz, 1H), 7.57 – 7.50 (m, 1H), 7.33 (d, *J* = 6.9 Hz, 1H), 4.23 (s, 2H), 3.64 (s, 3H), 2.97 (q, *J* = 7.3 Hz, 2H), 2.15 (s, 3H), 1.21 (t, *J* = 7.3 Hz, 3H); MS (m/z): 563.0 $[M+1]^+$.

Compound 4: 1-(4-(3,4-dichlorophenyl)-5-(ethylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid

[142] Into a 25 mL round bottom flask, methyl 1-(4-(3,4-dichlorophenyl)-5-(ethylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate (25 mg, 0.04 mmol) was diluted with THF/MeOH (1 mL, 1:1). A solution of NaOH 1 M (89 µL, 0.09 mmol) was added and the reaction was stirred overnight at rt. The crude product was concentrated under vacuum and was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (15.1 mg, 0.03 mmol, 62%) as white solid after lyophilization.

[143] ^{1}H NMR (500 MHz, DMSO) δ 8.11 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.1, 1.2 Hz, 1H), 7.94 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.64 (dt, *J* = 7.7, 3.8 Hz, 1H), 7.50 (t, *J* = 7.8 Hz, 1H), 7.23 (d, *J* = 7.8 Hz, 1H), 4.23 (s, 2H), 2.97 (q, *J* = 7.3 Hz, 2H), 2.06 (s, 3H), 1.21 (t, *J* = 7.3 Hz, 3H); MS (m/z): 549.1 $[M+1]^+$.

Compound 5: methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate

[144] **2-chloro-4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazole**

[145] A 2.5 Msolution of *n*-BuLi in hexanes (37.8 mL, 94.5 mmol) was added to a THF solution (216 mL) of 2-chloro-4-(3,4-dichlorophenyl)thiazole (20.0 g, 75.6 mmol) at -78 °C. The reaction mixture was stirred at the same temperature for 30 min. Diisopropyl disulfide (2.3 g, 24.2 mL, 151.2 mmol) was added to the reaction and was stirred at the same temperature for 1.5 h. Water (400 mL) was added to quench the reaction and then Et_2O (300 mL). The reaction mixture was transferred into a separation funnel and the layers were separated. The aqueous layer was extracted with Et_2O (2 x 300 mL). The combined organic layers were dried over Na_2SO_4 and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (0 to 5% gradient) and afforded the title compound (19.0 g, 56.2 mmol, 74%) as orange oil.

[146] **4-(3,4-dichlorophenyl)-2-hydrazinyl-5-(isopropylthio)thiazole**

[147] DIPEA (3.2 mL, 18.2 mmol) was added to a solution of hydrazine hydrochloride (1.2 g, 18.2 mmol) and 2-chloro-4-(3,4-dichlorophenyl)-5-(methylthio)thiazole (3.1 g, 9.1 mmol) to NMP (30 mL) in two glass microwave vial. The vials were sealed and were heated to 150 °C for 2 h with microwave radiation. The reaction mixture was diluted with water (10 mL) and extracted with Et_2O. The combined organic layers were washed with brine (3x), and dried over Na_2SO_4, filtered and concentrated under vacuum. This afforded the title compound (2.9 g, 8.7 mmol, 96%) as green oil.

[148] **methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate**

[149] Methyl 2-(methoxyimino)-3-(2-nitrobenzyl)-4-oxopentanoate (60.0 mg, 0.19 mmol) was dissolved in MeOH (2 mL),.4-(3,4-dichlorophenyl)-2-hydrazinyl-5-(isopropylthio)thiazole (65.0 mg, 0.19 mmol) was added and then HCl 12 N (65 µL, 0.78 mmol) was added dropwise to the reaction mixture. The reaction mixture was heated to reflux overnight. The crude product was concentrated under vacuum and was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 70-90% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (96.7 mg, 0.17 mmol, 86%) as white solid after lyophilization.

[150] ^{1}H NMR (500 MHz, DMSO) δ 8.10 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.2, 1.2 Hz, 1H), 7.96 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.72 – 7.64 (m, 1H), 7.54 (t, *J* = 7.2 Hz, 1H), 7.33 (d, *J* = 7.1 Hz, 1H), 4.23 (s, 2H), 3.64 (s, 3H), 3.38 – 3.34 (m, 1H), 2.15 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 577.1 $[M+1]^+$.

Compound 12: 1-(5-(butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid

[151] **5-(butylthio)-2-chloro-4-(3,4-dichlorophenyl)thiazole**

[152] A 2.5 Msolution of *n*-BuLi in hexanes (1.0 mL, 2.5 mmol) was added to a THF solution (6 mL) of 2-chloro-4-(3,4-dichlorophenyl)thiazole (0.53 g, 2.0 mmol) at -78 °C. The reaction mixture was stirred at the same temperature for 2 h. Dibutyl disulfide (0.71 g, 4.0 mmol) was added to the reaction and after 10 min, an aqueous saturated solution of NH_4Cl (15 mL) was added. The reaction mixture was extracted with EtOAc (3 x 15 mL). The combined organic layers were washed with brine (50 mL), dried with Na_2SO_4, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography (dry packing) on silica gel eluting using a solution of EtOAc in hexanes (5 to 10% gradient) and afforded the title compound (0.68 g, 1.93 mmol, 97%) as red liquid.

[153] **5-(butylthio)-4-(3,4-dichlorophenyl)-2-hydrazinylthiazole**

[154] DIPEA (0.29 mL, 1.65 mmol) was added to a solution of hydrazine hydrochloride (0.11 g, 1.7 mmol) and 2-chloro-4-(3,4-dichlorophenyl)-5-(propylthio)thiazole (0.12 g, 0.30 mmol) to NMP (2 mL) in a glass microwave vial. The vials were sealed and were heated to 150 °C for 1 h with microwave radiation. The reaction mixture was diluted with water (5 mL) and extracted with EtOAc. The combined organic layers were washed with brine (3x), and dried over Na_2SO_4, filtered and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel using a solution of DCM in hexanes (0 to 5% gradient) and afforded the title compound (61.0 mg, 0.18 mmol, 53%) as purple solid.

[155] **methyl 1-(5-(butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate**

[156] Methyl 2-(methoxyimino)-3-(2-nitrobenzyl)-4-oxopentanoate (38.0 mg, 0.12 mmol) was dissolved in MeOH (2 mL).5-(butylthio)-4-(3,4-dichlorophenyl)-2-hydrazinylthiazole (134.0 mg, 0.40 mmol) was added and then HCl 12 N (41 µL, 0.49 mmol) was added dropwise to the reaction mixture. The reaction mixture was heated to reflux overnight. The crude product was concentrated under vacuum and was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 80-100% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (49.0 mg, 0.08 mmol, 67%) as white solid after lyophilization.

[157] 1-(5-(butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid

[158] Methyl 1-(5-(butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate (25.0 mg, 0.04 mmol) was diluted with THF/MeOH (1 mL, 1:1). A solution of NaOH 1 M (85 µL, 0.08 mmol) was added and the reaction was stirred overnight at rt. The crude product was concentrated under vacuum and was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 70-90% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (6.02 mg, 0.01 mmol, 25%) as yellow solid after lyophilization.

[159] ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.04 (d, *J* = 1.7 Hz, 1H), 7.97 (d, *J* = 7.9 Hz, 1H), 7.68 (dd, *J* = 8.6, 1.6 Hz, 1H), 7.55 (d, *J* = 8.3 Hz, 1H), 7.44 (t, *J* = 8.1 Hz, 1H), 7.36 (t, *J* = 7.6 Hz, 1H), 7.05 (d, *J* = 7.7 Hz, 1H), 4.66 (s, 2H), 2.87 (t, *J* = 7.3 Hz, 2H), 2.17 (s, 3H), 1.60 (dt, *J* = 14.9, 7.5 Hz, 2H), 1.39 (dq, *J* = 14.5, 7.3 Hz, 2H), 0.88 (t, *J* = 7.4 Hz, 3H); MS (m/z): 577.2 $[M+1]^+$.

Compound 13: 1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carboxylic acid

[160] methyl 4-(2-aminobenzyl)-1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[161] Methyl 1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate (79.0 mg, 0.14 mmol) was dissolved in THF/MeOH (4 mL 1:1), platinum 1% and vanadium 2%, on activated carbon (50-70% wetted powder) Evonik Noblyst® P8078 (187.0 mg, 0.96 mmol) was then added. The flask was put under vacuum until MeOH starts bubbling, and then a hydrogen balloon was inserted. The reaction mixture was stirred overnight. The reaction mixture was filtered through Celite® and washed with MeOH and THF multiple times. The title compound (75.0 mg, 0.14 mmol, 100%) was concentrated under vacuum and used in the next step without further purification.

[162] methyl 1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido) benzyl)-1H-pyrazole-5-carboxylate

[163] Methyl 4-(2-aminobenzyl)-1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (75.0 mg, 0.14 mmol) was dissolved in dry DCM (1 mL) and pyridine (1.10 mL, 13.7 mmol) was added. MsCl (106 µL, 1.37 mmol) was added and the reaction mixture was stirred overnight under a nitrogen atmosphere. The crude product was concentrated under vacuum, resulting in the title compound (86 mg, 0.14 mmol, 100%).

[164] 1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carboxylic acid

[165] Methyl 1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carboxylate (86.0 mg, 0.14 mmol) was diluted with THF/MeOH (1 mL, 1:1). A solution of NaOH 1 M (3.30 mL, 3.30 mmol) was added and the reaction was stirred 5 h at rt. The reaction mixture was acidified with HCl 3M and the crude product was concentrated under vacuum and was purified by reverse flash chromatography (C18, using a gradient 0 to 100% MeCN in H_2O) and afforded the title compound (39.7 mg, 0.07 mmol, 47%) as white solid after lyophilization.

[166] ^{1}H NMR (500 MHz, DMSO) δ 14.06 (s, 1H), 9.29 (s, 1H), 8.15 (d, *J* = 2.1 Hz, 1H), 7.95 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.78 (d, *J* = 8.5 Hz, 1H), 7.36 (d, *J* = 7.8 Hz, 1H), 7.25 (t, *J* = 7.6 Hz, 1H), 7.18 (t, *J* = 7.5 Hz, 1H), 6.90 (d, *J* = 7.3 Hz, 1H), 4.05 (s, 2H), 3.01 (s, 3H), 2.94 (t, *J* = 7.1 Hz, 2H), 2.02 (s, 3H), 1.62 – 1.52 (m, 2H), 0.90 (t, *J* = 7.3 Hz, 3H); MS (m/z): 613.1 $[M+1]^+$.

Compound 14: N-(2-((5-(4-(aminomethyl)piperidine-1-carbonyl)-1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-4-yl)methyl)phenyl)methanesulfonamide

[167] tert-butyl (1-(1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carbonyl)piperidin-4-yl)methylcarbamate

[168] 1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carboxylic acid (27.0 mg, 0.04 mmol) was diluted with DMF (1 mL). DIPEA (16 µL, 0.09 mmol) and HATU (22.0 mg, 0.06 mmol) were added and the reaction mixture was stirred at rt overnight. The reaction mixture was transferred into a separation funnel with EtOAc and water. The layers were separated and the organic layer was washed with water (1x) and brine (3x), dried over Na_2SO_4 and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (20 to 60% gradient) and afforded the title compound (18.8 mg, 0.02 mmol, 53%) as colorless oil.

[169] N-(2-((5-(4-(aminomethyl)piperidine-1-carbonyl)-1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-4-yl)methyl)phenyl)methanesulfonamide

[170] tert-butyl (1-(1-(4-(3,4-dichlorophenyl)-5-(propylthio)thiazol-2-yl)-3-methyl-4-(2-(methylsulfonamido)benzyl)-1H-pyrazole-5-carbonyl)piperidin-4-yl)methylcarbamate (19 mg, 0.05 mmol) was diluted in dioxane (1 mL) and then HCl in dioxane (0.34 mL, 1.4 mmol) was added. The reaction mixture was stirred at room temperature overnight under a nitrogen atmosphere. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 50-70% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (4.2 mg, 0.02 mmol, 30%) as white solid after lyophilization.

[171] ^{1}H NMR Mixture of 2 rotamers 1:1 (500 MHz, MeOD) δ 8.55 (s, 3H), 8.16 (d, *J* = 2.1 Hz, 1H), 8.11 (d, *J* = 2.0 Hz, 1H), 8.05 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.95 (dd, *J* = 8.4, 2.1 Hz, 1H), 7.64 – 7.57 (m, 2H), 7.39 – 7.32 (m, 2H), 7.31 – 7.19 (m, 4H), 7.19 – 7.09 (m, 2H), 4.64 (d, *J* = 13.2 Hz, 2H), 4.53 (d, *J* = 13.4 Hz, 2H), 4.03 (s, 2H), 3.98 (s, 2H), 3.49 – 3.41 (m, 1H), 3.40 – 3.34 (m, 1H), 3.02 (s, 3H), 3.00 (s, 3H), 2.95 – 2.79 (m, 4H), 2.79 – 2.72 (m, 1H), 2.58 (dd, *J* = 36.5, 24.3 Hz, 4H), 2.25 (d, *J* = 4.2 Hz, 3H), 2.20 (s, 3H), 2.03 (s, 1H), 1.81 (d, *J* = 11.8 Hz, 1H), 1.68 – 1.52 (m, 4H), 1.46 (t, *J* = 15.3 Hz, 3H), 1.29 (s, 1H), 1.12 (d, *J* = 12.7 Hz, 1H), 1.00 – 0.91 (m, 6H), 0.84 – 0.59 (m, 2H); MS (m/z): 709.0 $[M+1]^+$.

Compound 15: 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[172] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[173] 4-(3,4-dichlorophenyl)-2-hydrazinyl-5-(isopropylthio)thiazole (11.0 g, 32.9 mmol), prepared as in Exemple 5, was dissolved in mehanol (395 mL). Methyl 2-(methoxyimino)-4-oxopentanoate (6.84 g, 39.5 mmol) was added followed by HCl_{conc} (11.0 mL, 134 mmol). The reaction mixture was refluxed for 18 hours. Water (300 mL) was added and half the MeOH was evaporated under reduced pressure. The mixture was extracted with DCM (3x250mL), the combined organic layers were washed with an aqueous saturated solution of $NaHCO_3$ (300 mL) and brine (300 mL), dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography (dry packing) using a solution of DCM in Hexanes (10 to 20%). The title compound was obtained as viscous brown oil (8.85 g, 20.0 mmol, 61%).

[174] methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[175] A solution of bromine (6.15 mL, 120 mmol) in acetonitrile (51 mL) was added dropwise to a solution of methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (8.85 g, 20.0 mmol) in acetonitrile (51 mL) and DCM (51 mL). The reaction was stirred for 5 hours at room temperature. A saturated aqueous solution of Na_2SO_3 (300 mL) was added at 0 °C and the mixture was extracted with DCM (3 x 300 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography (dry packing) on silica gel using a solution of DCM in hexanes (10 to 20%) and afforded the title compound (7.26 g, 13.9 mmol, 70%) as a white solid.

[176] 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[177] Methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.10 mmol) was diluted in a 1:1 solution of THF and MeOH (1 mL). 1M NaOH (0.19 mL, 0.19 mmol) was added and the reaction was stirred for 18 hours at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column with a solution of MeCN in water (containing 10mM of NH_4CO_2H) (50 to 70%). The product was lyophilized and afforded the title compound (28 mg, 0.055 mmol, 58%) as a pale yellow powder.

[178] ^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 2.25 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H). Note: isopropyl CH is overlapping with water signal; MS (m/z): 505.7 $[M+H]^+$.

Compound 16: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[179] Methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (22 mg, 0.049 mmol) was diluted in a 1:1 solution of THF and MeOH (0.49 mL). 1M NaOH (0.098 mL, 0.098 mmol) was added and the reaction was stirred for 18 hours at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10mM of NH_4CO_2H) (20 to 100%). The product was lyophilized and afforded the title compound (3.9 mg, 0.0091 mmol, 19%) as a white powder.

[180] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.81 (d, *J* = 8.5 Hz, 1H), 6.91 (s, 1H), 3.39 (sept, *J* = 6.7 Hz, 1H), 2.33 (s, 3H), 1.27 (d, *J* = 6.7 Hz, 6H); MS (m/z): 426.0 $[M-H]^-$.

Compound 17: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(imidazo[1,2-a]pyridin-6-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[181] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the 1-(4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)ethanone (50.0 mg, 0.10 mmol), imidazo[1,2-a]pyridin-6-ylboronic acid (18.6 mg, 0.12 mmol) and Na_2CO_3 (50.8 mg, 0.48 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (11.0 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. NaOH 1 M (0.19 mL, 0.19 mmol) was

added and the reaction mixture was stirred 6 h at 50 °C. The reaction mixture was acidified with HCl 3M and the product crashed out. The solid was triturated in EtOAc/water and was then filtered. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 40-60% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (11.0 mg, 0.02 mmol, 21%) as white solid after lyophilization.

[182] ^{1}H NMR (500 MHz, DMSO) δ 8.70 (s, 1H), 8.21 (d, *J* = 2.1 Hz, 1H), 8.06 – 7.99 (m, 2H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.64 (d, *J* = 9.5 Hz, 2H), 7.34 (d, *J* = 9.0 Hz, 1H), 3.42 – 3.29 (m, 1H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 544.0 $[M+1]^+$.

Compound 18: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-phenyl-1H-pyrazole-5-carboxylic acid

[183] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-phenyl-1H-pyrazole-5-carboxylate

[184] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed 1-(4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)ethanone prepared as in (25.0 mg, 0.05 mmol), phenylboronic acid (7.0 mg, 0.06 mmol) and Na_2CO_3 (25.4 mg, 0.24 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (5.5 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. The crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (0 to 20% gradient) and afforded the title compound (20.0 mg, 0.04 mmol, 80%) as white solid.

[185] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-phenyl-1H-pyrazole-5-carboxylic acid

[186] Into a 25 mL round bottom flask, methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-phenyl-1H-pyrazole-5-carboxylate (20.0 mg, 0.04 mmol) was diluted with THF/MeOH (1 mL, 1:1). A solution of NaOH 1 M (193 µL, 0.19 mmol) was added and the reaction was stirred 16 h at rt. The reaction mixture was acidified with HCl 3M and the crude product was concentrated under vacuum. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (5.0 mg, 0.01 mmol, 26%) as yellow solid after lyophilization.

[187] ^{1}H NMR (500 MHz, DMSO) δ 8.23 (d, *J* = 2.0 Hz, 1H), 8.04 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.55 – 7.29 (m, 5H), 7.12 (br s, 1H), 3.42 – 3.29 (m, 1H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 5H); MS (m/z): 504.5 $[M+1]^+$.

Compound 19: 1-(5-(cyclohexylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid

[188] 2-chloro-5-(cyclohexylthio)-4-(3,4-dichlorophenyl)thiazole

[189] A 2.5 Msolution of n-BuLi in hexanes (2.3 mL, 5.67 mmol) was added to a THF solution (13 mL) of 2-chloro-4-(3,4-dichlorophenyl)thiazole prepared as in (1.0 g, 3.78 mmol) at -78 °C. The reaction mixture was stirred at the same temperature for 30 min. Dicyclohexyl disulfide (1.89 mL, 7.56 mmol) was added and the reaction was stirred 3 h at the same temperature. Water was added to quench the reaction and the aqueous layer was extracted with EtOAc (3x). The combined organic layers were washed with brine, dried with Na_2SO_4, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography (wet loading) on silica gel eluting using a solution of EtOAc in hexanes (5 to 10% gradient) and afforded the title compound (0.85 g, 2.23 mmol, 59%) as bright orange oil.

[190] 5-(cyclohexylthio)-4-(3,4-dichlorophenyl)-2-hydrazinylthiazole

[191] DIPEA (184 µL, 1.06 mmol) was added to a solution of hydrazine hydrochloride (72.0 mg, 1.06 mmol) and 2-chloro-5-(cyclohexylthio)-4-(3,4-dichlorophenyl)thiazole (200 mg, 0.53 mmol) to NMP (2 mL) in a glass microwave vial. The vials were sealed and were heated to 150 °C for 2 h with microwave radiation. The product was purified by reverse flash chromatography (C18, using a gradient 20 to 100% MeCN in H_2O) and afforded the title compound (153 mg, 0.41 mmol, 77%) as light orange oil.

[192] methyl 1-(5-(cyclohexylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate

[193] Methyl 2-(methoxyimino)-3-(2-nitrobenzyl)-4-oxopentanoate (100.0 mg, 0.32 mmol) was dissolved in MeOH (4 mL).5-(cyclohexylthio)-4-(3,4-dichlorophenyl)-2-hydrazinylthiazole (146.0 mg, 0.39 mmol) was added and then HCl 12 N (108 µL, 1.30 mmol) was added dropwise to the reaction mixture. The reaction mixture was heated to reflux overnight. The crude product was concentrated under vacuum and was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (5 to 20% gradient) and afforded the title compound (133 mg, 0.22 mmol, 66%) as brown solid.

[194] 1-(5-(cyclohexylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid

[195] Methyl 1-(5-(cyclohexylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate (133 mg, 0.022 mmol) was diluted with THF/MeOH (2 mL, 1:1). A solution of NaOH 1 M (431 µL, 0.43 mmol) was added and the reaction was stirred 16 h at rt. The reaction mixture was acidified with HCl 3M and the crude product was concentrated under vacuum and was then extracted with EtOAc (3x), the combined organic

layers were dried over Na_2SO_4, filtered and concentrated under vacuum, resulting in the title compound (116 mg, 0.19 mmol, 89%) as off-white solid after lyophilization.

[196] ^{1}H NMR (500 MHz, DMSO) δ 8.16 (d, *J* = 2.1 Hz, 1H), 8.03 – 7.95 (m, 2H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.64 (dd, *J* = 11.4, 3.8 Hz, 1H), 7.51 (t, *J* = 7.7 Hz, 1H), 7.22 (d, *J* = 7.5 Hz, 1H), 4.24 (s, 2H), 3.17 – 3.09 (m, 1H), 2.07 (s, 3H), 1.95 – 1.81 (m, 2H), 1.65 (dd, *J* = 9.2, 3.8 Hz, 2H), 1.50 (dd, *J* = 7.6, 3.1 Hz, 1H), 1.38 – 1.10 (m, 5H); MS (m/z): 603.5 $[M+1]^+$.

Compound 20: 4-(benzofuran-2-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[197] 4-(benzofuran-2-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[198] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed 1-(4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)ethanone (52 mg, 0.10 mmol), benzofuran-2-ylboronic acid (19.4 mg, 0.12 mmol) and Na_2CO_3 (53.0 mg, 0.50 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (11.6 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (21.0 mg, 0.50 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (3.0 mg, 0.006 mmol, 6%) as yellow solid after lyophilization.

[199] ^{1}H NMR (500 MHz, DMSO) δ 8.25 (d, *J* = 1.9 Hz, 1H), 8.06 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.82 – 7.73 (m, 1H), 7.68 (d, *J* = 7.2 Hz, 1H), 7.56 (d, *J* = 8.3 Hz, 1H), 7.30 (dt, *J* = 22.9, 7.2 Hz, 2H), 7.17 (s, 1H), 3.42 – 3.29 (m, 1H), 2.54 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 544.0 $[M+1]^+$.

Compound 22: 2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2',5,5'-trimethyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid

[200] methyl 2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2',5,5'-trimethyl-4,4'-bi(2H-pyrazole)-3-carboxylate

[201] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed 1-(4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)ethanone (50.0 mg, 0.096 mmol), 1,3-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-1H-pyrazole (19.8 mg, 0.09 mmol) and Na_2CO_3 (39.1 mg, 0.37 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the

solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (8.5 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. EtOAc and water were added, the aqueous layer was extracted with EtOAc (3x) and the combined organic layers were dried over Na_2SO_4, filtered and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (20 to 100% gradient) and afforded the title compound (20.0 g, 0.037 mmol, 39%) as colorless oil.

[202] 2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2',5,5'-trimethyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid

[203] Into a 5 mL glass microwave vial, was placed methyl 2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2',5,5'-trimethyl-4,4'-bi(2H-pyrazole)-3-carboxylate (20.0 mg, 0.037 mmol) and LiOH (6.0 mg, 0.14 mmol). THF (1.5 mL), MeOH (0.5 mL) and water (3 mL) were added. The vial was heated to 110 °C under microwave radiation for 10 minutes. THF and MeOH were removed under vacuum and the crude product was purified by reverse flash chromatography (C18, using a gradient 20 to 70% MeCN in H_2O with 0.1% FA buffer) to afford the title compound (11.0 mg, 0.02 mmol, 75%) as white solid after lyophilization.

[204] ^1H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.0 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.66 (s, 1H), 3.79 (s, 3H), 2.14 (s, 3H), 2.06 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 522.2 $[M+1]^+$.

Compound 23: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[205] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid

[206] 2.5M in hexane *n*-BuLi (1.15 mL, 2.88 mmol) was added during 30 minutes (push serynge) to a solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (1.00 g, 1.92 mmol) and triisopropylborate (1.33 mL, 5.76 mmol) in THF (19.2 mL) at -78 °C. The reaction was stirred at that temperature for 10 minutes. 1N HCl (3 mL) was added and the reaction was stirred at rt for 30 minutes. Water (30 mL) was added and the mixture was extracted with EtOAc (3x20mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated and afforded the title compound (920 mg, 1.89 mmol, 99%) as a pale yellow solid. The crude product (purity = 94% by LCMS) was used without purification.

[207] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[208] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed 5-acetyl-1-(4-(3,4-dichlorophenyl)-5-

(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-4-ylboronic acid (50.0 mg, 0.010 mmol), 4-bromo-2,6-dimethylpyridine (17.7 mg, 0.10 mmol) and Na_2CO_3 (42.0 mg, 0.40 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of $Pd(PPh_3)_4$ (9.20 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (16.6 mg, 0.40 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 35-55% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (14.0 mg, 0.03 mmol, 26%) as white solid after lyophilization.

[209] ^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.16 (s, 2H), 2.47 (s, 6H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 533.0 $[M+1]^+$.

Compound 24: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3,5-difluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[210] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed 1-(4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)ethanone (50.0 mg, 0.096 mmol), 3,5-difluorophenylboronic acid (14.5 mg, 0.09 mmol) and Na_2CO_3 (40.4 mg, 0.50 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (8.8 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (16.0 mg, 0.38 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 55-75% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (15.0 mg, 0.027 mmol, 29%) as yellow solid after lyophilization.

[211] ^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.33 – 7.20 (m, *J* = 19.2, 8.0 Hz, 3H), 3.42 – 3.29 (m, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 541.9 $[M+1]^+$.

Compound 25: 1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3,5-dichlorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[212] **2-chloro-5-(isopropylthio)thiazole**

[213] A 2.5 M solution of *n*-BuLi in hexanes (20.5 mL, 51.2 mmol) was added to a THF solution (117 mL) of 2-chlorothiazole (4.9 g, 41.0 mmol) at -78 °C. The reaction mixture was stirred at the same temperature for 30 min. Diisopropyl disulfide (13.1 mL, 82.0 mmol) was

added to the reaction and was stirred at the same temperature for 1.5 h. Water was added to quench the reaction and then Et_2O. The reaction mixture was transferred into a separation funnel and the aqueous layer was extracted with Et_2O (3x). The combined organic layers were dried over Na_2SO_4 and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (0 to 5% gradient) and afforded the title compound (2.31 g, 11.9 mmol, 29%) as yellow liquid.

[214] 4-bromo-2-chloro-5-(isopropylthio)thiazole

[215] A 2 M solution of bromine (72.7 µL, 1.42 mmol) in DCM was added dropwise to a solution of 2-chloro-5-(isopropylthio)thiazole (250 mg, 1.29 mmol) in DCM. The reaction was stirred for 3 hours at room temperature. A solution of Na_2SO_3 was added and the aqueous layer was extracted with DCM (3x). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel using a solution of DCM in hexanes (50 to 100% gradient) and afforded the title compound (271 mg, 0.99 mmol, 77%) as colorless liquid.

[216] 4-bromo-2-hydrazinyl-5-(isopropylthio)thiazole

[217] DIPEA (64 µL, 0.37 mmol) was added to a solution of hydrazine hydrochloride (13.0 mg, 0.18 mmol) and 4-bromo-2-chloro-5-(isopropylthio)thiazole (50.0 mg, 0.18 mmol) to NMP (2 mL) in a glass microwave vial. The vial was sealed and was heated to 150 °C for 1 h with microwave radiation. The crude product was purified by reverse flash chromatography (C18, using a gradient 0 to 40 to 70% MeCN in H_2O with 10 mM NH_4CO_2H buffer) and afforded the title compound (29.0 mg, 0.11 mmol, 59%) as yellow solid after extraction with Et_2O and concentration under vaccum.

[218] methyl 1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[219] Methyl 2-(methoxyimino)-3-(2-nitrobenzyl)-4-oxopentanoate (4.00 g, 23.1 mmol) was dissolved in MeOH (115 mL).4-bromo-2-hydrazinyl-5-(isopropylthio)thiazole (6.19 g, 23.1 mmol) was added and then HCl 12 N (7.70 mL, 92.4 mmol) was added dropwise to the reaction mixture. The reaction mixture was heated to reflux overnight. The crude product was concentrated under vacuum and was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (5 to 20% gradient) and was purifed a second time by flash chromatography on silica gel (dry packing) using a solution of DCM in hexanes (10 to 50% gradient) and afforded the title compound (1.89 g, 5.02 mmol, 22%) as orange oil.

[220] methyl 1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[221] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-

methyl-1H-pyrazole-5-carboxylate (150.0 mg, 0.399 mmol), 5-chloro-2-fluorophenylboronic acid (64.2 mg, 0.37 mmol) and K_2CO_3 (212 mg, 0.50 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (15.3 mg, 0.03 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes/DCM 9:1 (0 to 5% gradient) and afforded the title compound (135 mg, 0.317 mmol, 80%) as yellow oil.

[222] methyl 4-bromo-1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[223] A 2 M solution of bromine (790 µL, 1.58 mmol) in MeCN was added dropwise to a solution of methyl 1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (135 mg, 0.32 mmol) in a solution of DCM/MeCN (2 mL, 1:1). The reaction was stirred for 5 hours at room temperature. A saturated aqueous solution of Na_2SO_3 was added and the aqueous layer was extracted with EtOAc (3x). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (0 to 5% gradient) and afforded the title compound (27.4 mg, 0.05 mmol, 17%) as colorless oil.

[224] 1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3,5-dichlorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[225] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (27.4 mg, 0.054 mmol), the 3,5-dichlorophenylboronic acid (8.0 mg, 0.04 mmol) and Na_2CO_3 (22.1 mg, 0.21 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (4.8 mg, 0.004 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (8.8 mg, 0.21 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (4.58 mg, 0.008 mmol, 15%) as yellow solid after lyophilization.

[226] ^1H NMR (500 MHz, DMSO) δ 7.66 – 7.49 (m, 5H), 7.42 (t, J = 9.1 Hz, 2H), 3.42 – 3.29 (m, 1H), 2.30 (s, 3H), 1.16 (d, J = 6.7 Hz, 6H); MS (m/z): 558.0 $[M+1]^+$.

Compound 26: 1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[227] 2,6-dimethylpyridin-4-ylboronic acid

[228] A 2.5 M solution of *n*-BuLi in hexanes (0.26 mL, 0.65 mmol) was added to a THF solution (5 mL) of 4-bromo-2,6-dimethylpyridine (100 mg, 0.54 mmol) and triisopropylborate (149 µL, 0.65 mmol) at -78 °C. The reaction mixture was warmed up to rt and stirred for 1h. 1 N HCl was added and the reaction was stirred at rt for 30 minutes. 1 N NaOH was added to basify and the mixture was extracted with EtOAc (3x). The combined organics were dried with Na_2SO_4, filtered and concentrated under vacuum, resulting in the title compound (30.0 mg, 0.20 mmol, 37%) as white solid.

[229] 1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[230] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(5-chloro-2-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (65.6 mg, 0.130 mmol), 2,6-dimethylpyridin-4-ylboronic acid (15.1 mg, 0.10 mmol) and Na_2CO_3 (53.0 mg, 0.50 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (11.6 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (21.0 mg, 0.50 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 30-50% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (4.70 mg, 0.009 mmol, 7%) as white solid after lyophilization.

[231] ^{1}H NMR (500 MHz, DMSO) δ 14.26 (s, 1H), 7.60 (ddd, *J* = 8.8, 4.3, 2.8 Hz, 1H), 7.54 (dd, *J* = 6.1, 2.7 Hz, 1H), 7.42 (t, *J* = 9.1 Hz, 1H), 7.13 (s, 2H), 3.28 – 3.19 (m, *J* = 13.3, 6.6 Hz, 2H), 2.45 (s, 6H), 2.32 (s, 3H), 1.16 (d, *J* = 6.7 Hz, 6H); MS (m/z): 517.1 $[M+1]^+$.

Compound 27: 4-(3,5-dichlorophenyl)-1-(4-(3,5-dimethylisoxazol-4-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[232] methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[233] A 2 M solution of bromine (3.32 mL, 6.64 mmol) in MeCN was added dropwise to a solution of methyl 1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (500 mg, 1.33 mmol) in a solution of DCM/MeCN (7 mL, 1:1). The reaction was stirred for 5 hours at room temperature. A solution of Na_2SO_3 was added and the aqueous layer was extracted with Et_2O (3x). The combined organic layers were washed with brine,

dried over Na_2SO_4, filtered and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel using a solution of DCM in hexanes (20%) and afforded the title compound (421 mg, 0.93 mmol, 70%) as orange solid.

[234] methyl 4-bromo-1-(4-(3,5-dimethylisoxazol-4-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[235] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (70.0 mg, 0.154 mmol), 3,5-dimethylisoxazol-4-ylboronic acid (16.7 mg, 0.12 mmol) and K_2CO_3 (81.8 mg, 0.59 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (5.9 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (wet loading) using a solution of EtOAc in hexanes (5 to 20% gradient) and afforded the title compound (29.2 mg, 0.062 mmol, 52%) as brown oil.

[236] 4-(3,5-dichlorophenyl)-1-(4-(3,5-dimethylisoxazol-4-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[237] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(3,5-dimethylisoxazol-4-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (29.0 mg, 0.062 mmol), 3,5-dichlorophenylboronic acid (8.60 mg, 0.06 mmol) and Na_2CO_3 (25.1 mg, 0.24 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (5.5 mg, 0.005 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (9.9 mg, 0.24 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 50-70% $MeCN/NH_4CO_2H$ 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (8.33 mg, 0.016 mmol, 26%) as white solid after lyophilization.

[238] ^1H NMR (500 MHz, DMSO) δ 14.33 (s, 1H), 7.64 (s, 1H), 7.53 (s, 2H), 3.27 – 3.16 (m, J = 13.1, 6.4 Hz, 1H), 2.38 (s, 3H), 2.31 (s, 3H), 2.19 (s, 3H), 1.14 (d, J = 6.7 Hz, 6H); MS (m/z): 524.9 $[M+1]^+$.

<u>Compound 28: 4-(3,5-dichlorophenyl)-1-(5-(isopropylthio)-4-(1-methyl-1H-pyrazol-4-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid</u>

[239] methyl 4-bromo-1-(5-(isopropylthio)-4-(1-methyl-1H-pyrazol-4-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[240] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (70.0 mg, 0.154 mmol), 1-methyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-1H-pyrazole (24.6 mg, 0.12 mmol) and K_2CO_3 (81.8 mg, 0.59 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (5.9 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (5 to 50% gradient) and afforded the title compound (51.0 mg, 0.112 mmol, 94%) as brown oil.

[241] 4-(3,5-dichlorophenyl)-1-(5-(isopropylthio)-4-(1-methyl-1H-pyrazol-4-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[242] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(5-(isopropylthio)-4-(1-methyl-1H-pyrazol-4-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (48.0 mg, 0.105 mmol), 3,5-dichlorophenylboronic acid (18.5 mg, 0.10 mmol) and Na_2CO_3 (42.9 mg, 0.40 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.4 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (17.0 mg, 0.40 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 45-55% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (6.73 mg, 0.013 mmol, 13%) as white solid after lyophilization.

[243] ^1H NMR (500 MHz, DMSO) δ 14.36 (s, 1H), 8.28 (s, 1H), 7.98 (s, 1H), 7.65 (s,1H), 7.54 (d, J = 1.4 Hz, 2H), 3.90 (s, 3H), 3.42 – 3.29 (m, 1H), 2.30 (s, 3H), 1.28 (d, J = 6.7 Hz, 6H); MS (m/z): 508.4 $[M+1]^+$.

Compound 32: 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(3,5-dichlorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[244] 5-(sec-butylthio)-2-chloro-4-(3,4-dichlorophenyl)thiazole

[245] A 2.5 M solution of *n*-BuLi in hexanes (6.80 mL, 17.0 mmol) was added to a THF solution (38 mL) of 2-chloro-4-(3,4-dichlorophenyl)thiazole (3.00 g, 11.3 mmol) at -78 °C. The reaction mixture was stirred at the same temperature for 30 min. Disecbutyl disulfide (4.21 mL, 22.7 mmol) was added andthe reaction was stirred at the same temperature for 1.5 h. Water was added to quench the reaction and then Et_2O. The reaction mixture was

transferred into a separation funnel and the aqueous layer was extracted with Et_2O (3x). The combined organic layers were dried over Na_2SO_4 and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (0 to 5% gradient) and afforded the title compound (3.32 g, 9.41 mmol, 83%) as light orange oil.

[246] 5-(sec-butylthio)-4-(3,4-dichlorophenyl)-2-hydrazinylthiazole

[247] DIPEA (3.29 mL, 18.8 mmol) was added to a solution of hydrazine hydrochloride (1.29 g, 18.8 mmol) and 5-(*sec*-butylthio)-2-chloro-4-(3,4-dichlorophenyl)thiazole (3.32 g, 9.41 mmol) to NMP (30 mL) in two glass microwave vials. The vials were sealed and were heated to 150 °C for 2 h with microwave radiation. The reaction mixture was diluted with water (10 mL) and extracted with Et_2O. The combined organic layers were washed with brine (3x), and dried over Na_2SO_4, filtered and concentrated under vacuum. This afforded the title compound (3.29 g, 9.45 mmol, 100%) as brown oil.

[248] methyl 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[249] Methyl 2-(methoxyimino)-4-oxopentanoate (1.64 g, 9.45 mmol) was dissolved in MeOH (95 mL).5-(*sec*-butylthio)-4-(3,4-dichlorophenyl)-2-hydrazinylthiazole (3.29 g, 9.45 mmol) was added and then HCl 12 N (3.15 mL, 37.8 mmol) was added dropwise to the reaction mixture. The reaction mixture was heated to reflux overnight. The crude product was concentrated under vacuum and was purified by flash chromatography (dry packing) using a solution of DCM in Hexanes (10 to 20% gradient). This afforded the title compound (1.42 g, 3.11 mmol, 33%) as green oil.

[250] methyl 4-bromo-1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[251] A 2 M solution of bromine (7.78 mL, 15.56 mmol) in acetonitrile was added dropwise to a solution of methyl 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (1.42 g, 3.11 mmol) in MeCN/DCM (16 mL, 1:1). The reaction was stirred for 5 hours at room temperature. A saturated aqueous solution of $Na_2S_2O_3$was added and the mixture was extracted with EtOAc (3x). The combined organic layers were dried with sodium sulfate, filtered and concentrated under reduced pressure. The crude product was purified by flash chromatography (dry packing) on silica gel using a solution of DCM in hexanes (10 to 50% gradient) and afforded the title compound (1.54 g, 2.88 mmol, 93%) as green solid.

[252] methyl 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(3,5-dichlorophenyl)-3-methyl-1H-pyrazole-5-carboxylate

[253] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(5-(sec-butylthio)-4-(3,4-

dichlorophenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (150.0 mg, 0.280 mmol), 3,5-dichlorophenylboronic acid (49.4 mg, 0.26 mmol) and Na_2CO_3 (114 mg, 1.08 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (24.9 mg, 0.02 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. The crude product was concentrated under vacuum and was purified by flash chromatography (wet loading with DCM) on silica gel using a solution of EtOAc in hexanes (2%) and afforded the title compound (121 mg, 0.207 mmol, 74%) as off white solid after lyophilization.

[254] ^{1}H NMR (500 MHz, DMSO) δ 8.16 (d, *J* = 2.1 Hz, 1H), 7.98 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.82 (d, *J* = 8.5 Hz, 1H), 7.72 (t, *J* = 1.9 Hz, 1H), 7.51 (d, *J* = 1.9 Hz, 1H), 3.82 (s, 3H), 3.22 – 3.14 (m, 1H), 2.34 (s, 3H), 1.63 – 1.45 (m, 2H), 1.22 (d, *J* = 6.8 Hz, 3H), 0.91 (t, *J* = 7.3 Hz, 3H); MS (m/z): 602.0 $[M+1]^+$.

[255] 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(3,5-dichlorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[256] Into a 5 mL glass microwave vial, was placed methyl 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(3,5-dichlorophenyl)-3-methyl-1H-pyrazole-5-carboxylate (25.0 mg, 0.04 mmol) and LiOH (9.00 mg, 0.21 mmol). THF (1.5 mL), MeOH (0.5 mL) and water (3 mL) were added. The vial was heated to 120 °C under microwave radiation for 10 minutes. THF and MeOH were removed under vacuum and the crude product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compund (10.0 mg, 0.017 mmol, 41%) as white solid after lyophilization.

[257] ^{1}H NMR (500 MHz, DMSO) δ 8.23 (d, *J* = 1.9 Hz, 1H), 8.01 (dd, *J* = 8.5, 1.8 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.65 (s, 1H), 7.59 – 7.52 (m, *J* = 7.3 Hz, 2H), 3.21 – 3.09 (m, 1H), 2.31 (s, 3H), 1.64 – 1.44 (m, 2H), 1.21 (d, *J* = 6.7 Hz, 3H), 0.90 (t, *J* = 7.4 Hz, 3H); MS (m/z): 588.0 $[M+1]^+$.

Compound 33: 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid and methyl 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[258] 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine

[259] A degassed solution of dioxane (2 mL) was added to a mixture of 4-bromo-2,6-dimethylpyridine (1.00 g, 5.38 mmol), 4,4,4',4',5,5,5',5'-octamethyl-2,2'-bi(1,3,2-dioxaborolane) (1.64 g, 6.45 mmol), $PdCl_2$(dppf) (393 mg, 0.537 mmol) and KOAc (1.58 g, 16.12 mmol). The reaction was heated at 85 °C for 18 hours. The reaction mixture was

dissolved in EtOAc and filtered on a pad of Celite®. The filtrate was concentrated under vacuum, resulting in the crude title compound (1.88 g, 8.07 mmol, quantitative yield) as brown solid.

[260] methyl 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[261] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100.0 mg, 0.187 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (73.8 mg, 0.32 mmol) and Na_2CO_3 (76.2 mg, 0.72 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (16.6 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. The crude product was concentrated under vacuum and was purified by flash chromatography (wet loading with DCM) on silica gel eluting using a solution of EtOAc in hexanes (5% to 35% gradient) and afforded the title compound (72.0 mg, 0.128 mmol, 69%) as beige solid after lyophilization.

[262] 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[263] Into a 5 mL glass microwave vial, was placed methyl 1-(5-(sec-butylthio)-4-(3,4-dichlorophenyl)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (25.0 mg, 0.04 mmol) and LiOH (9.00 mg, 0.22 mmol). THF (1.5 mL), MeOH (0.5 mL) and water (3 mL) were added. The vial was heated to 120 °C under microwave radiation for 10 minutes. THF and MeOH were removed under vacuum and the crude product was purified by reverse flash chromatography (C18, using a gradient 5 to 60% to 80% MeCN in H_2O with 10 mM NH_4CO_2H buffer) and afforded the title compound (8.6 mg, 0.016 mmol, 35%) as off white solid after lyophilization.

[264] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.15 (s, 2H), 3.21 – 3.12 (m, *J* = 13.2, 6.6 Hz, 1H), 2.47 (s, 6H), 2.33 (s, 3H), 1.63 – 1.43 (m, 2H), 1.21 (d, *J* = 6.8 Hz, 3H), 0.90 (t, *J* = 7.4 Hz, 3H); MS (m/z): 547.1 $[M+1]^+$.

Compound 35: 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[265] methyl 4-bromo-1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[266] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), 3-methoxyphenylboronic acid (25.7 mg, 0.17 mmol) and K_2CO_3 (117 mg, 0.85 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11.0 mg, 0.02 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel using a solution of DCM in hexanes (25 to 100% gradient) and afforded the title compound (65.8 mg, 0.136 mmol, 81%) as brown oil.

[267] methyl 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[268] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (65.8 mg, 0.136 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (54.0 mg, 0.23 mmol) and Na_2CO_3 (55.8 mg, 0.53 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (12.2 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. The reaction mixture was concentrated under vacuum and the crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (10 to 40% gradient) and afforded the title compound (41.0 mg, 0.081 mmol, 59%) as yellow oil.

[269] 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[270] Into a 5 mL glass microwave vial, was placed methyl 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (41.0 mg, 0.081 mmol) and LiOH (16.9 mg, 0.403 mmol). THF (1.5 mL), MeOH (0.5 mL) and water (3 mL) were added. The vial was heated to 120 °C under microwave radiation for 10 minutes. THF and MeOH were removed under vacuum and the crude product was purified by reverse flash chromatography (C18, using a gradient 5 to 40% to 60% MeCN in H_2O with 10 mM NH_4CO_2H buffer) and afforded the title compound (26.7 mg, 0.054 mmol, 67%) as yellow solid after lyophilization.

[271] ^{1}H NMR (500 MHz, DMSO) δ 8.04 – 7.92 (m, 1H), 7.14 (s, 1H), 7.05 – 6.97 (m, 1H), 3.82 (s, 1H), 3.32 – 3.19 (m, 7H), 2.46 (s, 2H), 2.32 (s, 1H), 1.23 (d, J = 6.7 Hz, 2H); MS (m/z): 495.2 $[M+1]^+$.

Compound 37: 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[272] methyl 4-bromo-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[273] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), the phenylboronic acid (20.6 mg, 0.17 mmol) and K_2CO_3 (117 mg, 0.85 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst Pd(dtbpf)Cl_2 (11.0 mg, 0.02 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (wet loading) using a solution of DCM in hexanes (25 to 100% gradient) and afforded the title compound (77.0 mg, 0.170 mmol, 100%) as brown oil.

[274] methyl 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[275] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (77.0 mg, 0.170 mmol), the 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (67.2 mg, 0.29 mmol) and Na_2CO_3 (69.5 mg, 0.66 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (15.1 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. The reaction mixture was concentrated under vacuum and the crude product was purified by flash chromatography on silica gel (wet loading) using a solution of EtOAc in hexanes (10 to 40% gradient) and afforded the title compound (63.0 mg, 0.132 mmol, 77%) as yellow oil.

[276] 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[277] Into a 5 mL glass microwave vial was placed the methyl 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (66.0 mg, 0.138 mmol) and LiOH (28.9 mg, 0.689 mmol). THF (1.5 mL), MeOH (0.5 mL) and water (3 mL) were added. The vial was heated to 120 °C under microwave radiation for 10 minutes. THF and MeOH were removed under vacuum and the crude product was purified by reverse flash chromatography (C18, using a gradient 5 to 30% to 60% MeCN in H_2O with 10 mM

NH_4CO_2H buffer) and afforded the title compound (25.6 mg, 0.055 mmol, 40%) as yellow solid after lyophilization.

[278] ^1H NMR (500 MHz, DMSO) δ 8.03 – 7.94 (m, 2H), 7.52 – 7.45 (m, 2H), 7.45 – 7.39 (m, *J* = 9.5, 4.3 Hz, 1H), 7.14 (s, 2H), 3.40 – 3.30 (m, 1H), 2.47 (s, 6H), 2.33 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 465.2 $[M+1]^+$.

Compound 41: 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-m-tolylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[279] methyl 4-bromo-1-(5-(isopropylthio)-4-m-tolylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[280] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (97.9 mg, 0.215 mmol), the m-tolylboronic acid (22.5 mg, 0.17 mmol) and K_2CO_3 (114 mg, 0.83 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (10.8 mg, 0.02 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (wet loading) using a solution of DCM in hexanes (10 to 50% gradient) and afforded the title compound (79.6 mg, 0.171 mmol, 100%) as brown oil.

[281] methyl 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-m-tolylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[282] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(5-(isopropylthio)-4-m-tolylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (79.6 mg, 0.171 mmol), the 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (67.4 mg, 0.29 mmol) and Na_2CO_3 (69.6 mg, 0.66 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (15.2 mg, 0.01 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. The reaction mixture was concentrated under vacuum and the crude product was purified by flash chromatography on silica gel (wet loading) using a solution of EtOAc in hexanes (10 to 40% gradient) and afforded the title compound (52.8 mg, 0.107 mmol, 63%) as yellow oil.

[283] 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-m-tolylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[284] Into a 5 mL glass microwave vial was placed the methyl 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-m-tolylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (52.8 mg, 0.107 mmol) and LiOH (22.5 mg, 0.536 mmol). THF (1.5 mL), MeOH (0.5 mL) and water (3 mL) were added. The vial was heated to 120 °C under microwave radiation for 10 minutes. THF and MeOH were removed under vacuum and the crude product was purified using a semi prep HPLC-MS (X-Bridge 30x50, eluted with 30-50% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compund (14.7 mg, 0.031 mmol, 19%) as yellow solid after lyophilization.

[285] ^{1}H NMR (500 MHz, DMSO) δ 7.80 (d, *J* = 6.3 Hz, 2H), 7.40 – 7.32 (m, 1H), 7.23 (d, *J* = 7.6 Hz, 1H), 7.16 (s, 2H), 3.38 – 3.25 (m, 1H), 2.45 (s, 6H), 2.37 (s, 3H), 2.32 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 479.2 $[M+1]^+$.

Compound 43: 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(phenylethynyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[286] methyl 4-bromo-1-(5-(isopropylthio)-4-(phenylethynyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[287] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (95.0 mg, 0.209 mmol), the phenylacetylene (18.1 mg, 0.18 mmol), the copper iodide (3.10 mg, 0.02 mmol) the catalyst $Pd(PPh_3)_2Cl_2$ (11.3 mg, 0.02 mmol) and triethylamine (2 mL). Nitrogen gas was bubbled through the reaction mixture for 10 min. The vial was capped and placed in an oil bath at 80 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (wet loading) using a solution of DCM in hexanes (10 to 50% gradient) and afforded the title compound (75.0 mg, 0.157 mmol, 98%) as brown oil.

[288] 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(phenylethynyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[289] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(5-(isopropylthio)-4-(phenylethynyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (75.0 mg, 0.157 mmol), the 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (80.7 mg, 0.346 mmol) and Na_2CO_3 (83.4 mg, 0.787 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (18.2 mg, 0.016 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (33.0 mg, 0.787 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS

(column X-Bridge 30x50, eluted with 30-50% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (1.17 mg, 0.002 mmol, 2%) as white solid after lyophilization.

[290] ^{1}H NMR (500 MHz, MeOD) δ 7.57 – 7.49 (m, 2H), 7.42 – 7.38 (m, 3H), 7.36 (s, 2H), 3.49 – 3.39 (m, 1H), 2.55 (s, 6H), 2.38 (s, 3H), 1.38 (d, *J* = 6.7 Hz, 6H); MS (m/z): 489.3 $[M+1]^+$.

Compound 47: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(pyridin-4-yl)-1H-pyrazole-5-carboxylic acid

[291] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 3-(Hydroxymethyl)phenylboronic acid (14 mg, 0.12 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. Water (5 mL) was added and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated. The crude product (ester) was used directly for the next step. It was diluted in a 1:1 solution of THF and MeOH (1 mL). 1 M NaOH (0.20 mL, 0.20 mmol) was added and the reaction was stirred for 18 hours at room temperature. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 0.1% of formic acid) (50 to 70%). The product was lyophilized and afforded the title compound (1.9 mg, 0.0038 mmol, 3.7%) as a pale yellow powder.

[292] ^{1}H NMR (500 MHz, DMSO) δ 8.65-8.58 (m, 2H), 8.23 (s, 1H), 8.04 (d, *J* = 8.2 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.57-7.50 (m, 2H), 2.53-2.50 (m, 1H), 2.35 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 504.9 $[M+H]^+$.

Compound 51: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-(trifluoromethyl)phenyl)-1H-pyrazole-5-carboxylic acid

[293] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 3-(trifluoromethyl)phenylboronic acid (20 mg, 0.11 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. LiOH (12 mg, 0.48 mmol) was added and the reaction was heated at 90 °C for 15 minutes under microwave radiation. 1 N HCl (1 mL) was added followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of

MeCN in water (containing 10 mM of NH_4CO_2H) (60 to 80%). The product was lyophilized and afforded the title compound (7.4 mg, 0.013 mmol, 14%) as a white solid.

[294] ^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 2.0 Hz, 1H), 8.03 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.84 (s, 1H), 7.80 (d, *J* = 7.5 Hz, 1H), 7.78-7.74 (m, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.71 (t, *J* = 7.5 Hz, 1H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 571.8 $[M+H]^+$.

Compound 52: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(4-(trifluoromethyl)phenyl)-1H-pyrazole-5-carboxylic acid

[295] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 4-(trifluoromethyl)phenylboronic acid (20 mg, 0.11 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. LiOH (12 mg, 0.48 mmol) was added and the reaction was heated at 90 °C for 15 minutes under microwave radiation. 1 N HCl (1 mL) was added followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (60 to 80%). The product was lyophilized and afforded the title compound (4.1 mg, 0.0072 mmol, 8%) as a white solid.

[296] ^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.0 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.83 (d, *J* = 8.0 Hz, 2H), 7.77 (d, *J* = 8.5 Hz, 1H), 7.71 (d, *J* = 8.0 Hz, 2H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 571.8 $[M+H]^+$.

Compound 53: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(hydroxy(phenyl)methyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[297] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-formyl-3-methyl-1H-pyrazole-5-carboxylate

[298] *n*-BuLi (0.92 mL, 5.8 mmol, 2.5 M in hexane) was added during 45 minutes using a push serynge to a solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (1.00 g, 1.92 mmol), and methyl formate (0.59 mL, 9.6 mmol) in THF (19.2 mL) at -78 °C. The reaction mixture was stirred at that temperature for 1 hour. A saturated aqueous solution of ammonium chloride (50 mL) was added and the mixture was extracted with EtOAc (2x50 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2 to 5%) and afforded the title compound (594 mg, 1.26 mmol, 66%) as a white solid.

[299] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(hydroxy(phenyl)methyl)-3-methyl-1H-pyrazole-5-carboxylate

[300] Phenylmagnesium bromide (0.12 mL, 0.037 mmol, 0.3 M in THF) was added slowly to a solution of methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-formyl-3-methyl-1H-pyrazole-5-carboxylate (15 mg, 0.032 mmol) in THF (0.32 mL) at r.t. The reaction mixture was stirred for two hours. Another portion of phenylmagnesium bromide (0.21 mL, 0.064 mmol, 0.3 M in THF) was added and the reaction mixture was stirred for 18 hours. An aqueous saturated ammonium chloride solution (5 mL) was added and the mixture was extracted with EtOAc (2x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated. The product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (5 to 15%) and afforded the title compound (9.0 mg, 0.016 mmol, 52%) as an oil.

[301] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(hydroxy(phenyl)methyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[302] Methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(hydroxy(phenyl)methyl)-3-methyl-1H-pyrazole-5-carboxylate (9.0 mg, 0.016 mmol) was diluted in a 1:1 solution of THF and MeOH (0.16 mL). 1 M NaOH (0.033 mL, 0.033 mmol) was added and the reaction mixture was stirred for 18 hours at room temperature. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (55 to 75%). The product was lyophilized and afforded the title compound (1.7 mg, 0.0032 mmol, 19%) as a white solid.

[303] ^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.41 (d, *J* = 7.1 Hz, 2H), 7.28 (t, *J* = 7.7 Hz, 2H), 7.18 (d, *J* = 7.5 Hz, 1H), 5.67-5.63 (m, 1H), 2.51 (hept, 1H, *J* = 7.1 Hz), 2.11 (s, 3H), 1.22 (d, *J* = 7.1 Hz, 6H); MS (m/z): 533.8 $[M+H]^+$.

Compound 56: 4-([1,2,4]triazolo[4,3-a]pyridin-3-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[304] methyl 4-([1,2,4]triazolo[4,3-a]pyridin-3-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[305] A solution of methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-formyl-3-methyl-1H-pyrazole-5-carboxylate (42 mg, 0.089 mmol), in MeOH (0.3 mL containing enough DCM to solubilize the aldehyde) is added to 2-hydrazinopyridine (10 mg, 0.089 mmol). The reaction mixture is heated at 70 °C for 2 hours (a precipitate forms). The

reaction is cooled down at r.t. and iodobenzene diacetate (35 mg, 0.107 mmol) is added. The reaction mixture is stirred at 70 °C for 2 hours and MeOH was evaporated. The crude was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexane (5 to 100%) and afforded the title compound (8.0 mg, 0.017 mmol, 19%) as a colorless oil.

[306] 4-([1,2,4]triazolo[4,3-a]pyridin-3-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[307] Methyl 4-([1,2,4]triazolo[4,3-a]pyridin-3-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (8.5 mg, 0.015 mmol) was diluted in a 1:1 solution of THF and MeOH (0.15 mL). 1 M NaOH (0.030 mL, 0.030 mmol) was added and the reaction mixture was stirred for 18 hours at room temperature. 1 N HCl (1 mL) was added followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (55 to 75%). The product was lyophilized and afforded the title compound (1.1 mg, 0.0020 mmol, 13%) as a white solid.

[308] ^{1}H NMR (500 MHz, DMSO) δ 8.34 (d, *J* = 7.0 Hz, 1H), 8.19 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.86 (d, *J* = 9.3 Hz, 1H), 7.78 (d, *J* = 8.5 Hz, 1H), 7.45 (dd, *J* = 9.3, 6.9 Hz, 1H), 7.01 (t, *J* = 6.9 Hz, 1H), 3.39 (hept, *J* = 6.7 Hz, 1H), 2.25 (s, 2H), 1.26 (d, *J* = 6.7 Hz, 6H); MS (m/z): 545.0 $[M+H]^+$.

Compound 58: 4-(1H-benzo[d]imidazol-2-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[309] methyl 4-(1H-benzo[d]imidazol-2-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[310] Methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-formyl-3-methyl-1H-pyrazole-5-carboxylate (45 mg, 0.10 mmol) was dissolved in MeOH (1.2 mL, containing enough DCM to dissolved the aldehyde). *O*-Phenyldiamine (11 mg, 0.10 mmol) and benzoquinone (13 mg, 0.12 mmol) were added and the reaction mixture was heated at 65 °C for 18 hours. The solvent was evaporated. The crude product was purified by flash chromatography on silica gel (dry packing) using ethyl acetate in hexanes and afforded the title compound (18 mg, 0.032 mmol, 32%) as a white solid.

[311] 4-(1H-benzo[d]imidazol-2-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[312] Methyl 4-(1H-benzo[d]imidazol-2-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (18 mg, 0.032 mmol) was diluted in a 1:1 solution of THF and MeOH (0.32 mL). 1 M NaOH (0.064 mL, 0.064 mmol)

was added and the reaction was stirred for 5 hours at room temperature. 1 N HCl (0.030 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse phase chromatography on C-18 column using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (50 to 70%). The product was lyophilized and afforded the title compound (5.4 mg, 0.0010 mmol, 31%) as a white solid.

[313] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.79 (d, *J* = 8.5 Hz, 1H), 7.68-7.64 (m, 2H), 7.28-7.24 (m, 2H), 3.42-3.29 (m, 1H), 2.60 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H).; MS (m/z): 544.1 $[M+H]^+$.

Compound 59: 4-(3-chloro-2-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[314] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 3-chloro-2-methylphenylboronic acid (20 mg, 0.11 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. LiOH (12 mg, 0.48 mmol) was added and the reaction was heated at 90 °C for 15 minutes under microwave radiation. 1 N HCl (1 mL) was added followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (65 to 85%). The product was lyophilized and afforded the title compound (12 mg, 0.021 mmol, 22%) as a pale yellow solid.

[315] ^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 1.9 Hz, 1H), 7.99 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.49 (d, *J* = 8.2 Hz, 1H), 7.28 (t, *J* = 7.8 Hz, 1H), 7.18 (d, *J* = 6.7 Hz, 1H),3.42-3.29 (m, 1H), 2.17 (s, 3H), 2.06 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H).; MS (m/z): 551.9 $[M+H]^+$.

Compound 60: 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[316] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 3,5-bis(trifluoromethyl)phenylboronic acid (30 mg, 0.11 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. LiOH (12 mg, 0.48 mmol) was added and the reaction mixture was heated at 90 °C for 15 minutes under microwave radiation. 1 N HCl (1 mL) was added followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined

organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (65 to 85%). The product was lyophilized and afforded the title compound (20 mg, 0.031 mmol, 32%) as a pale yellow solid.

[317] ^{1}H NMR (500 MHz, DMSO) δ 8.19-8.16 (m, 4H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 3.42-3.29 (m, 1H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 639.9 $[M+H]^+$.

Compound 61: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-isopropylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[318] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 3-isopropylphenylboronic acid (19 mg, 0.11 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. LiOH (12 mg, 0.48 mmol) was added and the reaction mixture was heated at 90 °C for 15 minutes under microwave radiation. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (65 to 85%). The product was lyophilized and afforded the title compound (7.1 mg, 0.013 mmol, 14%) as a pale yellow solid.

[319] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 1.9 Hz, 1H), 8.03 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.39-7.34 (m, 2H), 7.30-7.24 (m, 2H),3.42-3.29 (m, 1H), 2.92 (hept, *J* = 6.8 Hz, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.8 Hz, 6H), 1.23 (d, *J* = 6.8 Hz, 3H); MS (m/z): 546.0 $[M+H]^+$.

Compound 69: 4-(5-cyanopyridin-3-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[320] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 5-cyanopyridin-3-ylboronic acid pinacol ester (27 mg, 0.12 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. 1 N HCl (1 mL) was added followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H)

(35 to 55%). The product was lyophylised and afforded the title compound (8.6 mg, 0.016 mmol, 17%) as a white solid.

[321] ^{1}H NMR (500 MHz, DMSO) δ 8.97 (d, *J* = 1.7 Hz, 1H), 8.89 (d, *J* = 2.1 Hz, 1H), 8.41 (t, *J* = 2.0 Hz, 1H), 8.12 (d, *J* = 2.0 Hz, 1H), 7.94 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.70 (d, *J* = 8.5 Hz, 1H), 3.33 (1H, below water signal), 2.26 (s, 3H), 1.17 (d, *J* = 6.7 Hz, 6H); MS (m/z): 530.0 $[M+H]^+$.

Compound 70: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-ethoxypyridin-3-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[322] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-ethoxypyridin-3-yl)-3-methyl-1H-pyrazole-5-carboxylate

[323] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 2-ethoxypyridin-3-ylboronic acid (19 mg, 0.12 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. Water (5 mL) was added and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated. The crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (5 to 10%) and afforded the title compound (26 mg, 0.048 mmol, 50%) as a colorless oil.

[324] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-ethoxypyridin-3-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[325] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-ethoxypyridin-3-yl)-3-methyl-1H-pyrazole-5-carboxylate (26 mg, 0.046 mmol) was diluted in a 1:1 solution of THF and MeOH (0.46 mL). 1 M NaOH (0.092 mL, 0.092 mmol) was added and the reaction mixture was stirred for 18 hours at room temperature. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse phase chromatography on C-18 column using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (50 to 100%). The product was lyophilized and afforded the title compound (9.7 mg, 0.018 mmol, 38%) as a white solid.

[326] ^{1}H NMR (500 MHz, DMSO) δ 8.21 – 8.16 (m, 2H), 8.00 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.73 (dd, *J* = 7.3, 1.7 Hz, 1H), 7.07 (dd, *J* = 7.3, 5.0 Hz, 1H), 4.33 (q, *J* = 7.0 Hz, 2H), 3.33 (1H, below water signal), 2.19 (s, 3H), 1.28 (t, *J* = 7.0 Hz, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 549.0 $[M+H]^+$.

Compound 71: 2'-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2,5,5'-trimethyl-3,4'-bi(2H-pyrazole)-3'-carboxylic acid

[327] methyl 2'-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2,5,5'-trimethyl-3,4'-bi(2H-pyrazole)-3'-carboxylate

[328] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 1,3-dimethyl-1H-pyrazol-5-ylboronic acid pinacol ester (26 mg, 0.12 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. Water (5 mL) was added and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated. The crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (5 to 10%) and afforded the title compound (16 mg, 0.030 mmol, 31%) as a pale yellow oil.

[329] 2'-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2,5,5'-trimethyl-3,4'-bi(2H-pyrazole)-3'-carboxylic acid

[330] methyl 2'-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2,5,5'-trimethyl-3,4'-bi(2H-pyrazole)-3'-carboxylate (16 mg, 0.030 mmol) was diluted in a 1:1 solution of THF and MeOH (0.30 mL). 1 M NaOH (0.060 mL, 0.060 mmol) was added and the reaction mixture was stirred for 18 hours at room temperature. 1 N HCl (1 mL) was added followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse phase chromatography on C-18 column using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (50 to 100%). The product was lyophilized and afforded the title compound (4.5 mg, 0.0086 mmol, 29%) as a white solid.

[331] ^1H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.04-7.98 (m, 1H), 7.78 (d, *J* = 8.6 Hz, 1H), 6.11 (s, 1H), 3.61 (s, 3H), 3.35 (hept, J = 6.6 Hz, 1H), 2.18 (s, 3H), 2.15 (s, 3H), 1.24 (d, *J* = 6.6 Hz, 6H); MS (m/z): 522.0 $[M+H]^+$.

Compound 72: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(pyrimidin-5-yl)-1H-pyrazole-5-carboxylic acid

[332] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(pyrimidin-5-yl)-1H-pyrazole-5-carboxylic acid

[333] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), pyrimidin-5-ylboronic acid (14 mg, 0.12 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. 1 N HCl (1 mL) was added followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The

combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (35 to 55%). The product was lyophylised and afforded the title compound (8.9 mg, 0.018 mmol, 18%) as a white solid.

[334] ^{1}H NMR (500 MHz, DMSO) δ 9.13 (s, 1H), 8.98 (s, 2H), 8.24 (d, *J* = 2.0 Hz, 1H), 8.05 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 3.34 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 505.9 $[M+H]^+$.

Compound 73: 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxamide

[335] To 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (16 mg, 0.024 mmol) was added a 7 N solution of ammonia in MeOH (0.5 mL, 3.5 mmol) in a scealed vial. The vial was capped and the reaction mixture was heated at 65 °C for 18 hours. The solvent was evaporated and the crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (65 to 85%). The product was lyophilized and afforded the title compound (4.6 mg, 0.0072 mmol, 29%) as a white solid.

[336] ^{1}H NMR (500 MHz, DMSO) δ 8.39 (s, 1H), 8.24 (d, *J* = 2.1 Hz, 1H), 8.19 (s, 1H), 8.17 (s (br), 2H), 8.04 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 3.38 (hept, *J* = 6.7 Hz, 1H), 2.36 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 639.2 $[M+H]^+$.

Compound 75: 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-N-(pyridin-2-ylmethyl)-1H-pyrazole-5-carboxamide

[337] HATU (12 mg, 0.030 mmol) was added to a solution of 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (15 mg, 0.023 mmol), pyridin-2-ylmethanamine (3.0 mg, 0.028 mmol) and DIEPA (8.2 µL, 0.047 mmol) in DMF (0.33 mL). The reaction was stirred at rt for three days. The reaction was dissolved up to 0.5 mL with DMSO and it was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (70 to 90%). The product was lyophilized and afforded the title compound (4.2 mg, 0.0057 mmol, 25%) as a white solid.

[338] ^{1}H NMR (500 MHz, DMSO) δ 9.62 (t, *J* = 5.9 Hz, 1H), 8.37 (d, *J* = 4.2 Hz, 1H), 8.17 (s, 1H), 8.14 (d, *J* = 2.1 Hz, 1H), 8.13 (s, 2H), 8.04 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.35 (td, *J* = 7.7, 1.8 Hz, 1H), 7.15 (dd, *J* = 7.2, 5.1 Hz, 1H), 6.95 (d, *J* = 7.8 Hz,

1H), 4.52 (d, *J* = 5.9 Hz, 2H), 3.38 (hept, J = 6.7 Hz, 1H), 2.37 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 730.1 $[M+H]^+$.

Compound 76: 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-N-(2-hydroxyethyl)-N,3-dimethyl-1H-pyrazole-5-carboxamide

[339] HATU (12 mg, 0.030 mmol) was added to a solution of 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (15 mg, 0.023 mmol), 2-(methylamino)ethanol (2.1 mg, 0.028 mmol) and DIEPA (8.2 µL, 0.047 mmol) in DMF (0.33 mL). The reaction was stirred at rt for three days. The reaction was dissolved up to 0.5 mL with DMSO and it was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (70 to 90%). The product was lyophilized and afforded the title compound (5.1 mg, 0.0073 mmol, 31%) as a white solid.

[340] ^1H NMR (500 MHz, DMSO) (mixture of rotamers) δ 8.18-8.13 (m, 3H), 8.07 (s, 1H), 8.09 and 7.79 (dd, *J* = 8.5, 4.1 Hz, 1H, rotamers), (4.67 (t, *J* = 5.4 Hz) and 4.56 (t, *J* = 4.8 Hz), 1H, rotamers), 3.88 – 3.82 (m, 0.5H, one rotamer), 3.52 – 3.33 (m, 2.5H), 3.25 – 3.06 (m, 3H), 3.02 and 2.83 (s, 3H, rotamers), 2.41 and 2.40 (s, 3H, rotamers), 1.26 (d, *J* = 6.6 Hz, 6H); MS (m/z): 697.2 $[M+H]^+$.

Compound 77: 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-N,3-dimethyl-N-(5-(trifluoromethyl)-1,3,4-thiadiazol-2-yl)-1H-pyrazole-5-carboxamide

[341] HATU (12 mg, 0.030 mmol) was added to a solution of 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (15 mg, 0.023 mmol), N-methyl-5-(trifluoromethyl)-1,3,4-thiadiazol-2-amine (5.1 mg, 0.028 mmol) and DIEPA (8.2 µL, 0.047 mmol) in DMF (0.33 mL). The reaction was stirred at rt for three days. The reaction was dissolved up to 0.5 mL with DMSO and it was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (75 to 95%). The product was lyophilized and afforded the title compound (5.9 mg, 0.0073 mmol, 31%) as a white solid.

[342] ^1H NMR (500 MHz, DMSO) δ 8.20 (s, 1H), 8.11 (s, 2H), 7.78 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.52 (d, *J* = 2.0 Hz, 1H), 7.51 (d, *J* = 8.5 Hz, 1H), 3.57 (s, 3H), 3.37 (hept, *J* = 6.7 Hz, 1H), 2.43 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 805.1 $[M+H]^+$.

Compound 78: (4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)(3-(diethylamino)pyrrolidin-1-yl)methanone

[343] HATU (12 mg, 0.030 mmol) was added to a solution of 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (15 mg, 0.023 mmol), N,N-diethylpyrrolidin-3-amine (4.0 mg, 0.028 mmol) and DIEPA (8.2 µL, 0.047 mmol) in DMF (0.33 mL). The reaction was stirred at rt for three days. The reaction was dissolved up to 0.5 mL with DMSO and it was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (70 to 90%). The product was lyophilized and afforded the title compound (4.2 mg, 0.0055 mmol, 24%) as a white solid.

[344] ^{1}H NMR (500 MHz, DMSO) 8.18 (s, 1H), 8.15-8.04 (m, 4H), 7.83-7.75 (m, 1H), 3.80-2.62 (m, 4H), 3.39 and 3.38 (hept, 1H, *J* = 6.7 hz, rotamers), 2.45-1.83 (m, 9H), 1.70-1.43 (m, 1H), 1.26 and 1.25 (d, 6H, *J* = 6.7 Hz, rotamers), 0.85-0.77 (m, 3H), 0.74-0.63 (m, 3H); MS (m/z): 764.5 $[M+H]^+$.

Compound 79: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(pyrazin-2-yl)-1H-pyrazole-5-carboxylic acid

[345] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 2-bromopyrazine (20 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. LiOH (12.4 mg, 0.52 mmol) was added and the reaction was heated at 90 °C under microwave radiation for 15 minutes. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (30 to 70%). The product was lyophylised and afforded the title compound (10 mg, 0.020 mmol, 20%) as a pale yellow solid.

[346] ^{1}H NMR (500 MHz, DMSO) δ 8.97 (s, 1H), 8.71 (s, 1H), 8.58 (s, 1H), 8.23 (d, *J* = 1.9 Hz, 1H), 8.04 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.47 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 505.9 $[M+H]^+$.

Compound 80: 4-(3-cyano-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[347] methyl 4-(3-cyano-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[348] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), , 3-bromo-5-methylbenzonitrile (24 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. Water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2 to 5%) and afforded the title compound (22 mg, 0.039 mmol, 38%).

[349] 4-(3-cyano-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[350] methyl 4-(3-cyano-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (22 mg, 0.039 mmol) was diluted in a 1:1 solution of THF and MeOH (0.39 mL). 1 M NaOH (0.077 mL, 0.077 mmol) was added and the reaction was stirred for 18 hours at room temperature. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (50 to 100%). The product was lyophilized and afforded the title compound (7.8 mg, 0.014 mmol, 37%) as a white solid.

[351] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.73 (s, 1H), 7.70 (s, 1H), 7.63 (s, 1H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.40 (s, 3H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 543.0 $[M+H]^+$.

Compound 81: 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-N-(1H-tetrazol-5-yl)-1H-pyrazole-5-carboxamide

[352] HATU (12 mg, 0.030 mmol) was added to a solution of 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (15 mg, 0.023 mmol), 1H-tetrazol-5-amine monohydrate (2.9 mg, 0.028 mmol) and DIEPA (8.2 µL, 0.047 mmol) in DMF (0.33 mL). The reaction was stirred at rt for three days. More HATU (12 mg, 0.030 mmol) was added and the reaction was stirred at rt for 18 hours. The reaction was dissolved up to 0.5 mL with DMSO and it was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (70 to 90%). The product was lyophilized and afforded the title compound (1.0 mg, 0.0014 mmol, 6%) as a white solid.

[353] ^{1}H NMR (500 MHz, DMSO) δ 8.20-8.16 (m, 3H), 7.90 – 7.74 (m, 2H), 7.49 (d, *J* = 8.4 Hz, 1H), 3.38 (hept, *J* = 6.7 Hz, 1H), 2.41 (s, 3H), 1.26 (d, *J* = 6.7 Hz, 6H); MS (m/z): 707.0 $[M+H]^+$.

Compound 84: 4-(3-cyano-5-(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[354] methyl 4-(3-cyano-5-(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[355] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), , 3-bromo-5-(trifluoromethyl)benzonitrile (31 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. Water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2 to 10%) and afforded the title compound (23 mg, 0.037 mmol, 36%).

[356] 4-(3-cyano-5-(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[357] methyl 4-(3-cyano-5-(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (23 mg, 0.037 mmol) was diluted in a 1:1 solution of THF and MeOH (0.37 mL). 1 M NaOH (0.075 mL, 0.075 mmol) was added and the reaction was stirred for 18 hours at room temperature. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (50 to 70%). The product was lyophilized and afforded the title compound (1.5 mg, 0.0025 mmol, 7%) as a pale yellow solid.

[358] ^{1}H NMR (500 MHz, DMSO) δ 8.35-8.30 (m, 2H), 8.28-8.22 (m, 2H), 8.08-8.04 (m, 1H), 7.77 (d, *J* = 8.4 Hz, 1H), 3.35 (hept, *J* = 6.5 Hz, 1H), 2.34 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 596.9 $[M+H]^+$.

Compound 86: 4-(3-benzyl-5-methylisoxazol-4-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[359] 3-benzyl-5-methylisoxazole

[360] In a flask were added 3-(bromomethyl)-5-methylisoxazole (1 g, 5.68 mmol), phenylboronic acid (0.831 g, 6.82 mmol), sodium carbonate (3.01 g, 28.4 mmol), dioxane

(11 ml), water (2.8 ml), then tetrakis(triphenylphosphine)palladium (0) (0.657 g, 0.568 mmol). The mixture was degassed with nitrogen bubbling for 15 minutes then was heated to 85 °C for 16 h. The reaction mixture was cooled to rt, ethyl acetate and water were added. The mixture was transferred in a sep. funnel and the phases were separated. The organic phase was washed with brine, SiO_2 was added to the organic phase and solvents were evaporated. The crude product on SiO2 was purified on ISCO using a SiO_2 column employing a 0-100% ethyl acetate in hexanes gradient to obtain the title compound (0.57 g, 3.29 mmol, 57.9 %) as colorless oil.

[361] 3-benzyl-4-iodo-5-methylisoxazole

[362] In a flask containing 3-benzyl-5-methylisoxazole (0.28 g, 1.617 mmol) were added TFA (1.6 ml) and N-iodosuccinimide (0.364 g, 1.617 mmol). The mixture was stirred at 25 °C for 1 h. The mixture was diluted with EtOAc and transfered in a sep. funnel, washed with water 2x then aq. sat. $NaHCO_3$, then aq. sat. $Na_2S_2O_3$, then brine. The organic phase was dried over sodium sulfate, filtered, concentrated to dryness and afforded the title compound (0.48 g, 1.605 mmol, 99%) as a pale yellow solid.

[363] 4-(3-benzyl-5-methylisoxazol-4-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[364] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 3-benzyl-4-iodo-5-methylisoxazole (30 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. LiOH (12.4 mg, 0.52 mmol) was added and the reaction was heated at 90 °C under microwave radiation for 15 minutes. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (55 to 75%). The product was lyophylised and afforded the title compound (8.9 mg, 0.015 mmol, 18%) as a pale yellow solid.

[365] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.0 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.22 – 7.12 (m, 3H), 7.01 – 6.97 (m, 2H), 3.97-3.84 (ABquartet, 2H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.25 (s, 3H), 1.70 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 599.1 $[M+H]^+$.

Compound 89: 4-(benzo[d][1,3]dioxol-5-yl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[366] A solution of methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), benzo[d][1,3]dioxol-5-ylboronic

acid (19 mg, 0.12 mmol), $Pd(PPh_3)_4$ (11 mg, 0.10 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. LiOH (12 mg, 0.48 mmol) was added and the reaction was heated at 100 °C 1 h under microwave radiation. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (50 to 100%). The product was lyophilized and afforded the title compound (9.9 mg, 0.0018 mmol, 19%) as a white solid.

[367] ^{1}H NMR (500 MHz, DMSO) δ 14.23 (s, 1H), 8.20 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.05-6.99 (m, 2H), 6.92 (dd, *J* = 8.0, 1.7 Hz,1H), 6.07 (s, 2H), 3.33 (hept, *J* = 6.7 Hz, 1H), 2.28 (s, 3H), 1.23 (d, *J* = 6.7 Hz,6H); MS (m/z): 547.9 $[M+H]^+$.

Compound 92: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methylisothiazol-5-yl)-1H-pyrazole-5-carboxylic acid

[368] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 5-bromo-3-methylisothiazole (22 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. LiOH (12.4 mg, 0.52 mmol) was added and the reaction was heated at 90 °C under microwave radiation for 15 minutes. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (40 to 60%). The product was lyophylised and afforded the title compound (10 mg, 0.019 mmol, 19%) as a pale yellow solid.

[369] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 2.1 Hz, 1H), 8.04 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.40 (s, 1H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.45 (s, 3H), 2.41 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 524.9 $[M+H]^+$.

Compound 94: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(1,5-dimethyl-6-oxo-1,6-dihydropyridin-3-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[370] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 5-bromo-1,3-dimethylpyridin-2(1H)-one (25 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. LiOH (12.4 mg, 0.52 mmol) was added and the reaction was heated at 90 °C under

microwave radiation for 45 minutes. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (35 to 55%). The product was lyophylised and afforded the title compound (12 mg, 0.022 mmol, 22%) as a pale yellow solid.

[371] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.71 (d, *J* = 2.2 Hz, 1H), 7.41-7.39 (m, 1H), 3.48 (s, 3H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.28 (s, 3H), 2.03 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 549.0 $[M+H]^+$.

Compound 95: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[372] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 1-bromo-3-fluoro-5-methylbenzene (23 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. LiOH (12.4 mg, 0.52 mmol) was added and the reaction was heated at 90 °C under microwave radiation for 45 minutes. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (60 to 80%). The product was lyophylised and afforded the title compound (13 mg, 0.024 mmol, 24%) as a pale yellow solid.

[373] ^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.13 (s, 1H), 7.11 (d, *J* = 9.9 Hz, 1H), 7.07 (d, *J* = 9.7 Hz, 1H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.36 (s, 3H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 536.0 $[M+H]^+$.

Compound 97: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-isopropoxy-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[374] **1-bromo-3-isopropoxy-5-methylbenzene**

[375] 2-iodopropane (136 mg, 0.802 mmol) was added to a mixture of 3-bromo-5-methylphenol (100 mg, 0.535 mmol) and K_2CO_3 (118 mg, 0.855 mmol) in DMF (0.53 mL). The reaction was stirred at rt for 18 hours. Water (5 mL) and ethyl acetate were added (5 mL). The phases were separated. The organic layer was washed with 1 N NaOH (2x5mL), dried with sodium sulfate, filtered and evaporated and afforded the title compound (90 mg, 0.39 mmol, 74%) which was used directly.

[376] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-isopropoxy-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylate

[377] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 1-bromo-3-isopropoxy-5-methylbenzene (28 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. Water (5 mL) was added and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2 to 5%) and afforded the title compound (31 mg, 0.052 mmol, 51%).

[378] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-isopropoxy-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[379] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-isopropoxy-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylate (31 mg, 0.052 mmol) was diluted in a 1:1 solution of THF and MeOH (0.52 mL). 1 M NaOH (0.11 mL, 0.11 mmol) was added and the reaction was stirred for18 hours at room temperature. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (65 to 85%). The product was lyophilized and afforded the title compound (7.3 mg, 0.013 mmol, 24%) as a white solid.

[380] ^{1}H NMR (500 MHz, DMSO) δ 8.23 (s, 1H), 8.04 (d, *J* = 8.3 Hz, 1H), 7.75 (d, *J* = 8.3 Hz, 1H), 6.84-6.79 (m, 2H), 6.74 (s, 1H), 4.60 (hept, *J* = 6.0 Hz, 1H), 2.30 (s, 3H), 2.30 (s, 3H), 1.28 (d, *J* = 6.0 Hz, 6H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 576.2 $[M+H]^+$.

Compound 98: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methyl-5-(oxetan-3-yloxy)phenyl)-1H-pyrazole-5-carboxylic acid

[381] 3-(3-bromo-5-methylphenoxy)oxetane

[382] 3-bromooxetane (110 mg, 0.802 mmol) was added to a mixture of 3-bromo-5-methylphenol (100 mg, 0.535 mmol), KI (133 mg, 0.802 mmol) and K_2CO_3 (118 mg, 0.855 mmol) in DMF (0.53 mL). The reaction was stirred at 100 °C for 18 hours. Water (5 mL) and ethyl acetate were added (5 mL). The phases were separated. The organic layer was washed with 1 N NaOH (2x5mL), dried with sodium sulfate, filtered and evaporated and afforded the title compound (98 mg, 0.40 mmol, 75%) which was used directly.

[383] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methyl-5-(oxetan-3-yloxy)phenyl)-1H-pyrazole-5-carboxylate

[384] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 3-(3-bromo-5-methylphenoxy)oxetane (30 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. Water (5 mL) was added and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (10 to 20%) and afforded the title compound (18 mg, 0.029 mmol, 28%).

[385] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methyl-5-(oxetan-3-yloxy)phenyl)-1H-pyrazole-5-carboxylic acid

[386] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methyl-5-(oxetan-3-yloxy)phenyl)-1H-pyrazole-5-carboxylate (18 mg, 0.029 mmol) was diluted in a 1:1 solution of THF and MeOH (0.29 mL). 1 M NaOH (0.058 mL, 0.058 mmol) was added and the reaction was stirred for 18 hours at room temperature. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (50 to 100%). The product was lyophilized and afforded the title compound (4.1 mg, 0.0069 mmol, 24%) as a white solid.

[387] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (s, 1H), 8.03 (d, *J* = 7.0 Hz, 1H), 7.76 (d, *J* = 8.6 Hz, 1H), 6.91 (s, 1H), 6.68-6.62 (m, 2H), 5.27 (q, *J* = 5.1 Hz, 1H), 4.94 (t, *J* = 6.9 Hz, 1H), 4.56 (dd, *J* = 7.6, 5.1 Hz, 2H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 2.30 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H); MS (m/z): 590.2 $[M+H]^+$.

Compound 100: 4-(3-(1H-imidazol-1-yl)-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[388] 1-(3-bromo-5-methylphenyl)-1H-imidazole

[389] A solution of the 3-bromo-5-methylbenzenamine (500 mg, 2.69 mmol), ammonium acetate (207 mg, 2.69 mmol) and water (0.4 mL) in AcOH (1.35 mL) was added during 30 minutes (push serynge) to a solution of formaldehyde (37%w/w in water, 200 µL, 2.69 mmol) and glyoxal (40% w/w in water, 308 µL, 2.69 mmol) in AcOH (1.35 mL) at 70 °C. The reaction was stirred at that temperature for 18 hours. The reaction was slowly pored into saturated aqueous sodium bicarbonate. Some water was added and the precipitated solid was filtered. The filtrate was extracted with DCM and the combined organic layers were

dried with sodium sulfate, filtered and evaporated and afforded the title compound (378 mg, 1.59 mmol, 59%) as an orange oil.

[390] 4-(3-(1H-imidazol-1-yl)-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[391] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 1-(3-bromo-5-methylphenyl)-1H-imidazole (29 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. LiOH (12.4 mg, 0.52 mmol) was added and the reaction was heated at 90 °C under microwave radiation for 45 minutes. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (50 to 100%). The product was lyophylised and afforded the title compound (6.6 mg, 0.011 mmol, 11%) as a pale yellow solid.

[392] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.14 (d, *J* = 2.1 Hz, 1H), 7.96 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.70-7.67 (m, 2H), 7.48 (m, 1H), 7.46 (m, 1H), 7.20 (s, 1H), 7.06 (s, 1H), 3.29 (hept, *J* = 6.7 Hz, 1H), 2.35 (s, 3H), 2.27 (s, 3H), 1.18 (d, *J* = 6.7 Hz, 6H); MS (m/z): 584.1 $[M+H]^+$.

Compound 102: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-morpholinopyridin-4-yl)-1H-pyrazole-5-carboxylic acid

[393] 4-bromo-6-methylpyridin-2-yl trifluoromethanesulfonate

[394] Tf_2O (107 µL, 0.638 mmol) was added slowly to a solution of 4-bromo-6-methylpyridin-2-ol (100 mg, 0.532 mmol) and Et_3N (89 µL, 0.64 mmol) in DCM (2.7 mL) at 0 °C. The reaction was stirred at that temperature for 10 min. An aqueous saturated solution of $NaHCO_3$ (10 mL) was added and the mixture was extracted with DCM (2x10 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated. The crude product was purified by flash chromatography using a solution of ethyl acetate in hexanes (5%) and afforded the title compound (139 mg, 0.434 mmol, 82%) as a colorless oil.

[395] 4-(4-bromo-6-methylpyridin-2-yl)morpholine

[396] A solution of 4-bromo-6-methylpyridin-2-yl trifluoromethanesulfonate (100 mg, 0.312 mmol), and morpholine (54 mg, 0.63 mmol) in DMSO (2 mL) was heated at 80 °C for 18 hours. Water (10 mL) was added and the reaction was extracted with EtOAc (2x10 mL). The combined organic layers were washed with brine (3x10 mL), dried with sodium sulfate, filtered and evaporated. The crude product (80 mg, 0.312 mmol, quantitative yield) was used without purification.

[397] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-morpholinopyridin-4-yl)-1H-pyrazole-5-carboxylate

[398] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (25 mg, 0.051 mmol), 4-(4-bromo-6-methylpyridin-2-yl)morpholine (16 mg, 0.062 mmol), $Pd(PPh_3)_4$ (6 mg, 0.005 mmol), Na_2CO_3 (27 mg, 0.26 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.0 mL) was heated at 85 °C for 18 hours. water (5 mL) was added and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (10 to 20%) and afforded the title compound (15 mg, 0.025 mmol, 48%) as a pale orange oil.

[399] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-morpholinopyridin-4-yl)-1H-pyrazole-5-carboxylic acid

[400] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-morpholinopyridin-4-yl)-1H-pyrazole-5-carboxylate (15 mg, 0.025 mmol) was diluted in a 1:1 solution of THF and MeOH (0.25 mL). 1 M NaOH (0.049 mL, 0.049 mmol) was added and the reaction was stirred for 18 hours at room temperature. 1 N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5 mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10 mM of NH_4CO_2H) (30 to 70%). The product was lyophilized and afforded the title compound (4.1 mg, 0.0068 mmol, 28%) as a white solid.

[401] ^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 1.9 Hz, 1H), 8.03 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 6.66 (s, 1H), 6.64 (s, 1H), 3.72 – 3.68 (m, 4H), 3.48 – 3.43 (m, 4H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.35 (s, 3H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 604.0 $[M+H]^+$.

Compound 103: 1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid

[402] 2-chloro-4-(3-methoxyphenyl)thiazole

[403] A mixture of 1-(3-methoxyphenyl)-2-thiocyanatoethanone (4.43 g, 21.4 mmol) and 4 N HCl in dioxane (32 mL, 128 mmol) in dioxane (21 mL) was stirred at room temperature for 20 h. The mixture was concentrated in vacuo and the residue was diluted with EtOAc washed with sat. aq.$NaHCO_3$, brine and dried over $MgSO_4$, filtered and concentrated *in vacuo* and afforded the title compound (4.80 g, 21.3 mmol, 99%).

[404] 2-chloro-5-(isopropylthio)-4-(3-methoxyphenyl)thiazole

[405] A 2.5 M solution of n-BuLi in hexanes (2.66 mL, 6.65 mmol) was added to a THF (14.8 mL) solution of 2-chloro-4-(3-methoxyphenyl)thiazole (1.00g, 4.43 mmol) at -78 °C. The mixture was stirred at the same temperature for 20 mins. Then diisopropyl disulfide (0.94 mL, 1.42 mmol) was added and the reaction mixture was stirred 30 mins at the same temperature. Water was added to quench the reaction mixture and then extracted with EtOAc. The organic layer was washed with brine, dried with MgSO4, filtered and concentrated under vacuum. The crude product was purified by flash chromatography (dry packing) on silica gel eluted with hexanes and afforded the title compound (685 mg, 2.29 mmol, 52%).

[406] **2-hydrazinyl-5-(isopropylthio)-4-(3-methoxyphenyl)thiazole**

[407] The hydrazine HCl salt (91.0 mg, 1.33 mmol), the 2-chloro-5-(isopropylthio)-4-(3-methoxyphenyl)thiazole (200 mg, 0.667 mmol) and DIPEA (233 µL, 1.33 mmol) were dissolved in NMP (2.2 mL) in a microwave vial. The vial was heated with microwave radiation to 150 °C for 2 h. The crude product was purified by reverse flash chromatography (C18, using a gradient 10 to 75% MeCN in H_2O) and afforded the title compound (119 mg, 0.403 mmol, 60%) as a grey solid.

[408] **methyl 1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate**

[409] To a solution of methyl 2-(methoxyimino)-3-(2-nitrobenzyl)-4-oxopentanoate (92 mg, 0.30 mmol) in MeOH (3.0 mL) was added 2-hydrazinyl-5-(isopropylthio)-4-(3-methoxyphenyl)thiazole (88 mg, 0.30 mmol) followed by dropwise addition of HCl 12 N (99.5 µL, 1.19 mmol). The reaction mixture was heated to reflux overnight. The crude product was concentrated under vaccum. The product was purified by flash chromatography on silica gel using a gradient 0 to 20% EtOAc in hexanes and afforded the title compound (119 mg, 0.200 mmol, 67%).

[410] **1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylic acid**

[411] To a solution of methyl 1-(5-(isopropylthio)-4-(3-methoxyphenyl)thiazol-2-yl)-3-methyl-4-(2-nitrobenzyl)-1H-pyrazole-5-carboxylate (60 mg, 0.11 mmol) in a 1/1 mixture of MeOH /THF (1 mL) was added 1 N NaOH (223 µL, 0.22 mmol). The reaction mixture was stirred at rt overnight. Quenched to pH 4 with 3 N HCl and the reaction mixture was concentrated under vacuum. The crude product was diluted with DCM and transferred into a separation funnel. The organic layer was washed with water (2x) and brine (2x), dried over Na_2SO_4 and concentrated under vacuum. The product was lyophilized, resulting in the title compound (54.7 mg, 0.104 mmol, 94%) as a white solid.

[412] ^{1}H NMR (500 MHz, DMSO) δ 13.96 (s, 1H), 8.00 (dd, *J* = 8.1, 1.2 Hz, 1H), 7.65 (td, *J* = 7.6, 1.3 Hz, 1H), 7.58 – 7.48 (m, 2H), 7.38 (t, *J* = 8.0 Hz, 1H), 7.22 (d, *J* = 6.9 Hz,

1H), 6.99 (ddd, *J* = 8.3, 2.6, 0.9 Hz, 1H), 4.24 (s, 2H), 3.80 (s, 3H), 3.36 – 3.28 (m, 1H), 2.08 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 525.1 $[M+1]^+$.

Compound 108: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-nitrophenyl)-1H-pyrazole-5-carboxylic acid

[413] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-nitrophenyl)-1H-pyrazole-5-carboxylic acid

[414] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50.0 mg, 0.096 mmol), 3-nitrophenylboronic acid (19.2 mg, 0.12 mmol) and Na_2CO_3 (51.0 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11.0 mg, 0.01 mmol). The reaction mixture was heated at 85 °C for 16 hours. 1 N NaOH (100µL, 0.10 mmol) was added and the reaction mixture was stirred at 50 °C for 5 hours. More 1 N NaOH (100µL, 0.10 mmol) was added and the reaction mixture was stirred at 85 °C overnight. Quenched with 1 N HCl. Diluted with EtOAc washed with water and brine. Dried MgSO4, filtered and concentrated in vacuo. The crude product was purified by reverse flash chromatography (C18, using a gradient 60 to 80% MeCN in H_2O) and afforded the title compound (14.9 mg, 0.03 mmol, 28%) as yellow solid.

[415] ^1H NMR (500 MHz, DMSO) δ 8.36 (s, 1H), 8.24-8.20 (m, 2H), 8.04 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.99-7.95 (m, 1H), 7.79-7.73 (m, 2H), 3.43 – 3.31 (m, 1H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 549.1 $[M+1]^+$.

Compound 112: 4-(3-chlorophenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[416] 4-(3-chlorophenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[417] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50.0 mg, 0.096 mmol), 3-chlorophenylboronic acid (18.0 mg, 0.12 mmol) and Na_2CO_3 (51.0 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11.0 mg, 0.01 mmol). The reaction mixture was heated at 85 °C for 16 hours. LiOH (12.0 mg, 0.48 mmol) was added to the reaction mixture and stirred in the microwave at 90 °C for 10 min. Acidified with 1 N HCl and evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 65-85% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (20.3 mg, 0.04 mmol, 39%) as a yellow solid after lyophilization.

[418] ^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.57-7.53 (m, 1H), 7.52 – 7.42 (m, 3H), 3.39-3.25 (m, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 538.0 $[M+1]^+$.

Compound 115: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-methoxyphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[419] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-methoxyphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[420] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50.0 mg, 0.096 mmol), 3-methoxyphenylboronic acid (18.2 mg, 0.12 mmol) and Na_2CO_3 (51.0 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11.0 mg, 0.01 mmol). The reaction mixture was heated at 85 °C for 16 hours. LiOH (12.0 mg, 0.48 mmol) was added to the reaction mixture and stirred in the microwave at 90 °C for 25 min. Acidified with 1 N HCl and evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 65-85% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (10.6 mg, 0.02 mmol, 21%) as a yellow solid after lyophilization.

[421] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 1.9 Hz, 1H), 8.03 (dd, *J* = 8.5, 1.9 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.36 (t, *J* = 8.0 Hz, 1H), 7.09 – 7.03 (m, 2H), 6.94 (d, *J* = 8.0 Hz, 1H), 3.78 (s, 3H), 3.42 – 3.29 (m, 1H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 534.1 $[M+1]^+$.

Compound 118: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-m-tolyl-1H-pyrazole-5-carboxylic acid

[422] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-m-tolyl-1H-pyrazole-5-carboxylic acid

[423] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50.0 mg, 0.096 mmol), m-tolylboronic acid (16.3 mg, 0.12 mmol) and Na_2CO_3 (51.0 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11.0 mg, 0.01 mmol). The reaction mixture was heated at 85 °C for 16 hours. LiOH (12.0 mg, 0.48 mmol) was added to the reaction mixture and stirred in the microwave at 90 °C for 25 min. Acidified with 1N HCl and evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 65-85% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (19.0 mg, 0.04 mmol, 38%) as a yellow solid after lyophilization.

[424] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 2.0 Hz, 1H), 8.03 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.35-7.23 (m, 3H), 7.18 (d, *J* = 7.2 Hz, 1H), 3.42 – 3.28 (m, 1H), 2.36 (s, 3H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 518.1 $[M+1]^+$.

Compound 129: 2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2'-ethyl-5-methyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid

[425] **1-ethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-1H-pyrazole**

[426] NaH 60% dispersion in mineral oil (50.0 mg, 1.24 mmol) was suspended in DMF (2 mL) followed by the addition of a solution of 4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-1H-pyrazole (200 mg, 1.03 mmol) in DMF (550 µL). The resulting mixture was stirred at r.t. for 1hour. Iodomethane (132 µL, 1.65mmol) was added dropwise and stirring was continued for 2 days. Water was added and the reaction mixture was extracted with EtOAc. The organic layer was washed with water and brine. Dried $MgSO_4$, filtered and concentrated in vacuo. The product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 30% EtOAc in hexanes and afforded the title compound (62.7 mg, 0.28 mmol, 27%) as a yellow oil.

[427] **methyl 2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2'-ethyl-5-methyl-4,4'-bi(2H-pyrazole)-3-carboxylate**

[428] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50.0 mg, 0.10 mmol), 1-ethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-1H-pyrazole (25.6 mg, 0.12 mmol) and Na_2CO_3 (51.0 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11.0 mg, 0.01 mmol). The reaction mixture was heated at 85 °C for 16 hours. Diluted with EtOAc washed with water and brine. Dried $MgSO_4$, filtered and concentrated in vacuo. The product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 30% EtOAc in hexanes and afforded the title compound (24.4 mg, 0.05 mmol, 47%) as a yellow oil.

[429] **2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2'-ethyl-5-methyl-4,4'-bi(2H-pyrazole)-3-carboxylic acid**

[430] methyl 2-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-2'-ethyl-5-methyl-4,4'-bi(2H-pyrazole)-3-carboxylate (24.0 mg, 0.05 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (1 mL) and treated with LiOH (5.0 mg, 0.2 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Neutralized with 1N HCl and evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 50-70% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min)

and afforded the title compound (13.2 mg, 0.03 mmol, 56%) as a white solid after lyophilization.

[431] ^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.04-7.99 (m, 2H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.66 (d, *J* = 0.7 Hz, 1H), 4.18 (q, *J* = 7.3 Hz, 2H), 3.40 – 3.29 (m, 1H), 2.36 (s, 3H), 1.40 (t, *J* = 7.3 Hz, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 522.0 $[M+1]^+$.

Compound 131: (4-(aminomethyl)piperidin-1-yl)(1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-o-tolyl-1H-pyrazol-5-yl)methanone

[432] The 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-o-tolyl-1H-pyrazole-5-carboxylic acid (10.0 mg, 0.02 mmol) and tert-butyl piperidin-4-ylmethylcarbamate (5.0 mg, 0.02 mmol) were dissolved in DMF (0.5 mL) and was added HATU (10.0 mg, 0.03 mmol) followed by DIPEA (6.6 µL, 0.04 mmol). The reaction mixture was stirred at r.t. overnight. Diluted with EtOAc washed with water and brine. Dried $MgSO_4$, filtered and concentrated in vacuo. The crude product was dissolved in dioxane (0.5 mL) and treated with 4 N HCl (200 µL) and stirred at r.t overnight. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (4.6 mg, 0.007 mmol, 39%) as an off-white solid after lyophilization.

[433] ^{1}H NMR (500 MHz, DMSO) Complex mixture of rotamers; MS (m/z): 614.2 $[M+1]^+$.

Compound 136: (4-(aminomethyl)piperidin-1-yl)(4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)methanone

[434] The 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (20 mg, 0.031 mmol) and tert-butyl piperidin-4-ylmethylcarbamate (9.0 mg, 0.042 mmol) were dissolved in DMF (0.5 mL) and was added HATU (17 mg, 0.045 mmol) followed by DIPEA (12 µL, 0.068 mmol). The reaction mixture was stirred at r.t. for 1.5 h. Diluted with EtOAc washed with water and brine. Dried MgSO4, filtered and concentrated in vacuo. The crude product was dissolved in dioxane (0.5 mL) and treated with 4 N HCl (200 µL) and stirred at r.t overnight. More 4 N HCl (200uL) was added and stirring was continued over the week end. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 70-90% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (4.3 mg, 0.006 mmol, 19%) as a yellow solid after lyophilization.

[435] ^{1}H NMR (500 MHz, DMSO) δ 8.20 (s, 1H), 8.14 (d, *J* = 2.0 Hz, 1H), 8.10-8.06 (m, 2H), 8.04 (s, 1H), 7.81 (d, 8.5 Hz, 1H), 4.57-4.48 (m, 1H), 3.59-3.48 (m, 1H), 3.41-3.31 (m, 1H), 3.03-2.90 (m, 1H), 2.77 – 2.59 (m, 2H), 2.41 (s, 3H), 2.26-2.17 (m, 1H), 2.15-1.96 (m,

1H), 1.89 – 1.79 (m, 1H), 1.66-1.50 (m, 1H), 1.48-1.30 (m, 2H), 1.27-1.5 (m, 6H), 0.76-0.60 (m,1H), 0.28-0.15 (m 1H). MS (m/z): 738.0 [M+1]+.

Compound 137: N-(2-aminoethyl)-4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-N,3-dimethyl-1H-pyrazole-5-carboxamide

[436] The 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (20 mg, 0.031 mmol) and tert-butyl (2-(methylamino)ethyl)carbamate (7.0 mg, 0.042 mmol) were dissolved in DMF (0.5 mL) and was added HATU (17 mg, 0.045 mmol) followed by DIPEA (12 µL, 0.068 mmol). The reaction mixture was stirred overnight. Diluted with EtOAc washed with water and brine. Dried $MgSO_4$, filtered and concentrated in vacuo. The crude product was dissolved in dioxane (0.5 mL) and treated with 4 N HCl (200 µL) and stirred at r.t. for 4 hours. More 4N HCl (200µL) was added and stirring was continued overnight. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 80-100% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (5.8 mg, 0.008 mmol, 27%) as a yellow solid after lyophilization.

[437] ^{1}H NMR (500 MHz, DMSO) δ 8.18 (s, 0.5H), 8.16 (s, 0.5H), 8.15 (d, *J* = 2.1 Hz, 0.5H), 8.13 (s, 1H), 8.12 (d, *J* = 2.1 Hz, 0.5H), 8.10 (dd, *J* = 2.1, 8.5 Hz, 0.5H), 8.08 (s, 1H), 8.03 (dd, *J* = 2.1, 8.5 Hz, 0.5H), 7.80 (d, *J* = 8.5 Hz, 0.5H), 7.79 (d, *J* = 8.5 Hz, 0.5H), 3.77-3.68 (m, 0.5H), 3.43-3.34 (m, 1.5H), 3.14-2.99 (m, 2H), 2.98 (s, 1.5H), 2.80 (s, 1.5H), 2.66-2.57 (m, 1.5H), 2.47-2.27 (m, 1.5H), 2.41 (s, 3H), 1.27-1.23 (m, 6H). MS (m/z): 696.2 $[M+1]^+$.

Compound 139: (4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)(morpholino)methanone

[438] The 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (20 mg, 0.031 mmol) and morpholine (4.0 mg, 0.042mmol) were dissolved in DMF (0.5 mL) and was added HATU (17 mg, 0.045 mmol) followed by DIPEA (12 µL, 0.068 mmol). The reaction mixture was stirred overnight. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 80-100% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (9.4 mg, 0.013 mmol, 42%) as an off-white solid after lyophilization.

[439] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (s, 1H), 8.13 (d, *J* = 2.1 Hz, 1H), 8.08 (s, 2H), 8.04 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.82 (d, *J* = 8.5 Hz, 1H), 3.84-3.77 (m, 1H), 3.73-3.66 (m, 1H), 3.48 – 3.44 (m, 1H), 3.42-3.36 (m, 1H), 3.35-3.19 (m, 4H), 3.04-2.96 (m, 1H), 2.40 (s, 3H), 1.27-1.23 (m, 6H). MS (m/z): 709.1 $[M+1]^+$.

Compound 140: 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-N,N,3-trimethyl-1H-pyrazole-5-carboxamide

[440] The 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (20 mg, 0.031 mmol) and dimethylamine hydrochloride salt (3.0 mg, 0.042 mmol) were dissolved in DMF (0.5 mL) and was added HATU (17 mg, 0.045 mmol) followed by DIPEA (12 µL, 0.068 mmol). The reaction mixture was stirred overnight. Diluted with EtOAc washed with water and brine. Dried $MgSO_4$, filtered and concentrated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 80-100% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (6.9 mg, 0.010 mmol, 33%) as a white solid after lyophilization.

[441] ^{1}H NMR (500 MHz, DMSO) δ 8.17 (s, 1H), 8.14 (d, *J* = 2.1 Hz, 1H), 8.09-8.06 (m, 3H), 7.81 (d, *J* = 8.5 Hz, 1H), 3.43 – 3.34 (m, 1H), 2.99 (s, 3H), 2.80 (s, 3H), 2.42 (s, 3H), 1.26 (d, *J* = 6.7 Hz, 6H). MS (m/z): 667.1 $[M+1]^+$.

Compound 141: (4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazol-5-yl)(4-(hydroxymethyl)piperidin-1-yl)methanone

[442] The 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (20 mg, 0.031 mmol) and piperidin-4-ylMeOH (5.0 mg, 0.042 mmol) were dissolved in DMF (0.5 mL) and was added HATU (17 mg, 0.045 mmol) followed by DIPEA (12 µL, 0.068 mmol). The reaction mixture was stirred overnight. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 80-100% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45ml/min/10 min) and afforded the title compound (9.4 mg, 0.013 mmol, 41%) as a white solid after lyophilization.

[443] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (s, 1H), 8.14 (d, *J* = 2.0 Hz, 1H), 8.10 – 8.05 (m, 2H), 8.03 (s, 1H), 7.81 (d, *J* = 8.5 Hz, 1H), 4.58-4.51 (m, 1H), 4.49-4.43 (m, 1H), 4.11-4.06 (m, 1H), 3.56-3.50 (m, 1H), 3.42-3.34 (m, 1H), 3.07-2.93 (m, 2H), 2.76-2.64 (m, 1H), 2.41 (s, 3H), 1.82-1.74 (m, 1H), 1.63-1.44 (m, 2H), 1.27-1.24 (m, 6H), 0.78-0.65 (m, 1H), 0.31-0.17(m, 1H). MS (m/z): 737.1 $[M+1]^+$.

Compound 142: 1-(4-(3,4-dichlorophenyl)-5-isobutylthiazol-2-yl)-1',3-dimethyl-1H,1'H-[4,4'-bipyrazole]-5-carboxylic acid

[444] **1-(2-chloro-4-(3,4-dichlorophenyl)thiazol-5-yl)-2-methylpropan-1-ol**

[445] To a cold -78 °C solution of 2-chloro-4-(3,4-dichlorophenyl)thiazole (2.00 g, 7.56 mmol) and isopropyl aldehyde (966 µL, 10.6 mmol) in THF (40 mL) was added dropwise 2.5M nBuLi (4.8 mL, 12 mmol). The reaction mixture was stirred 2 hours at -78 °C. More

isopropyl aldehyde (290 µL, 3.18 mmol) and 2.5M nBuLi (1.5 mL, 3.8 mmol) were added and stirring was continued for 1 h. The reaction mixture was quenched with sat NH4Cl and allowed to warm to r.t. Diluted with EtOAc and washed with water and brine. Dried $MgSO_4$, filtered and concentrated in vacuo. The product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes and afforded the title compound (815 mg, 2.42 mmol, 32%) as a yellow oil.

[446] 2-chloro-4-(3,4-dichlorophenyl)-5-isobutylthiazole

[447] The 1-(2-chloro-4-(3,4-dichlorophenyl)thiazol-5-yl)-2-methylpropan-1-ol (500 mg, 1.49 mmol) was dissolved in DCM (15 mL) and treated with triethylsilane (710 µL, 4.46 mmol) followed by TFA (34 µL, 0.45 mmol). The reaction mixture was stirred at r.t. for 1.5 h. More triethylsilane (1.2 mL, 7.43 mmol) followed by TFA (1.6 mL, 21 mmol) were added and stirring was continued overnight. The reaction mixture was evaporated in vacuo. The residue was treated with sat $NaHCO_3$ and extracted with EtOAc. The organic layer was washed with brine, dried $MgSO_4$, filtered and concentrated in vacuo and afforded the title compound (382 mg, 1.19 mmol, 80%) which was used without further purification.

[448] 4-(3,4-dichlorophenyl)-2-hydrazinyl-5-isobutylthiazole

[449] The hydrazine HCl salt (163 mg, 2.38 mmol), the 2-chloro-4-(3,4-dichlorophenyl)-5-isobutylthiazole (382 mg, 1.19 mmol) and DIPEA (416 µL, 2.38 mmol) were dissolved in NMP (4.0 mL) in a microwave vial. The vial was heated with microwave radiation to 150 °C for 2 h. Add more hydrazine HCl salt (163 mg, 2.38 mmol) and DIPEA (416 µL, 2.38 mmol) and heating with microwave radiation to 150 °C was continued for another hour. The reaction mixture was diluted with Et_2O and washed with water and brine. Dried over $MgSO_4$, filtered and concentrated. The crude product was purified by reverse flash chromatography (C18, using a gradient 60-80% MeCN in H_2O) and afforded the title compound (33 mg, 0.10 mmol, 9%) as a yellow oil.

[450] methyl 1-(4-(3,4-dichlorophenyl)-5-isobutylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[451] To a solution of methyl 2-(methoxyimino)-4-oxopentanoate (17 mg, 0.10 mmol) in MeOH (1.0 mL) was added 4-(3,4-dichlorophenyl)-2-hydrazinyl-5-isobutylthiazole (32 mg, 0.10 mmol) followed by dropwise addition of HCl 12N (33 µL, 0.40 mmol). The reaction mixture was heated to reflux overnight. The crude product was concentrated under vaccum. The product was purified by flash chromatography on silica gel using a gradient 0 to 10% EtOAc in hexanes and afforded the title compound (23 mg, 0.054 mmol, 54%).

[452] methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-isobutylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[453] A 2 M solution of Br_2 in DCM (55µL, 0.11 mmol) was added to a solution of the methyl 1-(4-(3,4-dichlorophenyl)-5-isobutylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

(23 mg, 0.054 mmol) in DCM (0.5 mL). The reaction mixture was stirred at r.t. for 1.5 h. Two more increments of 2 M Br_2/DCM (55 µL, 0.11 mmol, each) was added prior to stirring overnight. Three more increments of 2 M Br_2/DCM (55 µL, 0.11 mmol, each) was added over the day. The reaction mixture was quenched with aq. $Na_2S_2O_3$ and extracted with EtOAc. The organic layer was washed with water and brine. Dried $MgSO_4$, filtered and concentrated in vacuo. The product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes and afforded the title compound (7.4 mg, 0.015 mmol, 29%) as a yellow oil.

[454] 1-(4-(3,4-dichlorophenyl)-5-isobutylthiazol-2-yl)-1',3-dimethyl-1H,1'H-[4,4'-bipyrazole]-5-carboxylic acid

[455] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-isobutylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (7.0 mg, 0.015 mmol), 1-methyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-1H-pyrazole (3.7 mg, 0.018 mmol) and Na_2CO_3 (8.0 mg, 0.075 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (2.0 mg, 0.002 mmol). The reaction mixture was heated at 85 °C for 16 hours. Add LiOH (1.8 mg, 0.075 mmol) and stirred in the microwave at 110 °C for 10min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 50-70% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (2.0 mg, 0.004 mmol, 28%) as a white solid after lyophilization.

[456] ^{1}H NMR (500 MHz, DMSO) δ 7.94 (s, 1H), 7.79 (d, *J* = 2.0 Hz, 1H), 7.74 (d, *J* = 8.4 Hz, 1H), 7.64 (s, 1H), 7.60 (dd, *J* = 8.4, 2.0 Hz, 1H), 3.88 (s, 3H), 2.84 (d, *J* = 7.1 Hz, 2H), 2.34 (s, 3H), 1.93 – 1.82 (m, 1H), 0.93 (d, *J* = 6.6 Hz, 6H). MS (m/z): 490.0 $[M+1]^+$.

Compound 143: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3,5-dimethylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[457] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), (3,5-dimethylphenyl)boronic acid (17 mg, 0.12 mmol) and Na_2CO_3 (51 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11 mg, 0.010 mmol). The reaction mixture was heated at 85 °C for 16 hours. Diluted with EtOAc washed with water and brine. Dried $MgSO_4$, filtered and concentrated in vacuo. The methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3,5-dimethylphenyl)-3-methyl-1H-pyrazole-5-carboxylate was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3,5-dimethylphenyl)-3-methyl-1H-pyrazole-5-carboxylate which was used directly for hydrolysis.

Dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.0 mL) and treated with LiOH (12 mg, 0.48 mmol). The reaction mixture was stirred in the microwave at 110 °C for 10min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 70-90% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (1.7 mg, 0.003 mmol, 3%) as a yellow solid after lyophilization.

[458] ^{1}H NMR (500 MHz, DMSO) δ 8.17 (s, 1H), 8.03-7.96 (m, 1H), 7.68 (d, *J* = 8.4 Hz, 1H), 7.02 (s, 2H), 6.90 (s, 1H), 3.30-3.25 (m, 1H), 2.23 (s, 6H), 2.20 (s, 3H), 1.17 (d, *J* = 6.7 Hz, 6H). MS (m/z): 532.1 $[M+1]^+$.

Compound 144: 4-(3,5-dichlorophenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[459] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), (3,5-dichlorophenyl)boronic acid (23 mg, 0.12 mmol) and Na_2CO_3 (51 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11 mg, 0.010 mmol). The reaction mixture was heated at 85 °C for 16 hours. Add LiOH (12 mg, 0.48 mmol) and the reaction mixture was stirred in the microwave at 110 °C for 10 min. More LiOH (12 mg, 0.48 mmol) was added and stirring in the microwave at 110 °C was continued for 30 min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 65-85% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (15 mg, 0.026 mmol, 27%) as a yellow solid after lyophilization.

[460] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.1 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.1 Hz, 1H), 777 (d, *J* = 8.5 Hz, 1H), 7.68-7.65(m, 1H), 7.54 (d, *J* = 1.9 Hz, 2H), 3.42 – 3.32 (m, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 571.8 [M+1]+.

Compound 145: 4-(3-chloro-5-methoxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[461] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 2-(3-chloro-5-methoxyphenyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (32 mg, 0.12 mmol) and Na_2CO_3 (51 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11 mg, 0.010 mmol). The reaction mixture was heated at 85 °C for 16 hours. Add LiOH (12 mg, 0.48 mmol) and the reaction mixture was stirred in the microwave at 110 °C for 10 min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 65-85% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min)

and afforded the title compound (16 mg, 0.028 mmol, 29%) as a yellow solid after lyophilization.

[462] ^{1}H NMR (500 MHz, DMSO) δ 8.23 (d, *J* = 1.7 Hz, 1H), 8.04 (dd, *J* = 8.4, 1.7 Hz, 1H), 7.73 (d, *J* = 8.4 Hz, 1H), 7.13 (s, 1H), 7.05 (s, 1H), 7.02 (s, 1H), 3.80 (s, 3H), 3.38 – 3.32 (m, 1H), 2.30 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 568.0 $[M+1]^+$.

Compound 146: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-methoxy-5-(trifluoromethyl)phenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[463] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), 2-(3-methoxy-5-(trifluoromethyl)phenyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (36 mg, 0.12 mmol) and Na_2CO_3 (51 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11 mg, 0.010 mmol). The reaction mixture was heated at 85 °C for 16 hours. Add LiOH (12 mg, 0.48 mmol) and the reaction mixture was stirred in the microwave at 110 °C for 10min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 65-85% MeCN/NH_4CO_2H 10mM, pH 3.8/Flow 45ml/min/10min) and afforded the title compound (15 mg, 0.024 mmol, 25%) as a yellow solid after lyophilization.

[464] ^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.38 (s, 1H), 7.35 (s, 1H), 7.28 (s, 1H), 3.88 (s, 3H), 3.40 – 3.32 (m, 1H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 601.9 $[M+1]^+$.

Compound 147: 4-(3-chloro-5-methylphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[465] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), (3-chloro-5-methylphenyl)boronic acid (20 mg, 0.12 mmol) and Na_2CO_3 (51 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11 mg, 0.010 mmol). The reaction mixture was heated at 85 °C for 16 hours. Add LiOH (12 mg, 0.48 mmol) and the reaction mixture was stirred in the microwave at 110 °C for 10 min. Add more LiOH (12 mg, 0.48 mmol) and stirring in the microwave at 110 °C was continued for 10 min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 70-90% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (22 mg, 0.040 mmol, 42%) as a yellow solid after lyophilization.

[466] ^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.32 (s, 1H), 7.30 (s, 1H), 7.25 (s, 1H), 3.41 – 3.31 (m, 1H), 2.36 (s, 3H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 552.0 $[M+1]^+$.

Compound 148: 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-N-(methylsulfonyl)-1H-pyrazole-5-carboxamide

[467] To a suspension of 4-(3,5-bis(trifluoromethyl)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid (43 mg, 0.068 mmol), EDCI hydrochloride salt (20 mg, 0.10 mmol) and DMAP (18 mg, 0.15 mmol) in DCM (0.5 mL) was added methanesulfonamide (9.7 mg, 0.10 mmol). The reaction mixture was stirred at r.t. for 7 hours. More methanesulfonamide (14 mg, 0.15 mmol) was added and stirring was continued overnight. More EDCI hydrochloride salt (10 mg, 0.052 mmol) and methanesulfonamide (9.7 mg, 0.10 mmol) were added and stirring was continued another day. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 55-75% MeCN/AmBicarb 10mM, pH 10.0/Flow 45ml/min/10min) and afforded the title compound (7.1 mg, 0.010 mmol, 15%) as a yellow solid after lyophilization.

[468] ^{1}H NMR (500 MHz, DMSO) δ 8.26 (s, 1H), 8.18 (s, 2H), 8.15-8.06 (m, 2H), 7.70 (d, *J* = 8.5 Hz, 1H), 7.33 – 7.28 (m, 1H), 3.43 – 3.31 (m, 1H), 2.92 (bs, 3H), 2.37 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 717.1 $[M+1]^+$.

Compound 150: 4-(3,5-dichlorophenyl)-1-(4-(3,5-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[469] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (63 mg, 0.12 mmol), (3,5-dichlorophenyl)boronic acid (28 mg, 0.15 mmol) and Na_2CO_3 (64 mg, 0.61 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (14 mg, 0.012 mmol). The reaction mixture was heated at 85 °C for 16 hours. Add LiOH (15 mg, 0.61 mmol) and the reaction mixture was stirred in the microwave at 110 °C for 10min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 70-90% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (15 mg, 0.026 mmol, 21%) as a yellow solid after lyophilization.

[470] ^{1}H NMR (500 MHz, DMSO) δ 8.02-8.00 (m, 2H), 7.70-7.68 (m, 1H), 7.65-6.63 (m, 1H), 7.57-7.53 (m, 2H), 3.40 – 3.33 (m, 1H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 571.9 $[M+1]^+$.

Compound 151: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[471] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), (3-fluorophenyl)boronic acid (16 mg, 0.12 mmol) and Na_2CO_3 (51 mg, 0.48 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (11 mg, 0.010 mmol). The reaction mixture was heated at 85 °C for 16 hours. Add LiOH (12 mg, 0.48 mmol) and the reaction mixture was stirred in the microwave at 110 °C for 10 min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (19 mg, 0.037 mmol, 38%) as a yellow solid after lyophilization.

[472] ^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 2.1 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.53-7.47 (m, 1H), 7.36-7.30 (m, 2H), 7.25-7.18 (m, 1H), 3.38-3.33 (m, 1H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 522.0 $[M+1]^+$.

Compound 152: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-hydroxyphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[473] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the (1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-yl)boronic acid (50 mg, 0.10 mmol), 3-bromo-5-fluorophenol (23 mg, 0.12 mmol) and Na_2CO_3 (55 mg, 0.52 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (12 mg, 0.010 mmol). The reaction mixture was heated at 85 °C for 16 hours. Add LiOH (12 mg, 0.51 mmol) and the reaction mixture was stirred in the microwave at 110 °C for 15 min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 55-75% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (12 mg, 0.022 mmol, 21%) as a yellow solid after lyophilization.

[474] ^{1}H NMR (500 MHz, DMSO) δ 10.05 (s, 1H), 8.24 (d, *J* = 2.1 Hz, 1H), 8.04 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.73 (d, *J* = 8.5 Hz, 1H), 7.09 (bs, 1H), 6.80 – 6.73 (m, 2H), 6.56-6.49 (m, 1H), 3.39 – 3.31 (m, 1H), 2.28 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 538.0 $[M+1]^+$.

Compound 154: 4-(3-chloro-5-hydroxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[475] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the (1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-yl)boronic acid (50 mg, 0.10 mmol), 3-bromo-5-chlorophenol (25 mg, 0.12 mmol) and Na_2CO_3 (55 mg, 0.52

mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (12 mg, 0.010 mmol). The reaction mixture was heated at 85 °C for 16 hours. Diluted with EtOAc washed with water and brine. Dried $MgSO_4$, filtered and concentrated in vacuo. The product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 30% EtOAc in hexanes to give 4-(3-chloro-5-methoxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acidvv(24 mg, 0.042 mmol, 41%) as a yellow oil. Dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.0 mL) and treated with LiOH (5.0 mg, 0.21 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (8.9 mg, 0.016 mmol, 16%) as a yellow solid after lyophilization.

[476] ^{1}H NMR (500 MHz, DMSO) δ 10.06 (s, 1H), 8.26 (d, *J* = 2.1 Hz, 1H), 8.07 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.15 (bs, 1H), 7.01 (s, 1H), 6.88 (s, 1H), 6.76 (s, 1H), 3.42 – 3.34 (m, 1H), 2.27 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 554.0 $[M+1]^+$.

Compound 155: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(1-methyl-1H-indol-7-yl)-1H-pyrazole-5-carboxylic acid

[477] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the (1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-yl)boronic acid (50 mg, 0.10 mmol), 7-bromo-1-methyl-1H-indole (25 mg, 0.12 mmol) and Na_2CO_3 (55 mg, 0.52 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (12 mg, 0.010 mmol). The reaction mixture was heated at 85 °C for 16 hours. Add LiOH (12 mg, 0.51 mmol) and the reaction mixture was stirred in the microwave at 110 °C for 30 min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 65-85% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (6.7 mg, 0.012 mmol, 12%) as a yellow solid after lyophilization.

[478] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 2.1 Hz, 1H), 7.99 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.60 (d, *J* = 7.2 Hz, 1H), 7.28 (d, *J* = 3.1 Hz, 1H), 7.10 – 7.03 (m, 1H), 6.91 (dd, *J* = 7.1, 0.9 Hz, 1H), 6.48 (d, *J* = 3.1 Hz, 1H), 3.47 (s, 3H), 3.42 – 3.34 (m, 1H), 2.04 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H). MS (m/z): 557.0 $[M+1]^+$.

Compound 157: 1-(4-(2-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[479] methyl 4-bromo-1-(4-(2-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[480] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-

(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (97.9 mg, 0.215 mmol), the (2-chlorophenyl)boronic acid (33.6 mg, 0.215 mmol), K_2CO_3 (149 mg, 1.08 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst Pd(dtbpf)Cl_2 (10.8 mg, 0.02 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes and afforded the title compound (40.5 mg, 0.083 mmol, 38%) as a yellow oil.

[481] methyl 1-(4-(2-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[482] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(2-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (41 mg, 0.083 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (47 mg, 0.20 mmol) and Na_2CO_3 (44 mg, 0.42 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.6 mg, 0.008 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 10 to 40% EtOAc in hexanes and afforded the title compound (23 mg, 0.044 mmol, 53%) as a yellow oil.

[483] 1-(4-(2-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[484] The methyl 1-(4-(2-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (23 mg, 0.045 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (5.4 mg, 0.23 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 40-60% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (7.4 mg, 0.015 mmol, 33%) as a white solid after lyophilization.

[485] ^{1}H NMR (500 MHz, DMSO) δ 7.59-7.56 (m, 1H), 7.51-7.42 (m, 3H), 7.11 (s, 2H), 3.24-3.17(m, 1H), 2.45 (s, 6H), 2.32 (s, 3H), 1.15 (d, J = 6.7 Hz, 6H). MS (m/z): 499.3 $[M+1]^+$.

Compound 158: 1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[486] methyl 4-bromo-1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[487] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (97.9 mg, 0.215 mmol), the (3-chlorophenyl)boronic acid (33.6 mg, 0.215 mmol), K_2CO_3 (149 mg, 1.08 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst Pd(dtbpf)Cl_2 (10.8 mg, 0.02 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes and afforded the title compound (91 mg, 0.19 mmol, 85%) as a yellow oil.

[488] methyl 1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[489] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (91.0 mg, 0.187 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (105 mg, 0.45 mmol) and Na_2CO_3 (99 mg, 0.93 mmol) followed by the addition of the catalyst Pd(PPh_3)$_4$ (22 mg, 0.019 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 10 to 40% EtOAc in hexanes and afforded the title compound (15 mg, 0.028 mmol, 15%) as a yellow oil.

[490] 1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[491] The methyl 1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (15 mg, 0.029 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (3.5 mg, 0.15 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 40-60% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (2.2 mg, 0.004 mmol, 15%) as a yellow solid after lyophilization.

[492] ^{1}H NMR (500 MHz, DMSO) δ 8.04 – 7.97 (m, 2H), 7.55-7.46 (m, 2H), 7.16 (s, 2H), 3.38 – 3.30 (m, 1H), 2.46 (s, 6H), 2.33 (s, 3H), 1.24 (d, J = 6.7 Hz, 6H). MS (m/z): 499.4 $[M+1]^+$.

Compound 159: 1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

methyl 4-bromo-1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[493] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (97.9 mg, 0.215 mmol), the (4-chlorophenyl)boronic acid (33.6 mg, 0.215 mmol), K2CO3 (149 mg, 1.08 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst Pd(dtbpf)Cl2 (10.8 mg, 0.02 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes and afforded the title compound (86 mg, 0.18 mmol, 80%) as a yellow oil.

[494] methyl 1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[495] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (85.6 mg, 0.176 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (98 mg, 0.42 mmol) and Na_2CO_3 (93 mg, 0.88 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (20 mg, 0.018 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 10 to 40% EtOAc in hexanes and afforded the title compound (54 mg, 0.11 mmol, 60%) as a yellow oil.

[496] 1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[497] The methyl methyl 1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (54 mg, 0.11 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (12.6 mg, 0.525 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 40-60% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (11.5 mg, 0.023 mmol, 22%) as a yellow solid after lyophilization.

[498] ^{1}H NMR (500 MHz, DMSO) δ 8.06 – 8.01 (m, 2H), 7.55 – 7.51 (m, 2H), 7.15 (s, 2H), 3.38-3.29 (m, 1H), 2.45 (s, 6H), 2.32 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 499.4 $[M+1]^+$.

Compound 160: 1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[499] methyl 4-bromo-1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[500] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (97.9 mg, 0.215 mmol), the (2,4-dichlorophenyl)boronic acid (41 mg, 0.22 mmol), K_2CO_3 (149 mg, 1.08 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst Pd(dtbpf)Cl_2 (10.8 mg, 0.02 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes and afforded the title compound (91 mg, 0.17 mmol, 79%) as a yellow oil.

[501] methyl 1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[502] Nitrogen was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (90.7 mg, 0.174 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (97 mg, 0.42 mmol) and Na_2CO_3 (92 mg, 0.87 mmol) followed by the addition of the catalyst Pd(PPh_3)$_4$ (20 mg, 0.017 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 10 to 40% EtOAc in hexanes and afforded the title compound (58 mg, 0.11 mmol, 61%) as a yellow oil.

[503] 1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[504] The methyl 1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (58 mg, 0.11 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (12.7 mg, 0.530 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 40-60% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min) and afforded the title compound (8.9 mg, 0.017 mmol, 16%) as a yellow solid after lyophilization.

[505] ^{1}H NMR (500 MHz, DMSO) δ 7.77 (d, J = 2.1 Hz, 1H), 7.55 (dd, J = 8.3, 2.1 Hz, 1H), 7.49 (d, J = 8.3 Hz, 1H), 7.12 (s, 2H), 3.25-3.16 (m, 1H), 2.44 (s, 6H), 2.31 (s, 3H), 1.15 (d, J = 6.7 Hz, 6H). MS (m/z): 533.4 $[M+1]^+$.

Compound 164: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-methoxyphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[506] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-methoxyphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[507] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (41 mg, 0.083 mmol), 1-bromo-3-fluoro-5-methoxybenzene (20 mg, 0.10 mmol), $Pd(PPh_3)_4$ (10 mg, 0.0083 mmol), Na_2CO_3 (44 mg, 0.42 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.7 mL) was heated at 85 °C for 18 hours. LiOH (10 mg, 0.42 mmol) was added and the reaction was heated at 95 °C under microwave radiation for 30 min. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of ammonium formate) (60 to 80%). The product was lyophylised to give the title compound (16 mg, 0.028 mmol, 34%) as a pale yellow solid.

[508] ^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 1.8 Hz, 1H), 8.03 (dd, *J* = 8.5, 1.8 Hz, 1H), 7.75 (d, *J* = 8.5 Hz, 1H), 6.94 – 6.89 (m, 2H), 6.86 (d, *J* = 11.5 Hz, 1H), 3.80 (s, 3H), 3.35 (sept, J = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 552.1 $[M+1]^+$.

Compound 165: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-methoxy-5-methylphenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[509] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (41 mg, 0.083 mmol), 1-bromo-3-methoxy-5-methylbenzene (20 mg, 0.10 mmol), $Pd(PPh_3)_4$ (10 mg, 0.0083 mmol), Na_2CO_3 (44 mg, 0.42 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.7 mL) was heated at 85 °C for 18 hours. LiOH (10 mg, 0.42 mmol) was added and the reaction was heated at 95 °C under microwave radiation for 1 h. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of ammonium formate) (60 to 80%). The product was lyophylised to give the title compound (1.8 mg, 0.0033 mmol, 7%) as a pale yellow solid.

[510] ^{1}H NMR (500 MHz, DMSO) δ 8.24 (s, 1H), 8.09 – 8.03 (m, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 6.91 – 6.85 (m, 2H), 6.74 (s, 1H), 3.75 (s, 3H), 3.33 (sept, *J* = 6.7 Hz, 1H), 2.31 (s, 3H), 2.29 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 548.1 $[M+1]^+$.

Compound 167: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methylpyridin-4-yl)-1H-pyrazole-5-carboxylic acid

[511] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methylpyridin-4-yl)-1H-pyrazole-5-carboxylate

[512] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (41 mg, 0.083 mmol), 4-bromo-2-methylpyridine (17 mg, 0.10 mmol), $Pd(PPh_3)_4$ (10 mg, 0.0083 mmol), Na_2CO_3 (44 mg, 0.42 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.7 mL) was heated at 85 °C for 18 hours. water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (10 to 40%) to give the title compound (18 mg, 0.034 mmol, 41%) as a pale yellow solid.

[513] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methylpyridin-4-yl)-1H-pyrazole-5-carboxylic acid

[514] Methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methylpyridin-4-yl)-1H-pyrazole-5-carboxylate (18 mg, 0.034 mmol) was diluted in a 1:1 solution of THF and MeOH (0.34 mL). 1M NaOH (0.067 mL, 0.067 mmol) was added and the reaction was stirred for 3 days at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10mM of ammonium formate) (30 to 70%). The product was lyophilysed to give the title compound (11 mg, 0.022 mmol, 65%) as a pale yellow solid.

[515] ^{1}H NMR (500 MHz, DMSO) δ 8.52 (d, J = 5.2 Hz, 1H), 8.20 (d, J = 2.1 Hz, 1H), 8.01 (dd, J = 8.5, 2.1 Hz, 1H), 7.77 (d, J = 8.5 Hz, 1H), 7.35 (s, 1H), 7.30 – 7.26 (m, 1H), 3.35 (sept, J = 6.7 Hz, 1H), 2.52 (s, 3H), 2.34 (s, 3H), 1.24 (d, J = 6.7 Hz, 6H); MS (m/z): 519.0 $[M+1]^+$.

Compound 172: 4-cyclopropyl-1-(4-cyclopropyl-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[516] methyl 4-cyclopropyl-1-(4-cyclopropyl-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[517] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100.0 mg, 0.220 mmol), potassium cyclopropyltrifluoroborate (97.5 mg, 0.659 mmol), Cs_2CO_3 (214 mg, 0.659 mmol), $Pd(OAc)_2$

(4.93 mg, 0.022 mmol) and Butyldi-1-adamantylphosphine (15.8 mg, 0.044 mmol), nitrogen and vacuum cycles were performed (2x). A solution of Toluene/water was added (3 mL, 2:1) and nitrogen gas was bubbled through the reaction mixture for 10 min. The vial was capped and placed in an oil bath at 100 °C for 16 h. EtOAc and water were added and the aqueous layer was extracted with EtOAc (2x), dried over Na_2SO_4, filtered and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel (wet loading) using a solution of DCM in hexanes (10 to 50% gradient) to give the title compound (60.6 mg, 0.161 mmol, 73%) as yellow oil.

[518] 4-cyclopropyl-1-(4-cyclopropyl-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[519] Into a 25 mL round bottom flask, methyl 4-cyclopropyl-1-(4-cyclopropyl-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (60.6 mg, 0.161 mmol) was diluted with THF/MeOH (2 mL, 1:1). A solution of NaOH 1 M (321 µL, 0.321 mmol) was added and the reaction was stirred 16 h at rt. The reaction mixture was acidified with HCl 1 M and the crude product was concentrated under vacuum. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 25-45% MeCN/NH_4CO_3H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (15.0 mg, 0.041 mmol, 26%) as white solid after lyophilisation.

[520] ^{1}H NMR (500 MHz, MeOD) δ 3.15 (hept, *J* = 6.7 Hz, 1H), 2.33 (tt, *J* = 8.2, 4.9 Hz, 1H), 2.28 (s, 3H), 1.65 (tt, *J* = 8.5, 5.4 Hz, 1H), 1.29 (d, *J* = 6.7 Hz, 6H), 0.97 (ddd, *J* = 7.8, 4.9, 2.5 Hz, 2H), 0.94 – 0.89 (m, 2H), 0.85 (ddd, *J* = 8.5, 6.2, 4.2 Hz, 2H), 0.71 – 0.66 (m, 2H); MS (m/z): 364.3 $[M+1]^+$.

Compound 173: 4-cyclopropyl-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[521] 4-cyclopropyl-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[522] Nitrogene was passed through a solution of toluene/H_2O (2/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), potassium cyclopropyltrifluoroborate(43 mg, 0.29 mmol) and Cs_2CO_3 (94 mg, 0.29 mmol) followed by the addition of the ligand butyldi-1-adamantylphosphine (3 mg, 0.01 mmol) and the catalyst $Pd(OAc)_2$ (1 mg, 0.005 mmol). The reaction mixture was heated at 90 °C for 16 hours. Diluted with EtOAc washed with water and brine. Dried MgSO4, filtered and concentrated in vacuo. The residue was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.0 mL) and treated with LiOH (12 mg, 0.48 mmol). The reaction mixture was stirred in the microwave at 110 °C for 10 min. Evaporated in vacuo. The crude product was purified by

semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10mM, pH 3.8/Flow 45ml/min/10min) and afforded the title compound (6.2 mg, 0.013 mmol, 14%) as a yellow solid after lyophilisation.

[523] ^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 2.1 Hz, 1H), 8.00 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 3.36-3.25 (m, 1H), 2.26 (s, 3H), 1.70-1.63 (m, 1H), 1.22 (d, *J* = 6.7 Hz, 6H), 0.88-0.79 (m, 2H), 0.69 – 0.61 (m, 2H). MS (m/z): 468.1 [M+1]+.

Compound 174: 4-(3-chloro-5-isopropoxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[524] 1-bromo-3-chloro-5-isopropoxybenzene

[525] 2-iodopropane (90 μL, 1.5 mmol) was added to a mixture of 3-bromo-5-chlorophenol (200 mg, 0.964 mmol) and potassium carbonate (213 mg, 1.54 mmol) in DMF (1 mL). The reaction mixture was stirred at rt for 18 h. Water and ethyl acetate were added. The phases were separated the organic layer was washed with 1N NaOH (2x), dried with sodium sulfate, filtered and evaporated under reduced pressure to give the title compound (219 mg, 0.878 mmol, 91%).

[526] methyl 4-(3-chloro-5-isopropoxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[527] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 1-bromo-3-chloro-5-isopropoxybenzene (31 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2%) to give the title compound (49 mg, 0.080 mmol, 78%) as a pale yellow oil.

[528] 4-(3-chloro-5-isopropoxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[529] methyl 4-(3-chloro-5-isopropoxyphenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (49 mg, 0.080 mmol) was diluted in a 1:1 solution of THF and MeOH (0.80 mL). 1M NaOH (0.16 mL, 0.16 mmol) was added and the reaction was stirred for 3 days at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10mM of ammonium formate) (30 to

100%). The product was lyophilysed to give the title compound (10 mg, 0.017 mmol, 21%) as a pale yellow solid.

[530] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (s, 1H), 8.04 (d, *J* = 8.4 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.08 (s, 1H), 6.99 (s, 2H), 4.67 (d, *J* = 6.0 Hz, 1H), 3.35 (sept, J - 6.7 Hz, 1H), 2.30 (s, 3H), 1.29 (d, *J* = 6.0 Hz, 6H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 596.0 $[M+1]^+$.

Compound 175: 4-(3-chloro-5-(2-methoxyethoxy)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[531] 1-bromo-3-chloro-5-(2-methoxyethoxy)benzene

[532] 1-bromo-2-methoxyethane (136 μL, 1.45 mmol) was added to a mixture of 3-bromo-5-chlorophenol (200 mg, 0.964 mmol), potassium iodide (240 mg, 1.45 mmol) and potassium carbonate (213 mg, 1.54 mmol) in DMF (1 mL). The reaction mixture was stirred at 100 °C for 18 h. Water and ethyl acetate were added. The phases were separated the organic layer was washed with 1N NaOH (2x), dried with sodium sulfate, filtered and evaporated under reduced pressure to give the title compound (170 mg, 0.67 mmol, 70%).

[533] methyl 4-(3-chloro-5-(2-methoxyethoxy)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[534] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 1-bromo-3-chloro-5-(2-methoxyethoxy)benzene (33 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (10 to 20%) to give the title compound (23 mg, 0.037 mmol, 36%) as a pale yellow oil.

[535] 4-(3-chloro-5-(2-methoxyethoxy)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[536] methyl 4-(3-chloro-5-(2-methoxyethoxy)phenyl)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (23 mg, 0.037 mmol) was diluted in a 1:1 solution of THF and MeOH (0.37 mL). 1M NaOH (0.073 mL, 0.073 mmol) was added and the reaction was stirred for 3 days at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10mM of ammonium formate) (30 to

70%). The product was lyophilysed to give the title compound (10 mg, 0.016 mmol, 45%) as a pale yellow solid.

[537] ^{1}H NMR (500 MHz, DMSO) δ 8.24 (s, 1H), 8.06 (d, *J* = 8.2 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.15 (s, 1H), 7.07 (s, 1H), 7.01 (s, 1H), 4.16 – 4.12 (m, 2H), 3.68 – 3.65 (m, 2H), 3.35 (sept, J = 6.7 Hz, 1H), 3.31 (s, 3H), 2.30 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 611.9 $[M+1]^+$.

Compound 176: 1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[538] methyl 4-bromo-1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[539] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (97.9 mg, 0.215 mmol), (3-chlorophenyl)boronic acid (33.6 mg, 0.215 mmol) and K_2CO_3 (149 mg, 1.08 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11 mg, 0.017 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (0 to 10% gradient) and afforded the title compound (26 mg, 0.053 mmol, 24%) as yellow oil.

[540] 1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[541] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(3-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (26 mg, 0.053 mmol), (3-fluorophenyl)boronic acid (9.0 mg, 0.064 mmol) and Na_2CO_3 (28 mg, 0.27 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (6.2 mg, 0.0054 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (6.3 mg, 0.27 mmol) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 30 min. The solvent was evaporated under vacuum and the product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), resulting in the title compound (2.8 mg, 0.0057 mmol, 11%) as yellow solid after lyophilization.

[542] ^{1}H NMR (500 MHz, DMSO) δ 8.04-8.01 (m, 1H), 8.00-7.96 (m, 1H), 7.55-7.46 (m, 3H), 7.39-7.30 (m, 2H), 7.25-7.16 (m, 1H), 3.40 – 3.29 (m, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 488.1 $[M+1]^+$.

Compound 177: 1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[543] methyl 4-bromo-1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[544] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (97.9 mg, 0.215 mmol), (4-chlorophenyl)boronic acid (33.6 mg, 0.215 mmol) and K_2CO_3 (149 mg, 1.08 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11 mg, 0.017 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (0 to 10% gradient) and afforded the title compound (54 mg, 0.11 mmol, 50%) as yellow oil.

[545] 1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[546] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(4-chlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (54 mg, 0.11 mmol), (3-fluorophenyl)boronic acid (18 mg, 0.13 mmol) and Na_2CO_3 (59 mg, 0.55 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (13 mg, 0.011 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (13 mg, 0.56 mmol) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 15 min. The solvent was evaporated under vacuum and the product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), resulting in the title compound (8.4 mg, 0.017 mmol, 16%) as yellow solid after lyophilization.

[547] ^{1}H NMR (500 MHz, DMSO) δ 8.06 – 8.02 (m, 2H), 7.56 – 7.47 (m, 3H), 7.37-7.30 (m, 2H), 7.24-7.17 (m, 1H), 3.36 – 3.27 (m, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 488.1 $[M+1]^+$.

Compound 178: 1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[548] methyl 4-bromo-1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[549] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (97.9 mg, 0.215 mmol), (2,4-dichlorophenyl)boronic acid (41.0 mg, 0.215 mmol) and K_2CO_3 (149 mg, 1.08 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11 mg, 0.017 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (0 to 10% gradient) and afforded the title compound (54 mg, 0.10 mmol, 47%) as yellow oil.

[550] 1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[551] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(2,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (54 mg, 0.10 mmol), (3-fluorophenyl)boronic acid (17 mg, 0.12 mmol) and Na_2CO_3 (55 mg, 0.51 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (12 mg, 0.010 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (12 mg, 0.52 mmol) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 15 min. The solvent was evaporated under vacuum and the product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), resulting in the title compound (8.0 mg, 0.015 mmol, 15%) as yellow solid after lyophilization.

[552] ^{1}H NMR (500 MHz, DMSO) δ 7.77 (d, *J* = 2.1 Hz, 1H), 7.55 (dd, *J* = 8.3, 2.1 Hz, 1H), 7.52 – 7.45 (m, 2H), 7.34-7.27 (m, 2H), 7.22-7.15 (m, 1H), 3.25-3.15 (m, 1H), 2.30 (s, 3H), 1.15 (d, *J* = 6.7 Hz, 6H). MS (m/z): 522.0 $[M+1]^+$.

Compound 179: 4-bromo-1-(4-(6-(3-fluorophenyl)pyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[553] methyl 4-bromo-1-(4-(6-chloropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[554] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), (6-chloropyridin-3-yl)boronic acid (34.6 mg, 0.220 mmol) and K_2CO_3 (152 mg, 1.10 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (14.3 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (wet loading) using a solution of EtOAc in hexanes (2 to 10% gradient) and afforded the title compound (39.0 mg, 0.080 mmol, 36%) as yellow oil.

[555] 4-bromo-1-(4-(6-(3-fluorophenyl)pyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[556] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(6-chloropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (39.0 mg, 0.080 mmol), 3-fluorophenylboronic acid (13.4 mg, 0.096 mmol) and Na_2CO_3 (42.4 mg, 0.4 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.24 mg, 0.008 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (16.8 mg, 0.400 mmol) was added to the reaction mixture and stirred under microwave radiation at 100 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 40-60% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (5.65 mg, 0.011 mmol, 13%) as white solid after lyophilisation.

[557] ^{1}H NMR (500 MHz, DMSO) δ 9.29 (d, *J* = 1.9 Hz, 1H), 8.50 (dd, *J* = 8.3, 2.3 Hz, 1H), 8.20 – 8.11 (m, 1H), 8.03 (d, *J* = 7.9 Hz, 1H), 7.98 (d, *J* = 10.2 Hz, 1H), 7.57 (dd, *J* = 14.1, 8.1 Hz, 1H), 7.30 (td, *J* = 8.4, 2.0 Hz, 1H), 3.37 – 3.29 (m, 1H), 2.21 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 533.1 $[M+1]^+$.

Compound 180: (R)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-((tetrahydrofuran-3-yl)oxy)pyridin-4-yl)-1H-pyrazole-5-carboxylic acid

[558] 4-bromo-6-methylpyridin-2-ol

[559] 4-hydroxy-6-methylpyridin-2(1H)-one (500 mg, 4.00 mmol) was mixed with phosphoryl bromide (881 mg, 3.07 mmol) and DMF (1.8 mL) was added. The reaction mixture was heated at 110 °C. After 5 min, more DMF (1.8 mL) was added and the reaction was heated at 110 °C for 1 h. The reaction was cooled down and ice cold water was carefully added, followed by solid sodium bicarbonate until pH reached 7. The precipitate

was filtered, rinced with cold water and let dry under air to give the title compound (520 mg, 2.77 mmol, 90%).

[560] (R)-4-bromo-2-methyl-6-((tetrahydrofuran-3-yl)oxy)pyridine

[561] Diisopropyl diazocarboxylate (242 mg, 1.20 mmol) was added to a solution of 4-bromo-6-methylpyridin-2-ol (150 mg, 0.798 mmol), (S)-tetrahydrofuran-3-ol (88 mg, 0.997 mmol) and triphenylphosphine (314 mg, 1.20 mmol) in THF (3.5 mL). The reaction mixture was stirred at r.t. for 18 h. The mixture was oncentrated to dryness and purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (40%) to give the title compound (44 mg, 0.17 mmol, 21%) as a pale yellow oil.

[562] (R)-methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-((tetrahydrofuran-3-yl)oxy)pyridin-4-yl)-1H-pyrazole-5-carboxylate

[563] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), (R)-4-bromo-2-methyl-6-((tetrahydrofuran-3-yl)oxy)pyridine (32 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (10 to 40%) to give the title compound (10 mg, 0.017 mmol, 16%) as a pale yellow oil.

[564] (R)-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-((tetrahydrofuran-3-yl)oxy)pyridin-4-yl)-1H-pyrazole-5-carboxylic acid

[565] (R)-methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(2-methyl-6-((tetrahydrofuran-3-yl)oxy)pyridin-4-yl)-1H-pyrazole-5-carboxylate (10 mg, 0.017 mmol) was diluted in a 1:1 solution of THF and MeOH (0.17 mL). 1M NaOH (0.034 mL, 0.034 mmol) was added and the reaction was stirred for 18 h at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by reverse chromatography on C-18 column using a solution of MeCN in water (containing 10mM of ammonium formate) (30 to 70%). The product was lyophilysed to give the title compound (1.8 mg, 0.0030 mmol, 18%) as a pale yellow solid.

[566] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (s, 1H), 8.04 (d, J = 8.3 Hz, 1H), 7.76 (d, J = 8.5 Hz, 1H), 6.97 (s, 1H), 6.72 (s, 1H), 5.53 – 5.48 (m, 1H), 3.93 (dd, J = 10.2, 4.8 Hz, 1H), 3.89 – 3.82 (m, 1H), 3.80 – 3.73 (m, 2H), 3.35 (hept, J = 6.7 Hz, 1H), 2.41 (s, 3H), 2.33 (s, 3H), 2.29 – 2.18 (m, 1H), 2.06 – 1.98 (m, 1H), 1.24 (d, J = 6.7 Hz, 6H); MS (m/z): 605.2 $[M+1]^+$.

Compound 181: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-(2-methoxyethoxy)-6-methylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[567] 4-bromo-2-(2-methoxyethoxy)-6-methylpyridine

[568] Diisopropyl diazocarboxylate (161 mg, 0.798 mmol) was added to a solution of 4-bromo-6-methylpyridin-2-ol (100 mg, 0.532 mmol), 2-methoxyethanol (52 μL, 0.67 mmol) and triphenylphosphine (209 mg, 0.798 mmol) in THF (2.3 mL). The reaction mixture was stirred at r.t. for 18 h. Some methanol was addand, followed by water. The mixture was extracted with ethyl acetate (3x) and the combined organic layers were dried with sodium sulfate, filtered and evaporated. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes to give the title compound (82 mg, 0.33 mmol, 63%).

[569] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-(2-methoxyethoxy)-6-methylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[570] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 4-bromo-2-(2-methoxyethoxy)-6-methylpyridine (30 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (10 to 50%) to give the title compound (28 mg, 0.046 mmol, 45%) as a pale yellow oil.

[571] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-(2-methoxyethoxy)-6-methylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[572] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-(2-methoxyethoxy)-6-methylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (28 mg, 0.046 mmol) was diluted in a 1:1 solution of THF and MeOH (0.46 mL). 1M NaOH (0.092 mL, 0.092 mmol) was added and the reaction was stirred for 18 h at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10mM of ammonium formate) (50 to 70%). The product was lyophilysed to give the title compound (2.8 mg, 0.0047 mmol, 10%) as a pale yellow solid.

[573] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (s, 1H), 8.04 (d, J = 8.4 Hz, 1H), 7.76 (d, J = 8.5 Hz, 1H), 6.96 (s, 1H), 6.72 (s, 1H), 4.40 – 4.35 (m, 2H), 3.69 – 3.64 (m, 2H), 3.35 (sept, J = 6.7 Hz, 1H), 2.41 (s, 3H), 2.33 (s, 3H), 1.24 (d, J = 6.7 Hz, 6H); MS (m/z): 592.9 $[M+1]^+$.

Compound 183: 1-(4-(cyclohex-1-en-1-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[574] methyl 4-bromo-1-(4-(cyclohex-1-en-1-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[575] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), 2-(cyclohex-1-en-1-yl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (45.8 mg, 0.220 mmol) and K_2CO_3 (152 mg, 1.10 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (14.3 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (0 to 20% gradient) and afforded the title compound (84.4 mg, 0.185 mmol, 84%) as yellow oil.

[576] 1-(4-(cyclohex-1-en-1-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[577] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(cyclohex-1-en-1-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (84.4 mg, 0.185 mmol), 3-fluorophenylboronic acid (31.0 mg, 0.22 mmol) and Na_2CO_3 (97.9 mg, 0.92 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (21.4 mg, 0.02 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. The reaction mixture was diluted with EtOAc and transferred into an extraction funnel. The layers were separated and the aqueous layer was extracted with EtOAc (3x). The combined organic layers were dried over Na_2SO_4, filtered and concentrated under vacuum. Into a 5 mL glass microwave vial, was placed the crude product and LiOH (43.1 mg, 1.80 mmol). THF (1.5 mL), MeOH (0.5 mL) and water (0.5 mL) were added. The vial was heated to 120 °C under microwave radiation for 10 minutes. THF, MeOH and water were removed under vacuum and the crude product was purified using a semi prep HPLC-MS (X-Bridge 30x50, eluted with 55-75% MeCN/ NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compund (15.0 mg, 0.033 mmol, 18%) as yellow solid after lyophilisation.

[578] ^1H NMR (500 MHz, DMSO) δ 7.52 (dd, J = 14.5, 8.1 Hz, 1H), 7.32 – 7.27 (m, 2H), 7.24 (t, J = 8.5 Hz, 1H), 6.41 – 6.37 (m, 1H), 3.28 (m, 1H), 2.46 – 2.41 (m, 2H), 2.29 (s, 3H),

2.21 (ddd, J = 9.8, 6.4, 3.4 Hz, 2H), 1.72 – 1.65 (m, 2H), 1.63 – 1.57 (m, 2H), 1.26 (d, J = 6.7 Hz, 6H); MS (m/z): 458.3 $[M+1]^+$.

Compound 185: 4-(3-chloro-5-methoxyphenyl)-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[579] methyl 4-bromo-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[580] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (200 mg, 0.439 mmol), phenylboronic acid (53.6 mg, 0.439 mmol) and K_2CO_3 (304 mg, 2.20 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (28.6 mg, 0.044 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (wet loading) using a solution of DCM in hexanes (10 to 100% gradient) and afforded the title compound (163 mg, 0.360 mmol, 82%) as brown oil.

[581] 4-(3-chloro-5-methoxyphenyl)-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[582] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(5-(isopropylthio)-4-phenylthiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (54.0 mg, 0.119 mmol), 2-(3-chloro-5-methoxyphenyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (38.5 mg, 0.096 mmol) and Na_2CO_3 (63.3 mg, 0.597 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (13.8 mg, 0.012 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (25.0 mg, 0.597 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 55-75% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (17.15 mg, 0.034 mmol, 29%) as white solid after lyophilisation.

[583] ^1H NMR (500 MHz, DMSO) δ 8.02 (d, J = 7.5 Hz, 2H), 7.47 (t, J = 7.5 Hz, 2H), 7.40 (t, J = 7.3 Hz, 1H), 7.17 – 6.96 (m, 3H), 3.80 (s, 3H), 3.35 – 3.20 (m, 1H), 2.30 (s, 3H), 1.22 (d, J = 6.7 Hz, 6H). MS (m/z): 500.1 $[M+1]^+$.

Compound 186: 4-(3-fluorophenyl)-1-(4-(4-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[584] methyl 4-bromo-1-(4-(4-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[585] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), 4-fluorophenylboronic acid (26.1 mg, 0.220 mmol) and K_2CO_3 (152 mg, 1.10 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (14.3 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (1% isochratic) and afforded the title compound (81.3 mg, 0.173 mmol, 79%) as yellow oil.

[586] 4-(3-fluorophenyl)-1-(4-(4-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[587] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(4-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (40.0 mg, 0.085 mmol), 3-fluorophenylboronic acid (14.3 mg, 0.102 mmol) and Na_2CO_3 (45.1 mg, 0.425 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.83 mg, 0.009 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (17.8 mg, 0.425 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 55-75% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (7.13 mg, 0.015 mmol, 18%) as white solid after lyophilisation.

[588] ^1H NMR (500 MHz, DMSO) δ 8.10 – 8.01 (m, *J* = 8.7, 5.6 Hz, 2H), 7.59 – 7.43 (m, *J* = 6.6 Hz, 1H), 7.42 – 7.26 (m, *J* = 8.9 Hz, 4H), 7.25 – 7.14 (m, 1H), 3.32 – 3.24 (m, 1H), 2.30 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 472.1 $[M+1]^+$.

Compound 187: 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[589] methyl 4-bromo-1-(5-(isopropylthio)-4-(4-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[590] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), 4-methoxyphenylboronic acid (28.4 mg, 0.220 mmol) and K_2CO_3 (152 mg, 1.10 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (14.3 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (1 to 4% gradient) and afforded the title compound (43.6 mg, 0.090 mmol, 41%) as yellow oil.

[591] 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[592] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(5-(isopropylthio)-4-(4-methoxyphenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (43.0 mg, 0.089 mmol), 3-fluorophenylboronic acid (15.0 mg, 0.107 mmol) and Na_2CO_3 (47.2 mg, 0.446 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (10.3 mg, 0.009 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (18.7 mg, 0.446 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 55-75% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (4.07 mg, 0.008 mmol, 9%) as white solid after lyophilisation.

[593] ^{1}H NMR (500 MHz, DMSO) δ 8.00 (s, 2H), 7.54 – 7.11 (m, 4H), 7.02 (d, *J* = 8.9 Hz, 2H), 3.81 (s, 3H), 3.37 – 3.24 (m, 1H), 2.30 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H); MS (m/z): 484.1 $[M+1]^+$.

Compound 188: 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(methylsulfonyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[594] methyl 4-bromo-1-(5-(isopropylthio)-4-(4-(methylsulfonyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[595] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), 4-methylsulfonylphenylboronic acid (37.4 mg, 0.187 mmol) and K2CO3 (152 mg, 1.10 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a

solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst Pd(dtbpf)Cl2 (14.3 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (1 to 5% gradient) and afforded the title compound (34.9 mg, 0.066 mmol, 30%) as yellow oil.

[596] 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(methylsulfonyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[597] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(5-(isopropylthio)-4-(4-(methylsulfonyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (34.9 mg, 0.066 mmol), 3-fluorophenylboronic acid (11.0 mg, 0.079 mmol) and Na_2CO_3 (34.9 mg, 0.329 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (7.61 mg, 0.007 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (13.8 mg, 0.329 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 30-50% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (2.28 mg, 0.004 mmol, 7%) as white solid after lyophilisation.

[598] ^{1}H NMR (500 MHz, DMSO) δ 8.24 (d, *J* = 8.4 Hz, 2H), 8.01 (d, *J* = 8.6 Hz, 2H), 7.55 – 7.43 (m, *J* = 6.9 Hz, 1H), 7.43 – 7.30 (m, *J* = 10.8 Hz, 2H), 7.25 – 7.13 (m, *J* = 9.8 Hz, 1H), 3.42 – 3.35 (m, *J* = 13.6, 6.9 Hz, 1H), 3.27 (s, 3H), 2.31 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 532.3 $[M+1]^+$.

Compound 189: 1-(4-(4-fluoro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[599] methyl 4-bromo-1-(4-(4-fluoro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[600] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), 4-fluoro-3-methoxyphenylboronic acid (31.7 mg, 0.187 mmol) and K_2CO_3 (152 mg, 1.10 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (14.3 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product

was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (1 to 5% gradient) and afforded the title compound (43.2 mg, 0.086 mmol, 39%) as yellow oil.

[601] 1-(4-(4-fluoro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[602] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(4-fluoro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (43.2 mg, 0.086 mmol), 3-fluorophenylboronic acid (14.5 mg, 0.104 mmol) and Na_2CO_3 (45.8 mg, 0.432 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.98 mg, 0.009 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (18.1 mg, 0.432 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 10 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 55-75% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound (11.69 mg, 0.023 mmol, 27%) as white solid after lyophilisation.

[603] ^{1}H NMR (500 MHz, DMSO) δ 7.95 – 7.86 (m, 1H), 7.73 – 7.65 (m, 1H), 7.51 – 7.44 (m, 1H), 7.40 – 7.27 (m, 2H), 7.22 – 7.13 (m, 1H), 3.90 (s, 3H), 3.37 – 3.24 (m, 1H), 2.31 (s, 3H), 1.24 (d, J = 6.7 Hz, 6H); MS (m/z): 502.4 $[M+1]^+$.

Compound 190: 1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[604] methyl 4-bromo-1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[605] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), the (4-chloro-3-methylphenyl)boronic acid (38 mg, 0.20 mmol), K_2CO_3 (152 mg, 1.10 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (90 mg, 0.18 mmol, 78%) as a yellow oil.

[606] methyl 1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[607] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (44 mg, 0.088 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (49 mg, 0.21 mmol) and Na_2CO_3 (47 mg, 0.44 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (10 mg, 0.0087 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 10 to 40% EtOAc in hexanes to give the title compound (26 mg, 0.049 mmol, 56%) as a yellow oil.

[608] 1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[609] The methyl 1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (26 mg, 0.049 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (5.9 mg, 0.25 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 45-65% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (4.8 mg, 0.0094 mmol, 19%) as a yellow solid after lyophilisation.

[610] ^{1}H NMR (500 MHz, DMSO) δ 7.94 (d, *J* = 1.9 Hz, 1H), 7.87 (dd, *J* = 8.4, 1.9 Hz, 1H), 7.50 (d, *J* = 8.4 Hz, 1H), 7.16 (s, 2H), 3.34 – 3.27 (m, 1H), 2.46 (s, 6H), 2.39 (s, 3H), 2.33 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 513.2 [M+1]+.

Compound 191: 1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[611] methyl 1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate

[612] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (44 mg, 0.088 mmol), (3-fluorophenyl)boronic acid (15 mg, 0.11 mmol) and Na_2CO_3 (47 mg, 0.44 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (10 mg, 0.0087 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (22 mg, 0.042 mmol, 47%) as a yellow oil.

[613] 1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[614] The methyl 1-(4-(4-chloro-3-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate (22 mg, 0.042 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (5.0 mg, 0.21 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (7.3 mg, 0.015 mmol, 35%) as a yellow solid after lyophilisation.

[615] ^{1}H NMR (500 MHz, DMSO) δ 7.94 (m, 1H), 7.86 (dd, *J* = 8.4, 1.9 Hz, 1H), 7.53 – 7.46 (m, 2H), 7.37-7.30 (m, 2H), 7.25-7.17 (m, 1H), 3.37-3.25 (m, 1H), 2.39 (s, 3H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 502.2 [M+1]+.

Compound 192: 1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[616] methyl 4-bromo-1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[617] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), the (4-chloro-3,5-difluorophenyl)boronic acid (38 mg, 0.20 mmol), K_2CO_3 (152 mg, 1.10 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst Pd(dtbpf)Cl_2 (11 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (90 mg, 0.17 mmol, 78%) as a yellow oil.

[618] methyl 1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[619] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (44 mg, 0.084 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (47 mg, 0.20 mmol) and Na_2CO_3 (45 mg, 0.42 mmol) followed by the addition of the catalyst Pd(PPh_3)$_4$ (9.7 mg, 0.0084 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 10 to 40% EtOAc in hexanes to give the title compound (17 mg, 0.031 mmol, 37%) as a yellow oil.

[620] 1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[621] The methyl 1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (17 mg, 0.031 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (3.7 mg, 0.16 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 40-60% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (3.2 mg, 0.0060 mmol, 19%) as a yellow solid after lyophilisation.

[622] ^{1}H NMR (500 MHz, DMSO) δ 7.97 (s, 1H), 7.95 (s, 1H), 7.18 (s, 2H), 3.43 – 3.32 (m, 1H), 2.45 (s, 6H), 2.33 (s, 3H), 1.26 (d, *J* = 6.7 Hz, 6H). MS (m/z): 535.2 [M+1]+.

Compound 193: 1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[623] methyl 1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate

[624] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (44 mg, 0.084 mmol), (3-fluorophenyl)boronic acid (14 mg, 0.10 mmol) and Na_2CO_3 (45 mg, 0.42 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.7 mg, 0.0084 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (16 mg, 0.030 mmol, 36%) as a yellow oil.

[625] 1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[626] The methyl 1-(4-(4-chloro-3,5-difluorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate (16 mg, 0.030 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (3.6 mg, 0.15 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (5.1 mg, 0.010 mmol, 32%) as a yellow solid after lyophilisation.

[627] ^{1}H NMR (500 MHz, DMSO) δ 7.97 (s, 1H), 7.95 (s, 1H), 7.52-7.45 (m,1H), 7.39-7.32 (m, 2H), 7.23-7.16 (m, 1H), 3.44 – 3.32 (m, 1H), 2.31 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H). MS (m/z): 524.2 [M+1]+.

Compound 194: 1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[628] methyl 4-bromo-1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[629] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), the (4-chloro-3-methoxyphenyl)boronic acid (37 mg, 0.20 mmol), K_2CO_3 (152 mg, 1.10 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (83 mg, 0.16 mmol, 72%) as a yellow oil.

[630] methyl 1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[631] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (41 mg, 0.079 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (44 mg, 0.19 mmol) and Na_2CO_3 (42 mg, 0.40 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.2 mg, 0.0080 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 10 to 40% EtOAc in hexanes to give the title compound (20 mg, 0.036 mmol, 36%) as a yellow oil.

[632] 1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[633] The methyl 1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (20 mg, 0.036 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (4.3 mg, 0.18 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 40-60% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min),

and afforded the title compound (8.5 mg, 0.016 mmol, 44%) as a yellow solid after lyophilisation.

[634] ^{1}H NMR (500 MHz, DMSO) δ 7.86-7.83 (m, 1H), 7.71 (dd, *J* = 8.4, 1.8 Hz, 1H), 7.51 (d, *J* = 8.4 Hz, 1H), 7.16 (s, 2H), 3.91 (s, 3H), 3.43 – 3.31 (m, 1H), 2.46 (s, 6H), 2.33 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H). MS (m/z): 529.3 [M+1]+.

Compound 195: 1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[635] methyl 1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate

[636] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (41 mg, 0.079 mmol), (3-fluorophenyl)boronic acid (13 mg, 0.10 mmol) and Na_2CO_3 (42 mg, 0.40 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.2 mg, 0.0080 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (24 mg, 0.045 mmol, 56%) as a yellow oil.

[637] 1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[638] The methyl 1-(4-(4-chloro-3-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate (24 mg, 0.045 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (5.4 mg, 0.23 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (6.7 mg, 0.013 mmol, 29%) as a yellow solid after lyophilisation.

[639] ^{1}H NMR (500 MHz, DMSO) δ 7.89-7.85 (m, 1H), 7.73-7.69 (m, 1H), 7.54 – 7.45 (m, 2H), 7.40-7.31 (m, 2H), 7.24-7.16 (m, 1H), 3.91 (s, 3H), 3.41 – 3.31 (m, 1H), 2.31 (s, 3H), 1.25 (d, *J* = 6.7 Hz, 6H). MS (m/z): 518.3 [M+1]+.

Compound 196: 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[640] methyl 4-bromo-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[641] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-

(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), the (4-(trifluoromethyl)phenyl)boronic acid (38 mg, 0.20 mmol), K_2CO_3 (152 mg, 1.10 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst Pd(dtbpf)Cl_2 (11 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (87 mg, 0.17 mmol, 75%) as a yellow oil.

[642] methyl 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[643] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (43 mg, 0.083 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (46 mg, 0.20 mmol) and Na_2CO_3 (44 mg, 0.41 mmol) followed by the addition of the catalyst Pd(PPh_3)$_4$ (9.5 mg, 0.0082 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 10 to 40% EtOAc in hexanes to give the title compound (25 mg, 0.046 mmol, 56%) as a yellow oil.

[644] 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[645] The methyl 4-(2,6-dimethylpyridin-4-yl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (25 mg, 0.046 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (5.5 mg, 0.23 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 40-60% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (6.3 mg, 0.012 mmol, 26%) as a yellow solid after lyophilisation.

[646] ^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 8.3 Hz, 2H), 7.83 (d, *J* = 8.3 Hz, 2H), 7.16 (s, 2H), 3.44 – 3.31 (m, 1H), 2.46 (s, 6H), 2.33 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 533.4 [M+1]+.

Compound 197: 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[647] methyl 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[648] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of methyl 4-bromo-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (43 mg, 0.083 mmol), (3-fluorophenyl)boronic acid (14 mg, 0.10 mmol) and Na_2CO_3 (44 mg, 0.41 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.5 mg, 0.0082 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (30 mg, 0.056 mmol, 68%) as a yellow oil.

[649] 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[650] The methyl 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (30 mg, 0.056 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (2.5 mL) and treated with LiOH (6.7 mg, 0.28 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (8.9 mg, 0.017 mmol, 30%) as a yellow solid after lyophilisation.

[651] ^{1}H NMR (500 MHz, DMSO) δ 8.21 (d, *J* = 8.3 Hz, 2H), 7.83 (d, *J* = 8.3 Hz, 2H), 7.53-7.46 (m, 1H), 7.38-7.31 (m, 2H), 7.25-7.18 (m, 1H), 3.44 – 3.31 (m, 1H), 2.30 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 522.3 [M+1]+.

Compound 198: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methyl-5-(oxetan-3-yloxy)phenyl)-1H-pyrazole-5-carboxylic acid

[652] 3-(3-bromo-5-methylphenoxy)oxetane

[653] Diisopropyl diazocarboxylate (292 mg, 1.45 mmol) was added to a solution of 3-bromo-5-methylphenol (200 mg, 0.964 mmol), oxetan-3-ol (89 mg, 1.2 mmol) and triphenylphosphine (379 mg, 1.45 mmol) in THF (4.2 mL). The reaction mixture was stirred at r.t. for 18 h. Ethyl acetate was added and the mixture was washed with 1N NaOH (3x). The organic layer was dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (10%) to give the title compound (218 mg, 0.827 mmol, 86%) as a colorless oil.

[654] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methyl-5-(oxetan-3-yloxy)phenyl)-1H-pyrazole-5-carboxylate

[655] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 3-(3-bromo-5-methylphenoxy)oxetane (33 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2 to 5%) to give the title compound (50 mg, 0.080 mmol, 78%) as a pale yellow oil.

[656] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methyl-5-(oxetan-3-yloxy)phenyl)-1H-pyrazole-5-carboxylic acid

[657] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-4-(3-methyl-5-(oxetan-3-yloxy)phenyl)-1H-pyrazole-5-carboxylate (50 mg, 0.080 mmol) was diluted in a 1:1 solution of THF and MeOH (0.8 mL). 1M NaOH (0.16 mL, 0.16 mmol) was added and the reaction was stirred for 18 h at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10mM of ammonium formate) (55 to 75%). The product was lyophilysed to give the title compound (7.3 mg, 0.012 mmol, 15%) as a pale yellow solid.

[658] ^{1}H NMR (500 MHz, DMSO) δ 8.22 (d, *J* = 1.7 Hz, 1H), 8.04 (dd, *J* = 8.5, 1.8 Hz, 1H), 7.74 (d, *J* = 8.5 Hz, 1H), 7.17 (s, 1H), 6.89 (s, 2H), 5.33 (d, *J* = 5.2 Hz, 1H), 4.95 (t, *J* = 7.0 Hz, 2H), 4.56 (dd, *J* = 8.0, 4.9 Hz, 2H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 610.0 $[M+1]^+$.

Compound 199: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-methoxy-6-methylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[659] 4-bromo-2-methoxy-6-methylpyridine

[660] Diisopropyl diazocarboxylate (323 mg, 1.60 mmol) was added to a solution of 4-bromo-6-methylpyridin-2-ol (200 mg, 1.06 mmol), methanol (54 μL, 1.3 mmol) and triphenylphosphine (419 mg, 1.60 mmol) in THF (4.6 mL). The reaction mixture was stirred at r.t. for 18 h. Ethyl acetate was added and the mixture was washed with 1N NaOH (3x). The organic layer was dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (5 to 10%) to give the title compound (65 mg, 0.32 mmol, 30%).

[661] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-methoxy-6-methylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[662] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 4-bromo-2-methoxy-6-methylpyridine (25 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (5%) to give the title compound (27 mg, 0.048 mmol, 47%) as a pale yellow oil.

[663] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-methoxy-6-methylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[664] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2-methoxy-6-methylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (27 mg, 0.048 mmol) was diluted in a 1:1 solution of THF and MeOH (0.48 mL). 1M NaOH (0.096 mL, 0.096 mmol) was added and the reaction was stirred for 18 h at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10mM of ammonium formate) (50 to 70%). The product was lyophilysed to give the title compound (9.3 mg, 0.017 mmol, 35%) as a pale yellow solid.

[665] ^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 2.0 Hz, 1H), 8.02 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.78 (d, *J* = 8.5 Hz, 1H), 6.94 (s, 1H), 6.68 (s, 1H), 3.87 (s, 3H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.44 (s, 3H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 549.4 $[M+1]^+$.

Compound 200: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-(oxetan-3-yloxy)phenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[666] 3-(3-bromo-5-fluorophenoxy)oxetane

[667] Diisopropyl diazocarboxylate (318 mg, 1.57 mmol) was added to a solution of 3-bromo-5-fluorophenol (200 mg, 1.05 mmol), oxetan-3-ol (97 mg, 1.3 mmol) and triphenylphosphine (412 mg, 1.57 mmol) in THF (4.6 mL). The reaction mixture was stirred at r.t. for 18 h. Ethyl acetate was added and the mixture was washed with 1N NaOH (3x). The organic layer was dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a

solution of ethyl acetate in hexanes (10 to 20%) to give the title compound (186 mg, 0.753 mmol, 72%) as a colorless oil.

[668] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-(oxetan-3-yloxy)phenyl)-3-methyl-1H-pyrazole-5-carboxylate

[669] A solution of 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-4-ylboronic acid (50 mg, 0.10 mmol), 3-(3-bromo-5-fluorophenoxy)oxetane (30 mg, 0.12 mmol), $Pd(PPh_3)_4$ (12 mg, 0.10 mmol), Na_2CO_3 (54 mg, 0.51 mmol) in degassed 1,4-dioxane and H_2O (4:1, 2.1 mL) was heated at 85 °C for 18 hours. water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2 to 20%) to give the title compound (26 mg, 0.043 mmol, 42%) as a pale yellow oil.

[670] 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-(oxetan-3-yloxy)phenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[671] methyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluoro-5-(oxetan-3-yloxy)phenyl)-3-methyl-1H-pyrazole-5-carboxylate (26 mg, 0.043 mmol) was diluted in a 1:1 solution of THF and MeOH (0.43 mL). 1M NaOH (0.086 mL, 0.086 mmol) was added and the reaction was stirred for 18 h at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10mM of ammonium formate) (50 to 70%). The product was lyophilysed to give the title compound (13 mg, 0.022 mmol, 49%) as a pale yellow solid.

[672] ^{1}H NMR (500 MHz, DMSO) δ 8.19 (d, *J* = 1.9 Hz, 1H), 8.01 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.77 (d, *J* = 8.5 Hz, 1H), 6.94 (d, *J* = 8.8 Hz, 1H), 6.76 (d, *J* = 10.7 Hz, 1H), 6.71 (s, 1H), 5.33 (quint., *J* = 5.3 Hz, 1H), 4.94 (t, *J* = 6.7 Hz, 2H), 4.57 (dd, *J* = 7.2, 5.0 Hz, 2H), 3.36 (hept, *J* = 6.7 Hz, 1H), 2.32 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H); MS (m/z): 594.3 $[M+1]^+$.

Compound 201: 1-(4-(benzofuran-2-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid and 4-(3-fluorophenyl)-1-(4-(3-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[673] methyl 1-(4-(benzofuran-2-yl)-5-(isopropylthio)thiazol-2-yl)-4-bromo-3-methyl-1H-pyrazole-5-carboxylate

[674] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-

yl)-3-methyl-1H-pyrazole-5-carboxylate (200 mg, 0.439 mmol), benzofuran-2-ylboronic acid (66.8 mg, 0.439 mmol) and K_2CO_3 (304 mg, 2.20 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of THF (2 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (28.6 mg, 0.044 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel (wet loading with DCM) using a solution of DCM in hexanes (10 to 50% gradient) and afforded the title compound and some starting material (43.5 mg, 0.088 mmol, 20%) as yellow oil.

[675] methyl 1-(4-(benzofuran-2-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate and methyl 4-(3-fluorophenyl)-1-(4-(3-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[676] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the pyrazoles (43.5 mg, 0.088 mmol), 3-fluorophenylboronic acid (14.8 mg, 0.106 mmol) and Na_2CO_3 (46.8 mg, 0.441 mmol), nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (10.2 mg, 0.009 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. The crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (2% isochratic), affording the titles compounds (14.9 mg, 0.029 mmol, 33%) as yellow oil.

[677] 1-(4-(benzofuran-2-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid and 4-(3-fluorophenyl)-1-(4-(3-fluorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[678] Into a 25 mL round bottom flask, the pyrazoles (14.9 mg, 0.029 mmol) was diluted with THF/MeOH (2 mL, 1:1). A solution of NaOH 1 M (58.6 µL, 0.059 mmol) was added and the reaction was stirred 16 h at rt. The reaction mixture was acidified with HCl 1 M and the crude product was concentrated under vacuum. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 25-45% $MeCN/NH_4CO_3H$ 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compound A (0.74 mg, 0.001 mmol, 5%) and title compound B (2.39 mg, 0.005 mmol, 17%) as yellow solids after lyophilisation.

[679] ^1H NMR (500 MHz, MeOD) δ 7.66 (d, J = 7.7 Hz, 1H), 7.56 – 7.52 (m, 1H), 7.51 (d, J = 0.9 Hz, 1H), 7.47 – 7.40 (m, 1H), 7.38 (dt, J = 7.7, 1.2 Hz, 1H), 7.36 – 7.31 (m, 2H), 7.29 – 7.23 (m, 1H), 7.10 – 7.03 (m, 1H), 3.50 – 3.41 (m, 1H), 2.36 (s, 3H), 1.39 (d, J = 6.7 Hz, 6H); MS (m/z): 494.3 $[M+1]^+$.

[680] ^{1}H NMR (500 MHz, MeOD) δ 8.09 – 8.04 (m, 1H), 8.02 – 7.96 (m, 1H), 7.47 – 7.40 (m, 2H), 7.39 – 7.35 (m, 1H), 7.34 – 7.29 (m, 1H), 7.12 – 7.02 (m, 2H), 3.31 – 3.24 (m, 1H), 2.35 (s, 3H), 1.29 (d, *J* = 6.7 Hz, 6H); MS (m/z): 472.4 $[M+1]^+$.

Compound 206: 1-(4-(4-chloro-2-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[681] methyl 1-(4-(4-chloro-2-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate

[682] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(4-chloro-2-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (41 mg, 0.079 mmol), 2,6-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine (44 mg, 0.19 mmol) and Na_2CO_3 (42 mg, 0.40 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.2 mg, 0.0080 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 40% EtOAc in hexanes to give the title compound (18 mg, 0.034 mmol, 43%) as a yellow oil.

[683] 1-(4-(4-chloro-2-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[684] The methyl 1-(4-(4-chloro-2-methoxyphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(2,6-dimethylpyridin-4-yl)-3-methyl-1H-pyrazole-5-carboxylate (18 mg, 0.034 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (1.3 mL) and treated with LiOH (4.1 mg, 0.17 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 45-65% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (7.4 mg, 0.014 mmol, 41%) as a yellowish solid after lyophilisation.

[685] ^{1}H NMR (500 MHz, DMSO) δ 7.28 (d, *J* = 8.1 Hz, 1H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.13 – 7.08 (m, 3H), 3.79 (s, 3H), 3.23-3.14 (m, 1H), 2.45 (s, 6H), 2.31 (s, 3H), 1.14 (d, *J* = 6.7 Hz, 6H). MS (m/z): 529.2 [M+1]+.

Compound 207: 1-(4-(3-chloro-4-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[686] methyl 4-bromo-1-(4-(3-chloro-4-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[687] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), the

(3-chloro-4-methylphenyl)boronic acid (38 mg, 0.22 mmol), K_2CO_3 (152 mg, 1.10 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst Pd(dtbpf)Cl_2 (11 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (66 mg, 0.13 mmol, 60%) as a yellow oil.

[688] methyl 1-(4-(3-chloro-4-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate

[689] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(3-chloro-4-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (66 mg, 0.13 mmol), (3-fluorophenyl)boronic acid (22 mg, 0.16 mmol) and Na_2CO_3 (70 mg, 0.66 mmol) followed by the addition of the catalyst Pd(PPh_3)$_4$ (15 mg, 0.013 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (48 mg, 0.093 mmol, 71%) as a yellow oil.

[690] 1-(4-(3-chloro-4-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[691] The methyl 1-(4-(3-chloro-4-methylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate (48 mg, 0.093 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (1.3 mL) and treated with LiOH (11 mg, 0.47 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (14 mg, 0.028 mmol, 30%) as a yellow solid after lyophilisation.

[692] ^{1}H NMR (500 MHz, DMSO) δ 14.36 (s, 1H), 8.04 (d, *J* = 1.6 Hz, 1H), 7.90 (dd, *J* = 8.0, 1.6 Hz, 1H), 7.54-7.47 (m, 1H), 7.45 (d, *J* = 8.0 Hz, 1H), 7.37-7.30 (m, 2H), 7.25-7.18 (m, 1H), 3.35-3.30 (m, 1H), 2.37 (s, 3H), 2.30 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 502.1 [M+1]+.

Compound 208: 1-(4-(1,5-dimethyl-6-oxo-1,6-dihydropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[693] 1,3-dimethyl-5-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridin-2(1H)-one

[694] Nitrogene was passed through dioxane and this solution (2.0 mL) was then added to a mixture of the 5-bromo-1,3-dimethylpyridin-2(1H)-one (75 mg, 0.37 mmol), bis(pinacolato)diboron (113 mg, 0.445 mmol) and KOAc (109 mg, 1.11 mmol) followed by the addition of the catalyst $PdCl_2$(dppf).CH_2Cl_2 (30 mg, 0.037 mmol). The reaction mixture

was heated at 85 °C for 16 hours then diluted with EtOAc and and filtered on a pad of Celite®. The filtrate was concentrated under vacuum, resulting in the crude title compound (169 mg, 0.678 mmol, quantitative yield) as brown oil.

[695] methyl 4-bromo-1-(4-(1,5-dimethyl-6-oxo-1,6-dihydropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[696] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (100 mg, 0.220 mmol), the 1,3-dimethyl-5-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyridin-2(1H)-one (110 mg, 0.440 mmol), K_2CO_3 (152 mg, 1.10 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11 mg, 0.022 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 10% EtOAc in hexanes to give the title compound (42 mg, 0.084 mmol, 38%) as a brown oil.

[697] methyl 1-(4-(1,5-dimethyl-6-oxo-1,6-dihydropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate

[698] Nitrogene was passed through a solution of dioxane/H2O (4/1) and this solution (2.0 mL) was then added to a mixture of the methyl 4-bromo-1-(4-(1,5-dimethyl-6-oxo-1,6-dihydropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (42 mg, 0.084 mmol), (3-fluorophenyl)boronic acid (14 mg, 0.10 mmol) and Na2CO3 (44 mg, 0.42 mmol) followed by the addition of the catalyst Pd(PPh3)4 (9.7 mg, 0.0084 mmol). The reaction mixture was heated at 85 oC for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 40% EtOAc in hexanes to give the title compound (14 mg, 0.027 mmol, 32%) as a yellow oil.

[699] 1-(4-(1,5-dimethyl-6-oxo-1,6-dihydropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[700] The methyl 1-(4-(1,5-dimethyl-6-oxo-1,6-dihydropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate (14 mg, 0.027 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (1.3 mL) and treated with LiOH (3.2 mg, 0.14 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 40-60% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (4.9 mg, 0.010 mmol, 36%) as a yellowish solid after lyophilisation.

[701] ^{1}H NMR (500 MHz, DMSO) δ 8.18-8.11 (m, 1H), 8.04 (bs, 1H), 7.50-7.43 (m, 1H), 7.40-7.32 (m, 2H), 7.21-7.14 (m, 1H), 3.48 (s, 3H), 3.35-3.24 (m, 1H), 2.30 (s, 3H), 2.05 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 499.2 [M+1]+.

Compound 212: 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(pyrimidin-5-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[702] methyl 4-bromo-1-(5-(isopropylthio)-4-(pyrimidin-5-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[703] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (75 mg, 0.16 mmol), pyrimidin-5-ylboronic acid (20 mg, 0.16 mmol), K_2CO_3 (114 mg, 0.825 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (8.2 mg, 0.026 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (0 to 30% gradient) and afforded the title compound (36 mg, 0.079 mmol, 48%) as brown oil.

[704] 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(pyrimidin-5-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[705] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(5-(isopropylthio)-4-(pyrimidin-5-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (36 mg, 0.079 mmol), (3-fluorophenyl)boronic acid (13 mg, 0.095 mmol) and Na_2CO_3 (42 mg, 0.40 mmol). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (9.2 mg, 0.0080 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (9.5 mg, 0.40 mmol) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 15 min. The solvent was evaporated under vacuum and the product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 50-70% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), resulting in the title compound (3.2 mg, 0.0070 mmol, 9%) as yellowish solid after lyophilization.

[706] ^{1}H NMR (500 MHz, DMSO) δ 9.36 (s, 2H), 9.23 (s, 1H), 7.56-7.47 (m, 1H), 7.38-7.31 (m, 2H), 7.26-7.17 (m, 1H), 3.45 – 3.33 (m, 1H), 2.33 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 456.1 $[M+1]^+$.

Compound 218: 1-(4-(4-chloro-3-cyanophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[707] methyl 4-bromo-1-(4-(4-chloro-3-cyanophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[708] Degassed THF (2 mL) was added to a mixture of methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (75.0 mg, 0.165 mmol), (4-chloro-3-cyanophenyl)boronic acid (30 mg, 0.16 mmol), [1,1′-Bis(di-*tert*-butylphosphino)ferrocene]dichloropalladium(II) (8.2 mg, 0.016 mmol) and potassium carbonate (114 mg, 0.824 mmol). The reaction mixture was heated at 90 °C for 18 hours. Water was added and the mixture was extracted with ethyl acetate (2x). The combined organic layers were dried with sodium sulfate, filtered and evaporated. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2 to 5%) to give the title compound (35 mg, 0.068 mmol, 42%) as a pale orange oil.

[709] methyl 1-(4-(4-chloro-3-cyanophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate

[710] A solution of methyl 4-bromo-1-(4-(4-chloro-3-cyanophenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (35 mg, 0.068 mmol), (3-fluorophenyl)boronic acid (12 mg, 0.082 mmol), $Pd(PPh_3)_4$ (8 mg, 0.007 mmol), Na_2CO_3 (36 mg, 0.34 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.4 mL) was heated at 85 °C for 18 hours. Water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2 to 5%) to give the title compound (9 mg, 0.017 mmol, 25%) as a colorless oil.

[711] 1-(4-(4-chloro-3-cyanophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[712] methyl 1-(4-(4-chloro-3-cyanophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate (9 mg, 0.017 mmol) was diluted in a 1:1 solution of THF and MeOH (0.17 mL). 1M NaOH (0.034 mL, 0.034 mmol) was added and the reaction was stirred for 18 h at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of ammonium formate) (50 to 70%). The product was lyophylised to give the title compound (3.2 mg, 0.006 mmol, 36%) as an off white solid.

[713] ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.45 (s, 1H), 8.38 (d, *J* = 8.2 Hz, 1H), 7.88 (d, *J* = 8.6 Hz, 1H), 7.52 – 7.44 (m, 1H), 7.42 – 7.33 (m, 2H), 7.22 – 7.14 (m, 1H), 3.35 (hept, *J* = 6.7 Hz, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 512.9 $[M+1]^+$.

Compound 219: 4-(3,5-dichlorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[714] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was methyl 4-bromo-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (52 mg, 0.10 mmol), (3,5-dichlorophenyl)boronic acid (23 mg, 0.12 mmol) and Na_2CO_3 (53 mg, 0.50 mmol). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (12 mg, 0.010 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. LiOH (9.5 mg, 0.40 mmol) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 15 min. The solvent was evaporated under vacuum and the product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 65-85% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), resulting in the title compound (10 mg, 0.018 mmol, 18%) as yellow solid after lyophilization.

[715] ^{1}H NMR (500 MHz, DMSO) δ 8.20 (d, *J* = 8.2 Hz, 2H), 7.85 (d, *J* = 8.2 Hz, 2H), 7.65 (s, 1H), 7.55 (d, *J* = 1.8 Hz, 2H), 3.41 – 3.28 (m, 1H), 2.32 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H). MS (m/z): 571.9 $[M+1]^+$.

Compound 220: 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-((2-methoxyethyl)carbamoyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[716] 4-(2-(4-bromo-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-1-yl)-5-(isopropylthio)thiazol-4-yl)benzoic acid

[717] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (125 mg, 0.275 mmol), 4-boronobenzoic acid (46 mg, 0.27 mmol), K_2CO_3 (190 mg, 1.37 mmol) and THF (2 mL). Nitrogen was bubbled in the solvent for 10 minutes followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (14 mg, 0.028 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. Acidified with aq. HCl and extracted with EtOAc. The organic layer was washed with water and brine.The crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 50 to 100% EtOAc in hexanes to give the title compound (30 mg, 0.060 mmol, 22%) as a brown solid.

[718] methyl 4-bromo-1-(5-(isopropylthio)-4-(4-((2-methoxyethyl)carbamoyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[719] 4-(2-(4-bromo-5-(methoxycarbonyl)-3-methyl-1H-pyrazol-1-yl)-5-(isopropylthio)thiazol-4-yl)benzoic acid (30 mg, 0.060 mmol) and 2-methoxyethanamine (5.4 mg, 0.072 mmol) were dissolved in DMF (1 mL) and treated with HATU (30 mg, 0.079 mmol) followed by DIPEA (16 mg, 0.12 mmol). The reaction mixture was stirred at rt for 16 h. Diluted with EtOAc washed with water and brine. Dried $MgSO_4$, filtered and concentrated *in vacuo* to give the title compound (43 mg, 0.077 mmol, quantitative yield) as a brown oil.

[720] methyl 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-((2-methoxyethyl)carbamoyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[721] Nitrogene was passed through a solution of dioxane/H_2O (4/1) and this solution (2.0 mL) was then added to a mixture of methyl 4-bromo-1-(5-(isopropylthio)-4-(4-((2-methoxyethyl)carbamoyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (33 mg, 0.060 mmol), (3-fluorophenyl)boronic acid (10 mg, 0.072 mmol) and Na_2CO_3 (32 mg, 0.30 mmol) followed by the addition of the catalyst $Pd(PPh_3)_4$ (6.9 mg, 0.0060 mmol). The reaction mixture was heated at 85 °C for 16 hours. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography (dry packing) on silica gel using a gradient 0 to 50% EtOAc in hexanes to give the title compound (10 mg, 0.018 mmol, 30%) as a yellow oil.

[722] 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-((2-methoxyethyl)carbamoyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[723] The methyl 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-((2-methoxyethyl)carbamoyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (10 mg, 0.018 mmol) was dissolved in a mixture of H_2O/THF/MeOH (6/3/1) (1.3 mL) and treated with LiOH (2.2 mg, 0.090 mmol). The reaction mixture was stirred in the microwave at 110 °C for 15 min. Evaporated in vacuo. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50, eluted with 45-5% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), and afforded the title compound (3.1 mg, 0.0056 mmol, 32%) as a yellow solid after lyophilisation.

[724] ^{1}H NMR (500 MHz, DMSO) δ 8.60 (t, *J* = 5.3 Hz, 1H), 8.08 (d, *J* = 8.4 Hz, 2H), 7.95 – 7.89 (m, 2H), 7.54-7.47 (m, 1H), 7.40-7.30 (m, 2H), 7.25-7.16 (m, 1H), 3.50 – 3.41 (m, 4H), 3.36 – 3.30 (m, 1H), 3.28 (s, 3H), 2.32 (s, 3H), 1.22 (d, *J* = 6.7 Hz, 6H). MS (m/z): 555.2 [M+1]+.

Compound 223: 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethoxy)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[725] methyl 4-bromo-1-(5-(isopropylthio)-4-(4-(trifluoromethoxy)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[726] Degassed THF (2 mL) was added to a mixture of methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (75.0 mg, 0.165 mmol) (4-(trifluoromethoxy)phenyl)boronic acid (34 mg, 0.16 mmol), [1,1′-Bis(di-*tert*-butylphosphino)ferrocene]dichloropalladium(II) (8.2 mg, 0.016 mmol) and potassium carbonate (114 mg, 0.824 mmol). The reaction mixture was heated at 90 °C for 18 hours. Water was added and the mixture was extracted with ethyl acetate (2x). The combined organic layers were dried with sodium sulfate, filtered and evaporated. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2%) to give the title compound (52 mg, 0.097 mmol, 59%) as a pale orange oil.

[727] methyl 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethoxy)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[728] A solution of methyl 4-bromo-1-(5-(isopropylthio)-4-(4-(trifluoromethoxy)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (52 mg, 0.097 mmol), (3-fluorophenyl)boronic acid (16 mg, 0.12 mmol), $Pd(PPh_3)_4$ (11 mg, 0.010 mmol), Na_2CO_3 (51 mg, 0.48 mmol) in degassed 1,4-dioxane and H_2O (4:1, 1.9 mL) was heated at 85 °C for 18 hours. Water (5 mL) was added and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography on silica gel using a solution of ethyl acetate in hexanes (2%) to give the title compound (38 mg, 0.069 mmol, 71%) as a pale orange oil.

[729] 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethoxy)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[730] methyl 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethoxy)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (38 mg, 0.069 mmol) was diluted in a 1:1 solution of THF and MeOH (0.69 mL). 1M NaOH (0.138 mL, 0.138 mmol) was added and the reaction was stirred for 18 h at room temperature. 1N HCl (1 mL) was added, followed by water (5 mL) and the mixture was extracted with EtOAc (3x5mL). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by semi-prep HPLC-MS (column X-Bridge 30x50) using a solution of MeCN in water (containing 10 mM of ammonium formate) (55 to 75%). The product was lyophylised to give the title compound (8.4 mg, 0.016 mmol, 23%) as a pale yellow solid.

[731] ^{1}H NMR (500 MHz, DMSO) δ 8.11 (d, *J* = 8.8 Hz, 2H), 7.55 – 7.45 (m, 3H), 7.36 – 7.29 (m, 2H), 7.23 (t, *J* = 8.2 Hz, 1H), 3.34 (hept, J = 6.7 Hz, 1H), 2.31 (s, 3H), 1.23 (d, *J* = 6.7 Hz, 6H); MS (m/z): 538.0 $[M+1]^+$..

Compound 228: 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-isopropyl-1H-pyrazole-5-carboxylic acid

[732] ethyl 2-(methoxyimino)-5-methyl-4-oxohexanoate

[733] Ethyl 5-methyl-2,4-dioxohexanoate (931 mg, 5.00 mmol), methoxyhydroxylamine hydrochloride (439 mg, 5.25 mmol) were dissolved in EtOH/water (11 mL, 1:1). The reaction mixture was stirred 2 h at rt. The reaction mixture was diluted with EtOAc and transferred into an extraction funnel. The layers were separated and the aqueous layer was extracted with EtOAc (2x). The combined organic layers were dried over Na_2SO_4, filtered and concentrated under vacuum, affording the title compound (1.07 g, 4.97 mmol, 99%) as yellow oil.

[734] ethyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-isopropyl-1H-pyrazole-5-carboxylate

[735] Ethyl 2-(methoxyimino)-5-methyl-4-oxohexanoate (1.07 g, 4.97 mmol) was dissolved in EtOH (50 mL) and 4-(3,4-dichlorophenyl)-2-hydrazinylthiazole (1.67 g, 5.00 mmol) was added followed by HCl 12 N (1.67 mL, 20.0 mmol). The reaction mixture was heated to reflux 3 h. The reaction mixture was concentrated under vaccum and was diluted with EtOAc and transferred into an extraction funnel. The layers were separated and the aqueous layer was extracted with EtOAc (3x). The combined organic layers were dried over Na_2SO_4, filtered and concentrated under vacuum. The crude product was purified by flash chromatography on silica gel (dry packing) using a solution of DCM in hexanes (0 to 20% gradient), affording the title compound (906 mg, 1.87 mmol, 37%) as yellow oil.

[736] ethyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-isopropyl-1H-pyrazole-5-carboxylate

[737] Bromine (0.621 mL, 12.1 mmol) was added to a solution of ethyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-isopropyl-1H-pyrazole-5-carboxylate (905 mg, 2.42 mmol) in MeCN/DCM (12 mL, 1:1 mL). The reaction was stirred for 5 hours at room temperature. A saturated aqueous solution of Na_2SO_3 was added and thereaction mixture was extracted with EtOAc (3x). The combined organic layers were dried with sodium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by flash chromatography (dry packing) on silica gel using a solution of DCM in hexanes (2 to 5%), affording the title compound (593 mg, 1.05 mmol, 43%) as blue oil.

[738] ethyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-isopropyl-1H-pyrazole-5-carboxylate

[739] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed ethyl 4-bromo-1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-3-isopropyl-1H-pyrazole-5-carboxylate (50.0 mg, 0.089 mmol), 3-fluorophenylboronic acid (14.9 mg, 0.107 mmol) and Na_2CO_3 (47.0 mg, 0.444 mmol),

nitrogen and vacuum cycles were performed (2x). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (10.3 mg, 0.009 mmol). The vial was capped and placed in an oil bath at 85 °C for 16 h. The crude product was purified by flash chromatography on silica gel (dry packing) using a solution of EtOAc in hexanes (0 to 5% gradient), affording the title compound (51 mg, 0.088 mmol, 99%) as colorless oil.

1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-isopropyl-1H-pyrazole-5-carboxylic acid

[740] Into a 5 mL glass microwave vial, was placed ethyl 1-(4-(3,4-dichlorophenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-isopropyl-1H-pyrazole-5-carboxylate (51.0 mg, 0.088 mmol) and LiOH (18.5 mg, 0.441 mmol). THF (1.5 mL), MeOH (0.5 mL) and water (0.5 mL) were added. The vial was heated to 120 °C under microwave radiation for 10 minutes. THF, MeOH and water were removed under vacuum and the crude product was purified using a semi prep HPLC-MS (X-Bridge 30x50, eluted with 60-80% MeCN/AmForm 10 mM, pH 3.8/Flow 45 ml/min/11 min), resulting in the title compund (0.4 mg, 0.001 mmol, 1%) as yellow solid after lyophilisation.

[741] ^{1}H NMR (500 MHz, MeOD) δ 8.45 (d, *J* = 2.0 Hz, 1H), 8.14 (dd, *J* = 8.5, 2.1 Hz, 1H), 7.55 (d, *J* = 8.5 Hz, 1H), 7.45 – 7.37 (m, 1H), 7.33 – 7.29 (m, 1H), 7.28 – 7.22 (m, 1H), 7.06 (td, *J* = 8.1, 2.1 Hz, 1H), 3.29 – 3.24 (m, 1H), 3.15 – 3.09 (m, 1H), 1.32 – 1.21 (m, 12H); MS (m/z): 552.02 $[M+1]^+$.

Compound 231: 1-(4-(4-ethylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[742] In a 5 mL glass microwave vial equipped with a magnetic stirring bar at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.11 mmol), the 4-ethylphenylboronic acid (16 mg, 0.11 mmol), K_2CO_3 (75 mg, 0.55 mmol), the catalyst $Pd(dtbpf)Cl_2$ (7 mg, 0.01 mmol) and THF (1 mL). Nitrogen gas was bubbled through the solution and then the vial was capped and stirred in an oil bath at 90 °C. After 16 h, the 3-fluorophenylboronic acid (15 mg, 0.11 mmol), Na_2CO_3 (58 mg, 0.55 mmol), the catalyst $Pd(PPh_3)_4$ (13 mg, 0.011 mmol) and water (0.5 mL) were added to the vial. A flow of nitrogen was bubbled through the black mixture for 5 minutes. The vial was capped and stirred in an oil bath at 90 °C. After 16 h, LiOH (26 mg, 1.1 mmol) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 30 min. The crude product was purified using a semi prep HPLC-MS (X-Bridge 30x50, eluted with 65-85% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 mL/min/11 min), resulting in the title compound (7 mg, 0.01 mmol, 13%) as a yellow solid after lyophilization.

[743] ^{1}H NMR (500 MHz, DMSO) δ 7.93 (d, *J* = 8.2 Hz, 2H), 7.50 (dd, *J* = 14.6, 7.7 Hz, 1H), 7.35-7.29 (m, 4H), 7.21 (t, *J* = 8.8 Hz, 1H), 2.65 (q, *J* = 7.7 Hz, 2H), 2.31 (s, 3H), 1.22 (dd, *J* = 8.3, 7.2 Hz, 9H); MS (m/z): 482.18 $[M+1]^+$.

Compound 233: 4-(3-fluorophenyl)-1-(4-(5-fluoropyridin-3-yl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[744] In a 5 mL glass microwave vial equipped with a magnetic stirring bar at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.11 mmol), the 5-fluoropyridin-3-ylboronic acid (15 mg, 0.109 mmol), K_2CO_3 (75 mg, 0.55 mmol), the catalyst $Pd(dtbpf)Cl_2$ (7 mg, 0.01 mmol) and THF (1mL). Nitrogen gas was bubbled through the solution and then the vial was capped and stirred in an oil bath at 90 °C. After 16 h, the 3-fluorophenylboronic acid (15 mg, 0.11 mmol), Na_2CO_3 (58 mg, 0.55 mmol), the catalyst $Pd(PPh_3)_4$ (13 mg, 0.011 mmol) and water (1 mL) were added to the vial. A flow of nitrogen was bubbled through the black mixture for 5 minutes. The vial was capped and stirred in an oil bath at 90 °C. After 16 h, LiOH (13 mg, 0.55 mmol) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 30 min. The crude product was purified using a semi prep HPLC-MS (X-Bridge 30x50, eluted with 50-70% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 mL/min/11 min), resulting in the title compound (3.3 mg, 0.0070 mmol, 6%) as a yellow solid after lyophilization.

[745] ^{1}H NMR (500 MHz, DMSO) δ 9.16 (s, 1H), 8.63 (d, *J* = 2.7 Hz, 1H), 8.28 – 8.24 (m, 1H), 7.48 – 7.38 (m, 3H), 7.11 (t, *J* = 7.9 Hz, 1H), 2.30 (s, 3H), 1.24 (d, *J* = 6.7 Hz, 6H). MS (m/z): 473.07 $[M+1]^+$.

Compound 234: 1-(4-(benzofuran-3-yl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[746] In a 5 mL glass microwave vial equipped with a magnetic stirring bar at room temperature was placed the methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.11 mmol), the benzofuran-3-ylboronic acid (18 mg, 0.109 mmol), K_2CO_3 (75 mg, 0.55 mmol), the catalyst $Pd(dtbpf)Cl_2$ (7 mg, 0.01 mmol) and THF (1 mL). Nitrogen gas was bubbled through the solution and then the vial was capped and stirred in an oil bath at 90 °C. After 16 h, the 3-fluorophenylboronic acid (15 mg, 0.11 mmol), Na_2CO_3 (58 mg, 0.55 mmol), the catalyst $Pd(PPh_3)_4$ (13 mg, 0.011 mmol) and water (0.5 mL) were added to the vial. A flow of nitrogen was bubbled through the black mixture for 5 minutes. The vial was capped and stirred in an oil bath at 90 °C. After 16 h, LiOH (13 mg, 0.55 mmol) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 30 min. NaOH (44 mg, 1.1 mmol) in water (1 mL) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 20 min. The crude

product was purified using a semi prep HPLC-MS (X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 mL/min/11 min), resulting in the title compound (0.51 mg, 0.0010 mmol, 1%) as a yellow solid after lyophilization. MS (m/z): 494.19 $[M+1]^+$.

Compound 236: 4-(4-fluoro-3-methylphenyl)-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[747] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(5-(isopropylthio)-4-(4-(trifluoromethyl)phenyl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (50 mg, 0.096 mmol), (4-fluoro-3-methylphenyl)boronic acid (15 mg, 0.096 mmol) and Na_2CO_3 (51 mg, 0.48 mmol). Nitrogen gas was bubbled through a solution of dioxane/water (2 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (11 mg, 0.0096 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. LiOH (23 mg, 0.96 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 15 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), resulting in the title compound (18 mg, 0.034 mmol, 35%) as yellow solid after lyophilization.

[748] ^1H NMR (500 MHz, DMSO) δ 8.24 (d, *J* = 8.2 Hz, 2H), 7.78 (d, *J* = 8.3 Hz, 2H), 7.40 (dd, *J* = 7.4, 1.5 Hz, 1H), 7.36 – 7.30 (m, 1H), 7.18 – 7.12 (m, 1H), 2.25 (s, 3H), 2.25 (s, 3H), 1.21 (d, *J* = 6.7 Hz, 6H); MS (m/z): 536.26 $[M+1]^+$.

Compound 239: 1-(4-(4-chloro-2,6-dimethylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[749] 2-(4-chloro-2,6-dimethylphenyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane

[750] In a microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed 2-bromo-5-chloro-1,3-dimethylbenzene (250 mg, 1.14 mmol), pinacol diborane (347 mg, 1.37 mmol), KOAc (335 mg, 3.42 mmol), and the catalyst PdCl2(dppf) (83 mg, 0.11 mmol). Nitrogen gas was bubbled through a solution of dioxane (5.7 mL) and then the solution was added to the reaction mixture. The vial was capped and placed in an oil bath at 85 °C for 18 h. The reaction mixture was and filtered on a pad of Celite® and washed with dioxane.The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (1 to 2 % gradient) and afforded the title compound (94 mg, 0.35 mmol, 31%) as white solid.

[751] methyl 4-bromo-1-(4-(4-chloro-2,6-dimethylphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[752] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (75 mg, 0.16 mmol), 2-(4-chloro-2,6-dimethylphenyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (44 mg, 0.164 mmol) and K_2CO_3 (113 mg, 0.82 mmol). Nitrogen gas was bubbled through a solution of THF (1.5 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11 mg, 0.017 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. The solvent was evaporated under vacuum and the crude product was purified by flash chromatography on silica gel eluted with hexanes and afforded the title compound (80 mg, 0.16 mmol, 95%) as brown oil.

[753] 1-(4-(4-chloro-2,6-dimethylphenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[754] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-(4-chloro-2,6-dimethylphenyl)-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (84 mg, 0.16 mmol), (3-fluorophenyl)boronic acid (23 mg, 0.16 mmol) and Na_2CO_3 (87 mg, 0.82 mmol). Nitrogen gas was bubbled through a solution of THF/water (1.5 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (19 mg, 0.016 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. LiOH (86 mg, 0.16 mmol) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 15 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 60-80% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), resulting in the title compound (14 mg, 0.027 mmol, 17%) as white solid after lyophilization.

[755] ^{1}H NMR (500 MHz, DMSO) δ 7.50 (dd, *J* = 14.2, 7.7 Hz, 1H), 7.30 – 7.20 (m, 5H), 3.20 (dt, *J* = 13.2, 6.6 Hz, 1H), 2.30 (s, 3H), 2.06 (s, 6H), 1.19 (d, *J* = 6.7 Hz, 6H); MS (m/z): 516.24 $[M+1]^+$.

Compound 242: 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(2-(trifluoromethyl)pyrimidin-5-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[756] 5-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-2-(trifluoromethyl)pyrimidine

[757] In a microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed 5-bromo-2-(trifluoromethyl)pyrimidine (250 mg, 1.10 mmol), pinacol diborane (336 mg, 1.32 mmol), KOAc (324 mg, 3.30 mmol), and the catalyst PdCl2(dppf) (81 mg, 0.11 mmol). Nitrogen gas was bubbled through a solution of dioxane (5.5 mL) and then the solution was added to the reaction mixture. The vial was capped and placed in an oil bath at 85 °C for 18 h. The reaction mixture was and filtered on a pad of Celite® and washed with dioxane.The solvent was evaporated under vacuum and the crude

product was purified by flash chromatography on silica gel using a solution of EtOAc in hexanes (1 to 2 % gradient) and afforded the title compound (247 mg, 0.901 mmol, 82%) as brown oil.

[758] 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(2-(trifluoromethyl)pyrimidin-5-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[759] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (75 mg, 0.16 mmol), 5-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-2-(trifluoromethyl)pyrimidine (45 mg, 0.164 mmol) and K_2CO_3 (113 mg, 0.82 mmol). Nitrogen gas was bubbled through a solution of THF (1.5 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11 mg, 0.017 mmol). The vial was capped and placed in an oil bath at 90 °C. After 16 h, was added (3-fluorophenyl)boronic acid (23 mg, 0.16 mmol) and Na_2CO_3 (87 mg, 0.82 mmol). Nitrogen gas was bubbled through a solution of THF/water (1.5 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (19 mg, 0.016 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. LiOH (39 mg, 1.6 mmol) was added to the reaction mixture and stirred under microwave radiation at 110 °C for 15 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 50-70% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), resulting in the title compound (9.2 mg, 0.018 mmol, 11%) as beige solid after lyophilization.

[760] ^{1}H NMR (500 MHz, DMSO) δ 9.60 (s, 2H), 7.51 (dd, *J* = 15.1, 8.0 Hz, 1H), 7.36 (t, *J* = 8.8 Hz, 2H), 7.22 (t, *J* = 8.8 Hz, 1H), 2.33 (s, 3H), 1.27 (d, *J* = 6.7 Hz, 6H); MS (m/z): 524.25 $[M+1]^+$.

Compound 243: 1-(4-(4-chloro-3-(ethylcarbamoyl)phenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[761] 1-(4-(4-chloro-3-(ethylcarbamoyl)phenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[762] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (75 mg, 0.16 mmol), (4-chloro-3-(ethylcarbamoyl)phenyl)boronic acid (37 mg, 0.16 mmol) and K_2CO_3 (113 mg, 0.82 mmol). Nitrogen gas was bubbled through a solution of THF (1.5 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11 mg, 0.017 mmol). The vial was capped and placed in an oil bath at 90 °C. After 16 h, was added (3-fluorophenyl)boronic acid (23 mg, 0.16 mmol) and Na_2CO_3 (87 mg, 0.82 mmol). Nitrogen

gas was bubbled through a solution of THF/water (1.5 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (19 mg, 0.016 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. LiOH (39 mg, 1.6 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 15 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 50-70% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), resulting in the title compound (13 mg, 0.023 mmol, 14%) as beige solid after lyophilization.

[763] ^{1}H NMR (500 MHz, DMSO) δ 8.43 (t, *J* = 5.6 Hz, 1H), 7.99 – 7.94 (m, 2H), 7.52 (d, *J* = 8.4 Hz, 1H), 7.43 (dd, *J* = 14.6, 7.8 Hz, 1H), 7.26 (t, *J* = 9.9 Hz, 2H), 2.24 (s, 3H), 1.18 (d, *J* = 6.7 Hz, 6H), 1.05 (t, *J* = 7.2 Hz, 3H); MS (m/z): 559.14 $[M+1]^+$.

Compound 244: 1-(4-(2-amino-4-(trifluoromethyl)phenyl)-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylic acid

[764] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (75 mg, 0.16 mmol), N-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-5-(trifluoromethyl)phenyl)acetamide (54 mg, 0.16 mmol) and K_2CO_3 (113 mg, 0.82 mmol). Nitrogen gas was bubbled through a solution of THF (1.5 mL) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(dtbpf)Cl_2$ (11 mg, 0.017 mmol). The vial was capped and placed in an oil bath at 90 °C. After 16 h, was added (3-fluorophenyl)boronic acid (23 mg, 0.16 mmol) and Na_2CO_3 (87 mg, 0.82 mmol). Nitrogen gas was bubbled through a solution of THF/water (1.5 mL, 4:1) and then the solution was added to the microwave vial, followed by the addition of the catalyst $Pd(PPh_3)_4$ (19 mg, 0.016 mmol). The vial was capped and placed in an oil bath at 90 °C for 16 h. LiOH (39 mg, 1.6 mmol) was added to the reaction mixture and stirred under microwave radiation at 120 °C for 15 min. The product was purified using a semi prep HPLC-MS (column X-Bridge 30x50, eluted with 50-70% MeCN/NH_4CO_2H 10 mM, pH 3.8/Flow 45 ml/min/10 min), resulting in the title compound (7.4 mg, 0.014 mmol, 9%) as beige solid after lyophilization

[765] ^{1}H NMR (500 MHz, DMSO) δ 7.52 – 7.43 (m, 2H), 7.34 (dd, *J* = 15.6, 9.5 Hz, 2H), 7.21 – 7.14 (m, 1H), 7.11 (s, 1H), 6.87 (d, *J* = 8.0 Hz, 1H), 2.30 (s, 3H), 1.16 (d, *J* = 6.7 Hz, 6H); MS (m/z): 537.23 $[M+1]^+$.

Compound 246: 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(5-(trifluoromethyl)pyrimidin-2-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[766] methyl 4-bromo-1-(4-cyano-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[767] In a 20 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed 4-bromo-1-(4-bromo-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (600 mg, 1.32 mmol), zinc cyanide (93 mg, 0.79 mmol), zinc (7.8 mg, 0.12 mmol), $Pd_2(dba)_3$ (23 mg, 0.04 mmol) and dppf (44 mg, 0.079 mmol) in DMA (16 mL) was stirred in a microwave oven at 110 °C for 30 min. It was added to a mixture of zinc (7.8 mg, 0.12 mmol), $Pd_2(dba)_3$ (23 mg, 0.040 mmol) and dppf (44 mg, 0.079 mmol), which was then heated for 45 min at 110 °C. The mixture was cooled to room temperature, then was extracted with Et_2O. The organic phase was washed with water (3x), dried with $MgSO_4$, filtered and concentrated. The residue was purified by flash chromatography on silica gel (dry pack) using using a solution of EtOAc in hexanes (0 to 5% gradient) and afforded the title compound (314 mg, 0.78 mmol, 71 %) as white solid.

[768] methyl 1-(4-cyano-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate

[769] In a 20 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-bromo-1-(4-cyano-5-(isopropylthio)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (347 mg, 0.87 mmol), boronic acid (182 mg, 1.29 mmol), Na_2CO_3 (275 mg, 2.59 mmol) and $Pd(dtbpf)Cl_2$ (43 mg, 0.086 mmol) was stirred in dioxane/water 1:1 (17 mL) at 90 °C for 70 min in a microwave reactor. The reaction mixture was diluted with Et_2O, washed with water. The aqueous phase was extracted with Et_2O (2x), with DCM (1x) and with MeTHF (1x), the organic layer were combined, dried over $MgSO_4$, filtered and concentrated. The residue was purified by flash chromatography on silica gel (dry pack) using using a solution of acetone in hexanes (0 to 3 % gradient) and afforded title compound as white solid. The mixed fraction were concentrated and purified by normal flash chromatography on silica gel (dry pack) using using a solution of EtOAc in hexanes (0 to 5 % gradient). The pures fractions were combined and afforded title compound (223 mg, 0.54 mmol, 62%) as white solid.

[770] methyl 1-(4-carbamimidoyl-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate

[771] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at 0 °C was placed methyl 1-(4-cyano-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate (40 mg, 0.096 mmol) in Et_2O (1.0 mL) was added a solution of LiHMDS (190 µL, 0.190 mmol). The mixture was stirred at 20 °C for 3 h. The reaction mixture was cooled at 0 °C and a solution of 10% citric acid was added, then the aqueous phase was extracted with Et_2O (3x). The combined organic layers were extracted two times with 10% citric acid. The aqueous phase was neutralized with Na_2CO_3 and extracted three times with Et_2O. The combined organic layers were dried over $MgSO_4$,

filtrated and concentrated to afford the title compound as beige solid (40 mg. 0.092 mmol, 96%).

[772] (Z)-N-(3-(dimethylamino)-2-(trifluoromethyl)allylidene)-N-methylmethanaminium chloride

[773] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at 0 °C was placed DMF (1.1 mL, 13.8 mmol) and oxalyl chloride (1.17 mL, 13.59 mmol), a white solid was formed after 10 min, and 3,3,3-trifluoropropionic acid (600 µL, 6.79 mmol) was slowly added at the same temperature. After 10 minutes, the reaction was heated at 70 °C for 1h. The mixture was concentrated under high vacuum for two days and afforded title compound (1.5 g, 6.5 mmol, 95%) as yellow solid.

[774] methyl 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(5-(trifluoromethyl)pyrimidin-2-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate

[775] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 1-(4-carbamimidoyl-5-(isopropylthio)thiazol-2-yl)-4-(3-fluorophenyl)-3-methyl-1H-pyrazole-5-carboxylate (42 mg, 0.10 mmol) and (Z)-N-(3-(dimethylamino)-2-(trifluoromethyl)allylidene)-N-methylmethanaminium chloride (34 mg, 0.15 mmol) followed by MeCN (1.0 mL) and Et_3N (40 µL, 0.29 mmol). The reaction mixture was stirred 5 min at 20 °C and 16 h at -20 °C. The mixture was diluted with Et_2O and the organic layer was washed two times with 10% citric acid and one time with saturated $NaHCO_3$, dried with Na_2SO_4, filtrated and concentrated. The residue was purified by normal flash chromatography on silica gel (dry pack) using using a solution of EtOAc in hexanes (0 to 5% gradient) afford title compound (15.8 mg, 0.029 mmol, 30%) as off-white solid.

[776] 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(5-(trifluoromethyl)pyrimidin-2-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylic acid

[777] In a 5 mL glass microwave vial equipped with a magnetic stirring bar and nitrogen flow at room temperature was placed methyl 4-(3-fluorophenyl)-1-(5-(isopropylthio)-4-(5-(trifluoromethyl)pyrimidin-2-yl)thiazol-2-yl)-3-methyl-1H-pyrazole-5-carboxylate (15 mg, 0.03 mmol) in THF (0.5 mL), MeOH (0.5 mL) and water (0.5 mL) followed by LiOH (15 mg). The mixture was stirred 45 min at 60 °C. The mixture was cooled and concentrated. The residue was purified by reverse phase chromatography (Isco) using a C18 column, eluting with a gradient of 0-100% MeCN/water (10 mM ammonium formate, pH 3.8) to afford title compound (9.8 mg, 0.19 mmol, 67%) as off-white solid.

[778] ^{1}H NMR (500 MHz, DMSO) δ 9.36 (s, 2H), 7.47 (dd, *J* = 14.5, 7.6 Hz, 1H), 7.36 (d, *J* = 9.3 Hz, 1H), 7.33 (d, *J* = 7.7 Hz, 1H), 7.21 – 7.15 (m, 1H), 3.57 (dt, *J* = 13.3, 6.7 Hz, 1H), 2.29 (s, 3H), 1.40 (d, *J* = 6.6 Hz, 6H); MS (m/z): 524.1 $[M+1]^+$.

BJAB Data

[779] BJAB cells (DSMZ) were maintained in RPMI 1640 growth medium + 10% FBS at 37°C/5%CO_2 and used prior to passage 34. Cells were seeded in white Corning Costar 96-well assay plates at 2500 cells/well in 50 µL of medium. Serial dilutions of test compounds were made in cell culture medium/FBS + 0.2% DMSO, and transferred to assay plates in a volume of 50 µL (DMSO at 0.1% final). Plates were maintained at 37°C for approximately 72 hours. The effect of compounds on cell proliferation was evaluated using the Cell Titer Glo reagent (Promega), according to the manufacturer's instructions. Briefly, 100 µL of reagent was added per well, and after a 10 minute incubation luminescence values were determined on a plate reader (Tecan F200PRO). The percent of luminescence signal relative to untreated controls was calculated for each compound concentration, and EC_{50} values were determined from dose response data by non-linear regression analysis using Prism (GraphPad). Data are shown in the compound table above. The mTor inhibitor Torin1 (Liu, *et al.* (2010) J.Med.Chem. **53**, 7146.) was used as a control. The data are summarized in the compound table provided above.

[780] Further studies on various test compounds indicated that cell viability decreased in a dose-dependent manner, and that the test compounds induced cell death in a dose-dependent manner 48 hours post-treatment.

Biological Examples

[781] The present inventors have determined that, despite initial data suggesting that they inhibit the initiation of translation of RNA, an important biological effect caused by the compounds as described herein is the inhibition of cell cycle progression, as described by the data provided herein. While not intending to be bound by theory, the present inventors surmise that the compounds disclosed herein disrupt the cell cycle at the G0/G1 phase, preventing a cancer cell from further proliferation.

[782] The examples below provide four measures of the activity of the compounds of the present disclosure, specifically with respect to one of the particular compounds described herein as having an IC_{50} value in the "A" range. First is the overall sensitivity of tumor cell lines to the test compound. Second is the role of *KRAS* genotype on the sensitivity of the cells to the test compound. Third is the effect of the test compound on a key cellular metabolite, glutathione. And fourth is the effect of the test compound on the cell cycle.

Example 1: Anticancer activity

[783] A panel of 96 tumor and 3 normal cell lines were tested for sensitivity to the test compound. The cell lines were cultured in standard media and pipetted into 96-well plates at the required plating densities. The cells were acclimated for 24 hours prior to compound

testing. Compound was prepared as a stock of 20 mM in DMSO. To prepare dose response curves compound was serially diluted in DMSO and dispensed into the plate wells using a Tecan D300e digital dispenser. The final DMSO concentration was 0.15 %. After 72 hours of incubation cell number was determined using the CellTiter-Glo® (Promega) protocol. In this assay, ATP is measured as a surrogate of cell number. The activity of the compound is determined by comparing untreated cells with treated cells and calculating the % of signal retained. Compound activity is measured as an EC_{50} of maximum level of efficacy and the two are used to compute an activity area curve.

[784] Out of the 96 tumor cell lines, 39 tumors (40 %) demonstrated a significant response to the test compound (as defined by ability to estimate an IC_{50}; Table 1). Of these, hematopoetic tumors demonstrated a great enrichment of response. More than 89 % of all hematopoetic tumors responded to compound, while 28.5 % of solid tumors responded in kind.

Table 1. Summary of tumor responsiveness

Tumor type	Number Responsive		Responsiveness (%)
	No	Yes	
Hematopoetic	2	17	89
Solid	55	22	28.5

[785] Data for various of the cell lines are provided in Table 2 below:

Table 2. Specific tumor responses

Cell Line	Tumor Type	Tumor Category	K-RAS	*KRAS* Zyygosity	Computed IC50	Activty Area	Max Inhibition_ %
143b	Solid	Sarcoma	MUT	HET	Y	2.00	63.84
786-0	Solid	Renal	WT	HOMO	N	1.05	24.32
A204	Solid	Sarcoma	WT	HOMO	N	1.37	34.89
A2058	Solid	Skin	WT	HOMO	N	-0.08	6.18
A2780	Solid	Ovarian	WT	HOMO	Y	3.88	70.89
A375	Solid	Skin	WT	HOMO	N	1.14	29.08
A498	Solid	Renal	WT	HOMO	N	2.29	46.35
A549	Solid	Lung	MUT	HOMO	Y	3.92	81.53
A673	Solid	Sarcoma	WT	HOMO	Y	2.29	57.68
AU565	Solid	Breast	WT	HOMO	Y	2.82	84.45
BT-474	Solid	Breast	WT	HOMO	N	-.12	-1.00
BT-483	Solid	Breast	WT	HOMO	N	0.22	6.13
BxPC-3	Solid	Pancreatic	WT	HOMO	N	1.46	30.79
CaCo-2	Solid	Colorectal	WT	HOMO	N	0.07	22.11
CAL-27	Solid	Head and Neck	WT	HOMO	N	-.05	23.28

Cell Line	Tumor Type	Tumor Category	K-RAS	*KRAS* Zyygosity	Computed IC50	Activty Area	Max Inhibition_ %
COLO 205	Solid	Colorectal	WT	HOMO	N	2.40	49.77
COLO-824	Solid	Breast	WT	HOMO	N	-0.06	29.16
Daudi	Hematopoetic	Hematopoietic	WT	HOMO	Y	4.33	92.47
DOHH-2	Hematopoetic	Hematopoietic	WT	HOMO	Y	5.04	100.21
DU-145	Solid	Prostate	WT	HOMO	N	1.48	33.20
EFM-19	Solid	Breast	WT	HOMO	N	0.51	29.01
FADU	Solid	Head and Neck	WT	HOMO	N	2.88	49.81
HCC1143	Solid	Breast	WT	HOMO	N	0.95	19.79
HCC1187	Solid	Breast	WT	HOMO	N	1.38	31.76
HCC1395	Solid	Breast	WT	HOMO	N	1.08	33.13
HCC1419	Solid	Breast	WT	HOMO	N	0.25	5.82
HCC1500	Solid	Breast	WT	HOMO	N	0.82	55.17
HCC1569	Solid	Breast	WT	HOMO	N	-1.27	26.60
HCC1806	Solid	Breast	WT	HOMO	N	1.00	56.75
HCC1937	Solid	Breast	WT	HOMO	N	1.12	40.02
HCC1954	Solid	Breast	WT	HOMO	N	1.08	21.92
HCC38	Solid	Breast	WT	HOMO	N	0.13	9.67
HCT-116	Solid	Colorectal	MUT	HET	Y	4.13	86.23
Hep 3B2.1-7	Solid	Liver	WT	HOMO	N	1.21	23.73
HepG2	Solid	Liver	WT	HOMO	N	0.70	19.20
HL-60	Hematopoetic	Hematopoietic	WT	HOMO	Y	2.45	103.55
Hs-445	Hematopoetic	Hematopoietic	WT	HOMO	Y	2.76	57.67
HT-1080	Solid	Sarcoma	WT	HOMO	Y	3.03	77.72
HT-29	Solid	Colorectal	WT	HOMO	N	1.89	46.47
Jurkat	Hematopoetic	Hematopoietic	WT	HOMO	Y	4.91	94.46
K-562	Hematopoetic	Hematopoietic	WT	HOMO	N	0.30	30.94
Kasumi-1	Hematopoetic	Hematopoietic	WT	HOMO	Y	2.70	63.46
KHOS/NP	Solid	Sarcoma	NA	NA	N	1.43	32.83
LoVo	Solid	Colorectal	MUT	HET	Y	3.70	61.30
Malme-3M	Solid	Skin	WT	HOMO	N	-1.41	29.79
MCF7	Solid	Breast	WT	HOMO	Y	2.43	54.45
MDA-MB-157	Solid	Breast	WT	HOMO	N	1.77	31.44
MDA-MB-231	Solid	Breast	MUT	HET	N	0.92	32.97
MDA-MB-435S	Solid	Breast	WT	HOMO	N	0.02	32.16
MDA-MB-436	Solid	Breast	WT	HOMO	N	1.33	28.79
MDA-MB-453	Solid	Breast	WT	HOMO	N	0.83	42.71
MDA-MB-468	Solid	Breast	WT	HOMO	Y	2.85	60.30
MFM-223	Solid	Breast	WT	HOMO	N	1.12	22.49
MG-63	Solid	Sarcoma	WT	HOMO	N	0.59	55.53
MIA PaCa-2	Solid	Pancreatic	MUT	HOMO	Y	2.56	53.12
MOLT-4	Hematopoetic	Hematopoietic	WT	HOMO	Y	3.12	65.24
MV-4-11	Hematopoetic	Hematopoietic	WT	HOMO	Y	2.97	74.31

Cell Line	Tumor Type	Tumor Category	K-RAS	*KRAS* Zyygosity	Computed IC50	Activty Area	Max Inhibition_ %
NALM-6	Hematopoetic	Hematopoietic	WT	HOMO	Y	2.95	66.29
NAMALWA	Hematopoetic	Hematopoietic	WT	HOMO	Y	4.32	88.24
NCI-H1734	Solid	Lung	MUT	HET	Y	2.43	62.45
NCI-H2122	Solid	Lung	MUT	HET	Y	3.73	71.82
NCI-H2444	Solid	Lung	MUT	HOMO	N	-0.45	15.70
NCI-H460	Solid	Lung	MUT	HET	Y	3.52	64.86
NCI-H929	Hematopoetic	Hematopoietic	WT	HOMO	N	1.22	31.23
OCI-LY7	Hematopoetic	Hematopoietic	NA	NA	Y	5.40	99.53
OVCAR-3	Solid	Ovarian	WT	HOMO	Y	2.44	59.46
PANC-1	Solid	Pancreatic	MUT	HET	Y	2.73	60.76
PC-3	Solid	Prostate	WT	HOMO	N	0.27	15.52
PC-9	Solid	Lung	WT	HOMO	Y	3.37	67.08
Raji	Hematopoetic	Hematopoietic	WT	HOMO	Y	3.21	80.38
RL95-2	Solid	Endometrial	WT	HOMO	N	2.38	45.56
RPMI-2650	Solid	Head and Neck	WT	HOMO	N	2.34	45.63
RPMI-8226	Hematopoetic	Hematopoietic	MUT	HET	Y	2.94	60.91
SJSA-1	Solid	Sarcoma	MUT	HOMO	N	0.46	36.32
SK-BR-3	Solid	Breast	NA	NA	N	0.98	70.35
SK-ES-1	Solid	Sarcoma	WT	HOMO	N	1.24	33.95
SK-HEP-1	Solid	Liver	WT	HOMO	Y	2.72	60.08
SK-MEL-28	Solid	Skin	WT	HOMO	N	-1.15	8.99
SK-N-AS	Solid	Neuroblastoma	WT	HOMO	N	-0.08	30.60
SK-NEP-1	Solid	Renal	WT	HOMO	N	1.22	36.63
SK-OV-3	Solid	Ovarian	WT	HOMO	N	0.60	33.48
SU-DHL-10	Hematopoetic	Hematopoietic	MUT	HET	Y	5.37	100.83
SU-DHL-4	Hematopoetic	Hematopoietic	WT	HOMO	Y	4.08	99.94
SU-DHL-6	Hematopoetic	Hematopoietic	WT	HOMO	Y	4.76	100.72
SUM190PT	Solid	Breast	WT	HOMO	Y	2.69	77.18
SUP-B15	Hematopoetic	Hematopoietic	WT	HOMO	Y	4.21	100.03
SW48	Solid	Colorectal	WT	HOMO	N	0.06	11.53
SW480	Solid	Colorectal	MUT	HOMO	N	0.90	20.83
SW620	Solid	Colorectal	MUT	HOMO	N	2.04	47.00
T.Tn	Solid	Esophagus	NA	NA	Y	2.26	65.75
T47D	Solid	Breast	WT	HOMO	N	1.41	26.52
TC-71	Solid	Sarcoma	WT	HOMO	Y	4.23	80.00
U-118-MG	Solid	Brain	WT	HOMO	N	-0.24	18.15
U-2 OS	Solid	Sarcoma	WT	HOMO	Y	1.80	55.04
U-87-MG	Solid	Brain	WT	HOMO	N	0.82	24.25
ZR-75-30	Solid	Breast	WT	HOMO	N	1.04	23.13

Example 2: Role of *KRAS* on activity

[786] Next, the genotype of the *KRAS* allele for the solid tumor lines was determined. Using the COSMIC database, *KRAS* genotype and zygosity (homozygous or heterozygous) could be determined for 74 of 77 solid tumor cell lines (Table 3).

Table 3. Tumor responsiveness with respect to *KRAS* genotype

KRAS genotype	Number Responsive		Responsiveness (%)
	N	Y	
MUT	5	9	65
NA	2	1	33
WT	48	12	20

Only 20% of the cell types having the wild-type *KRAS* allele were responsive to the test compound. In contrast, 65 % of the cell types harboring a mutation in the *KRAS* allele were responsive to the test compound. When the analysis is extended to whether the *KRAS* allele is homozygous or heterozygous there is a distinct split in the outcome (Table 4). Cell lines bearing a heterozygous mutation in the KRAS allele showed greatest responsiveness.

Table 4. Tumor responsiveness with respect to KRAS zygosity

Number Responsive	KRAS MUT		Responsiveness (%)
	N	Y	
HET	1	7	87.5
HOMO	4	2	30
NA	0	1	

[787] A final analysis of the role of *KRAS* on the response to the test compound used pooled data based on compound activity area. Responses of all cell lines were included in the analysis using Tukey's All Pairs HSD test. The data are presented in Figure 1 as a plot of activity area by *KRAS* genotype and *KRAS* zygosity. The average responsiveness of the test compound in cell lines containing the *KRAS* mutant heterozygous genotype were significantly higher than corresponding WT cells lines.

Example 3: Cellular metabolism and activity

[788] **Measurement of glutathione levels following treatment using three cell lines:** BJAB, HCT116, and normal human lung fibroblasts (NHLF) were maintained in RPMI (Wisent), McCoy's (Wisent) or FGM-2 (Lonza) medium, respectively. For total glutathione measurement, 5000 cells /well (BJAB or HCT116) or 10,000 cells/well (NHLF) were transferred to clear-bottom 96-well assay plates (Thermo Fisher) in a volume of 50 µL. Plates were incubated overnight at 37 °C in 5 % CO_2, in an unsealed plastic bag with damp paper. Test compound was serially diluted in medium plus 0.4 % DMSO, and 50 µL/well of each dilution was transferred to the assay plate. Assay plates were incubated at 37 °C in

5% CO_2 in unsealed plastic bag with damp paper for the indicated time. For total glutathione measurement, GSH-Glo™ reagent (Promega) was prepared by diluting provided Luciferin-NT (1:100), Glutathione S-Transferase (1:100), and DTT (1 mM final) to GSH-Glo™ Reaction buffer, and 100 µL was added to assay plates, followed by 30 min incubation at room temperature, and then 100 µL Luciferin Detection Reagent was added. Plates were maintained in the dark at room temperature for 10 min. Luminescence was measured using Tecan Infinite 200Pro.

[789] Figure 2 represents data from a typical experiment showing that the test compound reduced cellular glutathione levels in a dose dependent manner. Cell lines whose growth and survival are sensitive to the test compound (BJAB and HCT116) demonstrate a dose-dependent reduction in cellular glutathione levels while cell lines that are not sensitive (NHLF) fail to change.

[790] To evaluate proliferation (in parallel with glutathione levels measurement), 50 µL/well of cells in the medium described above were added to clear 96-well plates (TPP). At the indicated times, cells were fixed by adding 50 µL cold 50% Trichloroacetic acid (TCA Sigma) and incubated at 4 °C for at least 45 minutes before rinsing with distilled water. A volume of 50 µL/well 0.4% (w/v) Sulforhodamine B (SRB, Sigma) in 1% acetic acid was added to the wells to determine total protein content. Plates were rinsed several times in a large volume of 1% acetic acid, to remove excess dye, then total protein was solubilized in 200 µl 10mM unbuffered Tris base, agitating for 30 minutes. Absorbance was measured at 560 nm on Tecan Infinite 200Pro.

[791] **Effect on Glutathione levels:** BJAB and HCT116 cells were maintained in RPMI medium (Wisent) or McCoy's medium (Wisent), respectively. 5000 cells /well were transferred to clear-bottom 96-well assay plates (Thermo Fisher) in a volume of 50 µL. Plates were incubated overnight at 37 °C in 5% CO_2, in an unsealed plastic bag with damp paper. Menadione (Sigma) was dissolved in DMSO and diluted in 10% heat inactivated FBS plus culture medium to 20 µM and 5 µM (0.2% DMSO for each). Culture medium was gently aspirated from cells and replaced by 50 µl diluted menadione or 0.2% DMSO for controls. Test compound was diluted to 80 µM (0.2% DMSO) in 10% heat inactivated FBS plus culture medium then diluted further to 5 µM, 1 µM, 0.5 µM and 0.05 µM (in 0.2 % DMSO). 50 µL test compound solution was added to each well, with or without menadione. One µL of an N-acetyl cysteine (Sigma) solution at 100 mM in water was added where indicated. Assay plates were incubated for the times indicated at 37 °C 5% CO_2 in opened plastic bag with damp paper. Total glutathione levels were determined according to the procedure described above.

[792] The inclusion of N-acetyl cysteine in the media prevents the reduction of glutathione caused by menadione. Figure 3, top, represents the test compound-mediated

reduction in glutathione levels in HCT116 cells. There was no difference in the levels of glutathione in the presence or absence of N-acetyl-cysteine. Figure 3, bottom, demonstrates the menadione-mediated reduction in glutathione levels in HCT116 cells. This data suggests that the test compound reduces cellular glutathione in a manner distinct from agents that affect mitochondrial function and induce cellular ROS. Without being bound to particular theory,because N-acetyl cysteine fails to recover glutathione levels, it is believed that the defect in glutathione levels in treated cells is caused by an inability to synthesize glutathione after treatment with the test compound.

Example 3: Cell cycle analysis of compound-treated cells

[793] HCT116 cells (3×10^5 cells) grown in McCoy media supplemented with heat inactivated fetal bovine serum were plated in 6-well plates and allowed to adhere overnight. Duplicate samples were prepared by treating cells for 24 hours with serum starvation (0% FBS), 5 μM test compound or DMSO vehicle control. Two hours prior to harvest, replicating DNA was labeled with EdU (5-Ethynyl-2′-deoxyuridine, Thermo Fisher) at 10 μM. Both adherent and floating cells were harvested and fixed in a solution of 4 % paraformaldehyde in PBS for 15 minutes at room temperature. Next, cells were permeabilized in a solution of 0.25 % v/v triton X-100/0.5 % BSA/PBS for 20 minutes at room temperature. This was followed by click reaction with OG488-Azide to detect EdU incorporation as follows: cells were incubated for 30 minutes in a reaction mixture containing 100 mM Tris-HCl pH 7.6, 4 mM CuSO4, 10 μM OG488-azide, and 100 mM ascorbic acid. Excess reagent was removed by repeated washes in 0.5%BSA/PBS wash buffer. Cells were re-suspended in 500 μL of DAPI staining solution (1 μg/mL DAPI and 50 μg/mL RNAse A in PBS).

[794] Flow cytometry analysis was performed in a LSRII flow cytometer (BD Biosciences) equipped with blue (488 nm), red (633 nm), and violet (405 nm) lasers. OG488 analysis was performed using 488 nm excitation and detection with a 505LP mirror and a 530/30BP filter. DAPI analysis was performed using a 405 nm excitation and detection with a 442/16BP filter. Voltage settings were: FSC =324, SSC= 276, OG488= 215, DAPI = 351. Cell cycle analysis with DAPI was performed using a linear axis scale. Log scale was used for EdU. Data analysis was performed using FCS Express software version 6 (DeNovo Software).

[795] Figure 4A represents flow cytometry data collected from a representative cell cycle experiments in HCT116 cells after treatment with test compound. The data are presented as a dot plot of cell labeling data, with each channel being gated for detection and quantitation. Figure 4B is bar representation of the data in Figure 4A as the percentage of cells in each phase of the cell cycle. The data clearly demonstrate the effects of serum starvation on the cells by arresting cells in the G0/G1 phase. The test compound

demonstrated a similar distribution of cells in G1, S and G2/M suggesting that the test compound is arresting cells in the G0/G1 phase.

[796] It is understood that the examples and embodiments described herein are for illustrative purposes only and that various modifications or changes in light thereof will be suggested to persons skilled in the art and are to be incorporated within the spirit and purview of this application and scope of the appended claims.

We claim:

1. A method for treating a hyperproliferative disorder, e.g., a cancer, in a subject in need thereof, comprising administering to the subject an effective amount of a compound as described herein.

2. A compound as described herein for use in the treatment of a hyperproliferative disorder, e.g., a cancer.

3. Use of a compound as described herein for the preparation of a medicament for the treatment of a hyperproliferative disorder, e.g., a cancer.

4. A method for inhibiting cell cycle progression in a cancer cell, the method comprising contacting the cancer cell with an effective amount of a compound as described herein.

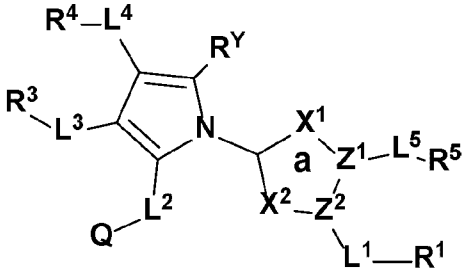
5. A method according to claim 5, wherein cell cycle progression is inhibited at the G0/G1 phase of the cell cycle.

6. A method for inducing apoptosis of a cancer cell, the method comprising contacting the cancer cell with an effective amount of a compound as described herein.

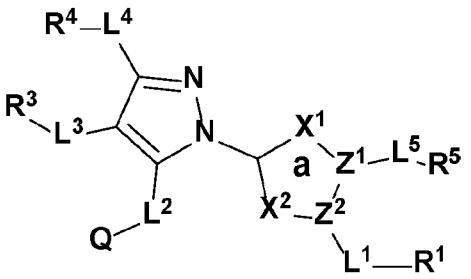
7. A method for inducing a cytotoxic effect on a cancer cell, the method comprising contacting the cancer cell with an effective amount of a compound as described herein.

8. A method for inhibiting glutathione synthesis in a cancer cell, the method comprising contacting the cancer cell with an effective amount of a compound as described herein.

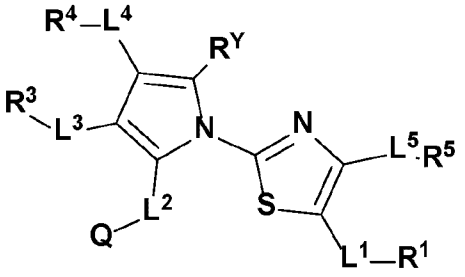
9. A method, compound or use according to any of claims 1-8, wherein the compound of formula (I) has the structural formula



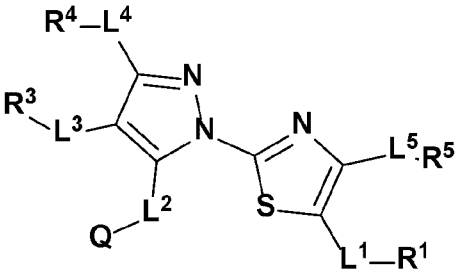
(Ia), in which formula (Ia) the ring system denoted by "a" is heteroaromatic,



(Ib), in which formula (Ib) the ring system denoted by "a" is heteroaromatic,



(Ic),



(Id),

optionally in the form of a pharmaceutically acceptable salt or N-oxide, and/or a solvate or hydrate, wherein

L^1 is selected from the group consisting of a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, -NR^6-, -C(O)NR^6-, -NR^6C(O)-, -C(S)NR^6-, -NR^6C(S)-, -C(O)O-, -OC(O)-, -C(O)S-, -SC(O)-, -C(S)O-, -OC(S)-, -C(S)S-, -SC(S)-, -$S(O)_{1-2}$O-, -$OS(O)_{1-2}$-, -$S(O)_{1-2}NR^6$- and-$NR^6S(O)_{1-2}$-;

R^1 is selected from the group consisting of

hydrogen,

C_1-C_8 alkyl, C_1-C_8 alkenyl and C_1-C_8 alkynyl, each unsubstituted or fluorinated, cycloalkyl and heterocycloalkyl, each optionally substituted with 1-2 R^{1E}, and aryl and heteroaryl, each optionally substituted with 1-5 R^{1E},

in which

each R^{1E} is independently selected from oxo, optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, SF_5, -N_3, -C(O)R^{1F}, -SR^{1F}, -$S(O)_{1-2}R^{1F}$, -OR^{1F}, -$NR^{1G}R^{1F}$ and -C(O)R^{1F};

each R^{1F} is independently selected from H, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl and

each R^{1G} is independently selected from H and C_1-C_3 alkyl,

or L^1 and R^1 are absent;

L^2 is selected from the group consisting of a bond, -CH_2-, -$CH(CH_3)$- or -CH_2CH_2-;

Q is selected from the group consisting of H, -CH_2OH, -C(O)OH, -$C(O)OR^{2A}$, -$C(O)NR^{2B}R^{2A}$, -$C(O)NR^{2B}S(O)_2R^{2A}$, -$C(O)NR^{2B}S(O)_2NR^{2B}R^{2A}$, -$C(O)R^{2A}$, -$S(O)_2OH$, -$P(O)(OH)_2$, -$C(OH)(CF_3)_2$, $S(O)_2R^{2A}$, -$N(R^{2B})S(O)_2R^{2A}$, -$S(O)_2NR^{2B}R^{2A}$, -C(O)NHOH, -C(O)NH-O(C_1-C_3 alkyl), and -CO(NH)CN, in which

each R^{2A} is independently selected from H and C_1-C_3 alkyl, and

each R^{2B} is independently selected from H and C_1-C_3 alkyl;

L^3 is a bond, -C(O)-, -S-, -$S(O)_{1\text{-}2}$-, -O-, -NR^6-, -CH_2-, -$CH(CH_3)$(OH)- or -CH(OH)-;

R^3 is aryl or heteroaryl each (i) optionally substituted with a single substituent selected from -L^{3C}-(aryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(heteroaryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(cycloalkyl optionally substituted with 1-5 R^{3E}), -L^{3C}-(heterocycloalkyl optionally substituted with 1-5 R^{3E}) and (ii) optionally substituted with 1-5 R^{3E},

in which

each L^{3C} is a bond, methylene, ethylene, -C(O)-, -S-, -$S(O)_{1\text{-}2}$-, -O- or -NR^{3G}-;

each R^{3D} is independently selected from optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, SF_5, -N_3, -$C(O)R^{3F}$, -SR^{3F}, -$S(O)_{1\text{-}2}R^{3F}$, -OR^{3F}, -$NR^{3G}R^{3F}$, -$C(O)R^{3F}$, -$C(O)NR^{3G}R^{3F}$, -$NR^{3G}C(O)R^{3F}$, -$C(S)NR^{3G}R^{3F}$, -$NR^{3G}C(S)R^{3F}$, -$C(O)OR^{3F}$, -$OC(O)R^{3F}$, -$C(O)SR^{3F}$, -$SC(O)R^{3F}$, -$C(S)OR^{3F}$, -$OC(S)R^{3F}$, -$C(S)SR^{3F}$, -$SC(S)R^{3F}$, -$S(O)_{1\text{-}2}OR^{3F}$, -$OS(O)_{1\text{-}2}R^{3F}$, -$S(O)_{1\text{-}2}NR^{3G}R^{3F}$ and -$NR^{3G}S(O)_{1\text{-}2}R^{3F}$;

each R^{3E} is independently selected from oxo, optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, SF_5, -N_3, -$C(O)R^{3F}$, -SR^{3F}, -$S(O)_{1\text{-}2}R^{3F}$, -OR^{3F}, -$NR^{3G}R^{3F}$, -$C(O)R^{3F}$, -$C(O)NR^{3G}R^{3F}$, -$NR^{3G}C(O)R^{3F}$, -$C(S)NR^{3G}R^{3F}$, -$NR^{3G}C(S)R^{3F}$, -$C(O)OR^{3F}$, -$OC(O)R^{3F}$, -$C(O)SR^{3F}$, -$SC(O)R^{3F}$, -$C(S)OR^{3F}$, -$OC(S)R^{3F}$, -$C(S)SR^{3F}$, -$SC(S)R^{3F}$, -$S(O)_{1\text{-}2}OR^{3F}$, -$OS(O)_{1\text{-}2}R^{3F}$, -$S(O)_{1\text{-}2}NR^{3G}R^{3F}$, -$NR^{3G}S(O)_{1\text{-}2}R^{3F}$;

each R^{3F} is independently selected from H, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl and

each R^{3G} is independently selected from H and C_1-C_3 alkyl, C_1-C_3 fluoroalkyl;

L^4 is is selected from the group consisting of a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, -NR^6-, -$C(O)NR^6$-, -$NR^6C(O)$-, -$C(S)NR^6$-, -$NR^6C(S)$-, -C(O)O-, -OC(O)-, -C(O)S-, -SC(O)-, -C(S)O-, -OC(S)-, -C(S)S-, -SC(S)-, -$S(O)_{1-2}O$-, -$OS(O)_{1-2}$-, -$S(O)_{1-2}NR^6$- and -$NR^6S(O)_{1-2}$-;

R^4 is selected from the group consisting of hydrogen, optionally substituted C_1-C_8 alkyl, optionally-substituted C_1-C_8 alkenyl and optionally substituted C_1-C_8 alkynyl,

L^5 is a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, -NR^6-, -CH_2CH_2-, -CH=CH-, -C≡C-, -CH_2-, -$CH(CH_3)$(OH)- or -CH(OH)-;

R^5 is aryl, heteroaryl, cycloalkyl or heterocycloalkyl, each optionally substituted with 1-5 R^{5E},

in which

each R^{5E} is independently selected from oxo, optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, -SF_5, -N_3, -$C(O)R^{5F}$, -SR^{5F}, -$S(O)_{1-2}R^{5F}$, -OR^{5F}, -$NR^{5G}R^{5F}$, -$C(O)R^{5F}$, -$C(O)NR^{5G}R^{5F}$, -$NR^{5G}C(O)R^{5F}$, -$C(S)NR^{5G}R^{5F}$, -$NR^{1G}C(S)R^{5F}$, -$C(O)OR^{5F}$, -$OC(O)R^{5F}$, -$C(O)SR^{5F}$, -$SC(O)R^{5F}$, -$C(S)OR^{5F}$, -$OC(S)R^{5F}$, -$C(S)SR^{5F}$, -$SC(S)R^{5F}$, -$S(O)_{1-2}OR^{5F}$, -$OS(O)_{1-2}R^{5F}$, -$S(O)_{1-2}NR^{5G}R^{5F}$ and -$NR^{5G}S(O)_{1-2}R^{5F}$;

each R^{5F} is independently selected from H, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl and

each R^{5G} is independently selected from H and C_1-C_3 alkyl;

R^Y is selected from the group consisting of hydrogen, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl;

X^1 is selected from the group consisting of CR^{XA}, S, O, NRX^B and N and

X^2 is selected from the group consisting of CR^{XA}, S, O, NRX^B and N in which

each R^{XA} is independently selected from the group consisting of hydrogen, C_1-C_4 alkyl and C_1-C_4 fluoroalkyl; and

each R^{XB} is independently selected from the group consisting of hydrogen, C_1-C_4 alkyl and C_1-C_4 fluoroalkyl, C_1-C_4 alkyl-C(O)-, C_1-C_4 alkyl-$S(O)_{1-2}$-;

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

wherein

when Z^1 is N and is bound in the ring system denoted by "a" by a double bond, L^1 and R^1 are absent;

each R^6 is selected from the group consisting of hydrogen, C_1-C_3 alkyl and -C(O)(C_1-C_3 alkyl);

each optionally substituted alkyl, alkenyl and alkynyl is unsubstituted, fluorinated or substituted with one or two hydroxyl groups;

each cycloalkyl has 3-10 ring carbons and is unsaturated or partially unsaturated, and optionally includes one or two fused cycloalkyl rings, each fused ring having 3-8 ring members;

each heterocylcloalkyl has 3-10 ring members and 1-3 heteroatoms independently selected from nitrogen, oxygen and sulfur and is unsaturated or partially unsaturated, and optionally includes one or two fused cycloalkyl rings, each having 3-8 ring members;

each aryl is a phenyl or a naphthyl, and optionally includes one or two fused cycloalkyl or heterocycloalkyl rings, each fused cycloalkyl or heterocycloalkyl ring having 4-8 ring members;

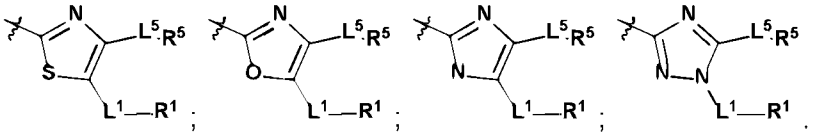
each heteroaryl is a 5-6 membered monocyclic heteroaryl ring having 1-4 heteroatoms independently selected from nitrogen, oxygen and sulfur or a 8-10 membered bicyclic heteroaryl having 1-5 heteroatoms independently selected from nitrogen, oxygen or sulfur, and optionally includes one or two fused cycloalkyl or heterocycloalkyl rings, each fused cycloalkyl or heterocycloalkyl ring having 4-8 ring members.

10. The method, compound or use according to claim 9, wherein the compound of formula (I) has the structural formula (Ia) or (Ib).

11. The method, compound or use according to claim 9, wherein the compound of formula (I) has the structural formula (Ib).

12. The method, compound or use according to claim 9 or claim 10, wherein the ring system denoted by "A" is oxazole, imidazole, pyrazole or tetrazole.

13. The method, compound or use according to claim 9 or claim 10, wherein the ring system denoted by "A" is in one of the following configurations:



14. The method, compound or use according to claim 9, wherein the compound of formula (I) has the structural formula (Ic) or (Id).

15. The method, compound or use according to claim 9, wherein the compound of formula (I) has the structural formula (Id).

16. The method, compound or use according to any of claims 9, 10 and 12-14, wherein R^Y is H.

17. The method, compound or use according to any of claims 9-16, wherein R^1 is selected from the group consisting of hydrogen, optionally substituted C_1-C_8 alkyl and cycloalkyl optionally substituted with 1-5 R^{1E}.

18. The method, compound or use according to any of claims 9-16, wherein R^1 is unsubstituted C_1-C_8 alkyl or fluorinated C_1-C_8 alkyl.

19. The method, compound or use according to any of claims 9-18, wherein L^1 is a bond, -O-, -S-, -S(O)- or -$S(O)_2$-.

20. The method, compound or use according to any of claims 9-18, wherein L^1 is -S-.

21. The method, compound or use according to any of claims 9-20, wherein L^2 is a bond.

22. The method, compound or use according to any of claims 9-20, wherein L^2 is -CH_2-, -$CH(CH_3)$- or -CH_2CH_2-.

23. The method, compound or use according to any of claims 9-22, wherein Q is -C(O)OH.

24. The method, compound or use according to any of claims 9-22, wherein Q is selected from the group consisting of -CH_2OH, -C(O)OH, -$C(O)OR^{2A}$, -$C(O)NR^{2B}R^{2A}$, -$C(O)NR^{2B}S(O)_2R^{2A}$, -$C(O)NR^{2B}S(O)_2NR^{2B}R^{2A}$, -$C(O)R^{2A}$, -$S(O)_2OH$, -$P(O)(OH)_2$.

25. The method, compound or use aaccording to any of claims 9-24, wherein L^3 is a bond.

26. The method, compound or use according to any of claims 9-24, wherein L^3 is -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, -NR^6-, -CH_2-, -$CH(CH_3)(OH)$- or -CH(OH)-.

27. The method, compound or use according to any of claims 9-26, wherein R^3 is aryl (e.g., phenyl) or heteroaryl (e.g., monocyclic heteroaryl) each (i) optionally substituted with a single substituent selected from -L^{3C}-(aryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(heteroaryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(cycloalkyl optionally substituted with 1-5 R^{3E}), -L^{3C}-(heterocycloalkyl optionally substituted with 1-5 R^{3E}) and (ii) optionally substituted with 1-5 R^{3E}.

28. The method, compound or use according to any of claims 9-27, wherein L^{3C} is methylene or -O-.

29. The method, compound or use according to any of claims 9-26, wherein R^3 is aryl (e.g., a phenyl) optionally substituted with 1-5 R^{3E}.

30. The method, compound or use according to any of claims 9-26, wherein R^3 is heteroaryl (e.g., an isothiazole, a pyridone, a thiadiazole, a pyrazine, a pyrazolopyrimidine, a pyrazolopyridine, an imidazole, a benzofuran, an indole, an imidazopyridine, a pyridine, a pyrazole, an isoxazole, a triazolopyridine, a benzimidazole, a thiophene, a benzothiophene, a furan or a pyrimidine) optionally substituted with 1-5 R^{3E}.

31. The method, compound or use according to any of claims 9-30, wherein R^4 is optionally substituted C_1-C_8 alkyl, optionally-substituted C_1-C_8 alkenyl or optionally substituted C_1-C_8 alkynyl.

32. The method, compound or use according to any of claims 9-30, wherein R^4 is optionally substituted C_1-C_8 alkyl,

33. The method, compound or use according to any of claims 9-32, wherein L^4 is a bond.

34. The method, compound or use according to any of claims 9-32, wherein L^4 is selected from a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, and -NR^6-.

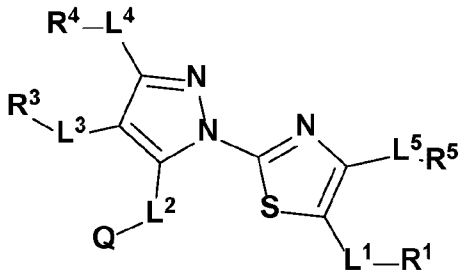
35. The method, compound or use according to any of claims 9-34, wherein L^5 is a bond.

36. The method, compound or use according to any of claims 9-34, wherein L^5 is a bond, -O-, -S-, -C(O)- or -$S(O)_{1-2}$-.

37. The method, compound or use according to any of claims 9-36, wherein R^5 is phenyl optionally substituted with 1-5 R^{5E}.

38. The method, compound or use according to any of claims 4-36, wherein R^5 is heteroaryl (e.g., an isoxazolyl, a pyridyl, an imidazopyridyl, a pyrazolyl), each optionally substituted with 1-5 R^{5E}.

39. The method, compound or use according to any of claims 1-8, wherein the compound of formula (I) is a compound of the structural formula



,

optionally in the form of a pharmaceutically acceptable salt or N-oxide, or a solvate or hydrate, wherein

L^1 is a -S-, -O-, -S(O)-, -$S(O)_2$- or a bond;

R^1 is unsubstituted or fluorinated C_1-C_8 alkyl, unsubstituted or fluorinated C_1-C_8 alkenyl and unsubstituted or fluorinated C_1-C_8 alkynyl

L^2 is a bond or -CH_2-;

Q is -COOH;

L^3 is a bond, -C(O)-, -S-, -$S(O)_{1-2}$-, -O-, -NR^6-, -CH_2-, -$CH(CH_3)$(OH)- or -CH(OH)-;

R^3 is phenyl or monocyclic heteroaryl each (i) optionally substituted with a single substituent selected from -L^{3C}-(phenyl optionally substituted with 1-5 R^{3D}), -L^{3C}-(monocyclic heteroaryl optionally substituted with 1-5 R^{3D}), -L^{3C}-(monocyclic C3-C6 cycloalkyl optionally substituted with 1-5 R^{3E}), -L^{3C}-(monocyclic C4-C6 heterocycloalkyl optionally substituted with 1-5 R^{3E}) and (ii) optionally substituted with 1-5 R^{3E},

in which

each L^{3C} is a bond, methylene, ethylene, -C(O)-, -S-, -$S(O)_{1-2}$-, -O- or -NR^{3G}-;

each R^{3D} is independently selected from optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, SF_5, -N_3, -$C(O)R^{3F}$, -SR^{3F}, -$S(O)_{1-2}R^{3F}$, -OR^{3F}, -$NR^{3G}R^{3F}$, -$C(O)R^{3F}$, -$C(O)NR^{3G}R^{3F}$, -$NR^{3G}C(O)R^{3F}$, -$C(S)NR^{3G}R^{3F}$, -$NR^{3G}C(S)R^{3F}$, -$C(O)OR^{3F}$, -$OC(O)R^{3F}$, -$C(O)SR^{3F}$, -$SC(O)R^{3F}$, -$C(S)OR^{3F}$, -$OC(S)R^{3F}$, -$C(S)SR^{3F}$, -$SC(S)R^{3F}$, -$S(O)_{1-2}OR^{3F}$, -$OS(O)_{1-2}R^{3F}$, -$S(O)_{1-2}NR^{3G}R^{3F}$ and -$NR^{3G}S(O)_{1-2}R^{3F}$;

each R^{3E} is independently selected from oxo, optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, SF_5, -N_3, -$C(O)R^{3F}$, -SR^{3F}, -$S(O)_{1-2}R^{3F}$, -OR^{3F}, -$NR^{3G}R^{3F}$, -$C(O)R^{3F}$, -$C(O)NR^{3G}R^{3F}$, -$NR^{3G}C(O)R^{3F}$, -$C(S)NR^{3G}R^{3F}$, -$NR^{3G}C(S)R^{3F}$, -$C(O)OR^{3F}$, -$OC(O)R^{3F}$, -$C(O)SR^{3F}$, -$SC(O)R^{3F}$, -$C(S)OR^{3F}$, -$OC(S)R^{3F}$, -$C(S)SR^{3F}$,

$-SC(S)R^{3F}$, $-S(O)_{1-2}OR^{3F}$, $-OS(O)_{1-2}R^{3F}$, $-S(O)_{1-2}NR^{3G}R^{3F}$, $-NR^{3G}S(O)_{1-2}R^{3F}$;

each R^{3F} is independently selected from H, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl and

each R^{3G} is independently selected from H and C_1-C_3 alkyl, C_1-C_3 fluoroalkyl;

L^4 is is selected from the group consisting of a bond, -C(O)-, -S-, $-S(O)_{1-2}$-, -O- and $-NR^6$-;

R^4 is selected from the group consisting of unsubstituted or fluorinated C_1-C_8 alkyl, unsubstituted or fluorinated C_1-C_8 alkenyl and unsubstituted or fluorinated C_1-C_8 alkynyl,

L^5 is a bond, -C(O)-, -S-, $-S(O)_{1-2}$-, -O- or $-NR^6$-;

R^5 is phenyl or monocyclic heteroaryl each optionally substituted with 1-5 R^{5E},

in which

each R^{5E} is independently selected from oxo, optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, $-SF_5$, $-N_3$, $-C(O)R^{5F}$, $-SR^{5F}$, $-S(O)_{1-2}R^{5F}$, $-OR^{5F}$, $-NR^{5G}R^{5F}$, $-C(O)R^{5F}$, $-C(O)NR^{5G}R^{5F}$, $-NR^{5G}C(O)R^{5F}$, $-C(S)NR^{5G}R^{5F}$, $-NR^{1G}C(S)R^{5F}$, $-C(O)OR^{5F}$, $-OC(O)R^{5F}$, $-C(O)SR^{5F}$, $-SC(O)R^{5F}$, $-C(S)OR^{5F}$, $-OC(S)R^{5F}$, $-C(S)SR^{5F}$, $-SC(S)R^{5F}$, $-S(O)_{1-2}OR^{5F}$, $-OS(O)_{1-2}R^{5F}$, $-S(O)_{1-2}NR^{5G}R^{5F}$ and $-NR^{5G}S(O)_{1-2}R^{5F}$;

each R^{5F} is independently selected from H, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl and

each R^{5G} is independently selected from H and C_1-C_3 alkyl;

wherein

each R^6 is selected from the group consisting of hydrogen, C_1-C_3 alkyl and -C(O)(C_1-C_3 alkyl);

each optionally substituted alkyl, alkenyl and alkynyl is unsubstituted, fluorinated or substituted with one or two hydroxyl groups;

each cycloalkyl has 3-10 ring carbons and is unsaturated or partially unsaturated, and optionally includes one or two fused cycloalkyl rings, each fused ring having 3-8 ring members;

each heterocylcloalkyl has 3-10 ring members and 1-3 heteroatoms independently selected from nitrogen, oxygen and sulfur and is unsaturated or partially unsaturated, and optionally includes one or two fused cycloalkyl rings, each having 3-8 ring members;

each aryl is a phenyl or a naphthyl, and optionally includes one or two fused cycloalkyl or heterocycloalkyl rings, each fused cycloalkyl or heterocycloalkyl ring having 4-8 ring members;

each heteroaryl is a 5-6 membered monocyclic heteroaryl ring having 1-4 heteroatoms independently selected from nitrogen, oxygen and sulfur or a 8-10 membered bicyclic heteroaryl having 1-5 heteroatoms independently selected from nitrogen, oxygen or sulfur, and optionally includes one or two fused cycloalkyl or heterocycloalkyl rings, each fused cycloalkyl or heterocycloalkyl ring having 4-8 ring members.

40. The method, compound or use according to claim 39, wherein

R^3 is phenyl optionally substituted with 1-5 R^{3E}, in which

each L^{3C} is a bond, methylene, ethylene, -C(O)-, -S-, -$S(O)_{1-2}$-, -O- or -NR^{3G}-;

each R^{3D} is independently selected from optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, SF_5, -N_3, -$C(O)R^{3F}$, -SR^{3F}, -$S(O)_{1-2}R^{3F}$, -OR^{3F}, -$NR^{3G}R^{3F}$, -$C(O)R^{3F}$, -$C(O)NR^{3G}R^{3F}$, -$NR^{3G}C(O)R^{3F}$, -$C(S)NR^{3G}R^{3F}$, -$NR^{3G}C(S)R^{3F}$, -$C(O)OR^{3F}$, -$OC(O)R^{3F}$, -$C(O)SR^{3F}$, -$SC(O)R^{3F}$, -$C(S)OR^{3F}$, -$OC(S)R^{3F}$, -$C(S)SR^{3F}$, -$SC(S)R^{3F}$, -$S(O)_{1-2}OR^{3F}$, -$OS(O)_{1-2}R^{3F}$, -$S(O)_{1-2}NR^{3G}R^{3F}$ and -$NR^{3G}S(O)_{1-2}R^{3F}$;

each R^{3E} is independently selected from oxo, optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, SF_5, -N_3, -$C(O)R^{3F}$, -SR^{3F}, -$S(O)_{1-2}R^{3F}$, -OR^{3F}, -$NR^{3G}R^{3F}$, -$C(O)R^{3F}$, -$C(O)NR^{3G}R^{3F}$, -$NR^{3G}C(O)R^{3F}$, -$C(S)NR^{3G}R^{3F}$, -$NR^{3G}C(S)R^{3F}$, -$C(O)OR^{3F}$, -$OC(O)R^{3F}$, -$C(O)SR^{3F}$, -$SC(O)R^{3F}$, -$C(S)OR^{3F}$, -$OC(S)R^{3F}$, -$C(S)SR^{3F}$, -$SC(S)R^{3F}$, -$S(O)_{1-2}OR^{3F}$, -$OS(O)_{1-2}R^{3F}$, -$S(O)_{1-2}NR^{3G}R^{3F}$, -$NR^{3G}S(O)_{1-2}R^{3F}$;

each R^{3F} is independently selected from H, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl and each R^{3G} is independently selected from H and C_1-C_3 alkyl, C_1-C_3 fluoroalkyl;

R^5 is phenyl optionally substituted with 1-5 R^{5E}, in which

each R^{5E} is independently selected from oxo, optionally-substituted C_1-C_4 alkyl, C_1-C_4 fluoroalkyl, halogen, -CN, -SF_5, -N_3, -$C(O)R^{5F}$, -SR^{5F}, -$S(O)_{1-2}R^{5F}$, -OR^{5F}, -$NR^{5G}R^{5F}$, -$C(O)R^{5F}$, -$C(O)NR^{5G}R^{5F}$, -$NR^{5G}C(O)R^{5F}$, -$C(S)NR^{5G}R^{5F}$, -$NR^{1G}C(S)R^{5F}$, -$C(O)OR^{5F}$, -$OC(O)R^{5F}$, -$C(O)SR^{5F}$, -$SC(O)R^{5F}$, -$C(S)OR^{5F}$, -$OC(S)R^{5F}$, -$C(S)SR^{5F}$, -$SC(S)R^{5F}$, -$S(O)_{1-2}OR^{5F}$, -$OS(O)_{1-2}R^{5F}$, -$S(O)_{1-2}NR^{5G}R^{5F}$ and -$NR^{5G}S(O)_{1-2}R^{5F}$;

each R^{5F} is independently selected from H, C_1-C_3 alkyl and C_1-C_3 fluoroalkyl and each R^{5G} is independently selected from H and C_1-C_3 alkyl.

41. The method, compound or use according to claim 39 or claim 40, wherein

L^1 is -S-;

L^2 is a bond; and

L^3 is a bond.

42. The method, compound or use according to any of claims 39-41, wherein

L^4 is a bond; and

L^5 is a bond.

43. The method, compound or use according to any of claims 9-36 and 39-41, wherein R^5 is trifluoromethylphenyl, halophenyl or dihalophenyl.

44. The method, compound or use according to any of claims 9-36 and 39-41, wherein R^5 is phenyl substituted (e.g., 3-substituted, 4-substituted, 3,4-disubstituted, 2,4-disubstituted, or 2,5-disubstituted) with one or two substituents selected from trifluoromethyl, fluorine and chlorine.

45. The method, compound or use according to any of claims 9-44, wherein each optionally substituted alkylene, alkenylene and alkynylene is unsubstituted.

46. The method, compound or use according to any of claims 9-45, wherein each optionally substituted alkyl, alkenyl and alkynyl is unsubstituted.

47. The method, compound or use according to any of claims 9-46, wherein each cycloalkyl is a 3-7 membered monocyclic cycloalkyl.

48. The method, compound or use according to any of claims 9-47, wherein each heterocycloalkyl is a 4-7 membered monocyclic heterocycloalkyl having 1-2 heteroatoms selected from O, S and N.

49. The method, compound or use according to any of claims 9-48, wherein each heteroaryl is a 5-6 membered monocyclic heteroaryl having 1-3 heteroatoms selected from O, S and N.

50. The method, compound or use according to any of claims 9-49, wherein each aryl is phenyl.

51. The method, compound or use according to any of claims 9-50, wherein each R^{XA} is hydrogen or C_1-C_4 alkyl.

52. The method, compound or use according to any of claims 9-51, wherein each R^{XA} is hydrogen.

53. The method, compound or use according to any of claims 9-52, wherein each R^{XB} is hydrogen or C_1-C_4 alkyl.

54. The method, compound or use according to any of claims 9-53, wherein each R^{XB} is hydrogen.

55. The method, compound or use according to any of claims 9-54, wherein each and every optionally substituted alkyl, alkylene, alkenyl, alkenylene, alkynyl and alkynylene is unsubstituted or fluorinated.

56. The method, compound or use according to any of claims 9-54, wherein each and every optionally substituted alkyl, alkylene, alkenyl, alkenylene, alkynyl and alkynylene is unsubstituted.

57. The method, compound, or use according to any of claims 9-56, wherein the compound is not one of compounds 1-187 of the table of compounds above.

58. The method, compound or use according to any of claims 1-8, wherein the compound is a compound of any of embodiments 1-187 in the table of embodiments above, optionally in the form of a pharmaceutically acceptable salt or N-oxide, or a solvate or hydrate.

59. The method, compound or use according to any of claims 1-8, wherein the compound is any of compounds 188-259 of the table of compounds above, optionally in the form of a pharmaceutically acceptable salt or N-oxide, or a solvate or hydrate.

60. The method, compound or use according to any of claims 9-59, wherein the compound is in the form of an N-oxide.

61. The method, compound or use according to any of claims 9-60, wherein the compound is in the form of a pharmaceutically acceptable salt.

62. The method, compound or use according to any of claims 9-60, wherein the compound is in the form of the base compound.

63. The method, compound or use according to any of claims 9-62, wherein the compound is in the form of a solvate or hydrate.

64. The method, compound or use according to any of claims 1-63, wherein the cancer is a hematopoetic cancer.

65. The method, compound or use according to any of claims 1-63, wherein the cancer is selected from a lymphoma (e.g., Burkitt's lymphoma, Hodgkin's lymphoma, non-Hodgkin's lymphoma, hairy cell lymphoma, mantle cell lymphoma, T-cell lymphoma, cutaneous T-cell lymphoma, B-cell lymphoma, diffuse large B-cell lymphoma, double-hit lymphoma, Waldenström macroglobulinemia, primary central nervous System (CNS) lymphoma, and intravascular large B-cell lymphoma (ILBCL)), a leukemia (e.g., acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), acute myeloblastic leukemia, chronic lymphocytic leukemia (CLL), chronic myelogenous leukemia (CML), chronic neutrophilic leukemia (CNL), chronic myelomonocytic leukaemia (CMML), aggressive NK-cell leukemia, acute biphenotypic leukaemia, and polycythemia vera), acute and chronic T-cell and B-cell leukemia), and a plasma cell neoplasm (e.g., multiple myeloma).

66. The method, compound or use according to any of claims 1-63, wherein the cancer is selected from the group consisting of adrenocortical carcinoma, adrenal cortex cancer, AIDS-related cancers (e.g., as Kaposi sarcoma, AIDS-related lymphoma, Burkitt lymphoma, and primary CNS lymphoma), anal cancer, appendix cancer, astrocytomas (e.g., childhood cerebellar or cerebral), bile duct cancer (e.g., cholangiocarcinoma), bladder cancer, bone cancer (e.g., Ewing sarcoma, osteosarcoma and malignant fibrous histiocytoma), brain tumors (e.g., glioblastoma multiforme, cerebellar astrocytoma, cerebral astrocytoma/malignant glioma, ependymoma, medulloblastoma, oligodendroglioma, supratentorial primitive neuroectodermal tumors, and visual pathway and hypothalamic glioma), brainstem glioma, breast cancer, bronchial tumors, gastrointestinal carcinoid tumor, carcinoid tumors, carcinoma of unknown primary, cardiac (heart) tumors, central nervous system caner (e.g., atypical teratoid/rhabdoid tumor, embryonal tumors, and germ cell tumors), cervical cancer, childhood cancers, chondrosarcoma, chronic myeloproliferative neoplasms, colon and rectal cancer, craniopharyngioma, desmoplastic small round cell tumor, ductal carcinoma in situ (DCIS), endometrial cancer, ependymoma, epitheliod hemangioendothelioma (EHE), esophageal cancer, esthesioneuroblastoma, extracranial germ cell tumor, extragonadal germ cell tumor, eye cancer (e.g., intraocular melanoma, and retinoblastoma), fallopian tube cancer, gallbladder cancer, gastric (stomach) cancer,

gastrointestinal stromal tumors (GIST), gestational trophoblastic disease (GTD), gliomas, hairy cell leukemia, head and neck cancer (e.g., head and neck squamous cell carcinoma (HNSCC)), hepatocellular (liver) cancer, histiocytosis, langerhans cell, hypopharyngeal cancer, kidney cancer, langerhans cell histiocytosis, laryngeal cancer, laryngeal cancer and papillomatosis, leukemia (e.g., acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), acute myeloblastic leukemia, chronic lymphocytic leukemia (CLL), chronic myelogenous leukemia (CML), chronic neutrophilic leukemia (CNL), chronic myelomonocytic leukaemia (CMML), aggressive NK-cell leukemia, acute biphenotypic leukaemia, and polycythemia vera), acute and chronic T-cell and B-cell leukemia), lip and oral cavity cancer, liver cancer, lung cancer (e.g., small cell lung cancer, non-small cell lung cancer (NSCLC), carcinoma of the lung, and squamous carcinoma of the lung), lung carcinoid tumor, lymphoma (e.g., Burkitt lymphoma, Hodgkin's lymphoma, non-Hodgkin's lymphoma, hairy cell lymphoma, mantle cell lymphoma, T-cell lymphoma, cutaneous T-cell lymphoma, B-cell lymphoma, diffuse large B-cell lymphoma, double-hit lymphoma, Waldenström macroglobulinemia, primary central nervous System (CNS) lymphoma, and intravascular large B-cell lymphoma (ILBCL)), male breast cancer, meningiomas, mesothelioma, midline tract carcinoma involving *NUT* gene, mouth cancer, multiple endocrine neoplasia syndrome, plasma cell neoplasm (e.g., multiple myeloma), mycosis fungoides, myelodysplastic syndrome, myelodysplastic/myeloproliferative neoplasms and chronic myeloproliferative neoplasms, nasal cavity and paranasal sinus cancer, nasopharyngeal cancer (NPC), neuroblastoma, oral cancer, lip and oral cavity cancer and oropharyngeal cancer, ovarian cancer, pancreatic cancer and pancreatic neuroendocrine tumors (e.g., islet cell tumors), paraganglioma, parathyroid cancer, penile cancer, pharyngeal cancer, pheochromocytoma, pituitary tumor, pleuropulmonary blastoma, primary peritoneal cancer, prostate cancer, retinoblastoma, rhabdomyosarcoma, salivary gland cancer, Sézary syndrome, skin cancer (e.g., basal and squamous cell carcinoma, merkel cell carcinoma, and melanoma), small intestine cancer, soft tissue sarcoma, squamous cell carcinoma, stomach (gastric) cancer, testicular cancer, throat cancer, thymoma and thymic carcinoma, thyroid cancer, transitional cell cancer of the renal pelvis and ureter, urethral cancer, uterine cancer and uterine Sarcoma, vaginal cancer, vascular tumors, vulvar cancer, and Wilms tumor.

67. A method, compound or use according to any of claims 1-63, wherein the cancer is selected from the group consisting of appendix cancer, bone cancer (e.g., Ewing sarcoma, osteosarcoma and malignant fibrous histiocytoma), bronchial tumors, carcinoma of unknown primary, chronic myeloproliferative neoplasms, colon and rectal cancer, head and neck cancer (including head and neck squamous cell carcinoma (HNSCC)), leukemia (e.g., acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), acute myeloblastic leukemia,

chronic lymphocytic leukemia (CLL), chronic myelogenous leukemia (CML), chronic neutrophilic leukemia (CNL), chronic myelomonocytic leukaemia (CMML), aggressive NK-cell leukemia, acute biphenotypic leukaemia, and polycythemia vera), acute and chronic T-cell and B-cell leukemia), lymphoma (e.g., Burkitt lymphoma, Hodgkin's lymphoma, non-Hodgkin's lymphoma, hairy cell lymphoma, mantle cell lymphoma, T-cell lymphoma, cutaneous T-cell lymphoma, B-cell lymphoma, diffuse large B-cell lymphoma, double-hit lymphoma, Waldenström macroglobulinemia, primary central nervous System (CNS) lymphoma, and intravascular large B-cell lymphoma (ILBCL)), plasma cell neoplasms (e.g., multiple myeloma), myelodysplastic syndrome, myelodysplastic/myeloproliferative neoplasms and chronic myeloproliferative neoplasms, pancreatic cancer and pancreatic neuroendocrine tumors (e.g., islet cell tumors), small intestine cancer, soft tissue sarcoma, and squamous cell carcinoma.

68. A method, compound or use according to any of claims 1-63, wherein the cancer is diffuse large B-cell lymphoma.

69. A method, compound or use according to any of claims 1-63, wherein the cancer is a colorectal cancer.

70. A method, compound or use according to any of claims 1-69, wherein the cancer has a mutant *KRAS* gene.

71. A method, compound or use according to any of claims 1-69, wherein the cancer has a heterozygous mutant *KRAS* gene.

72. A method, compound or use according to any of claims 1-71, wherein the hyperproliferative disorder or cancer is not Burkitt's lymphoma.

Figure 1

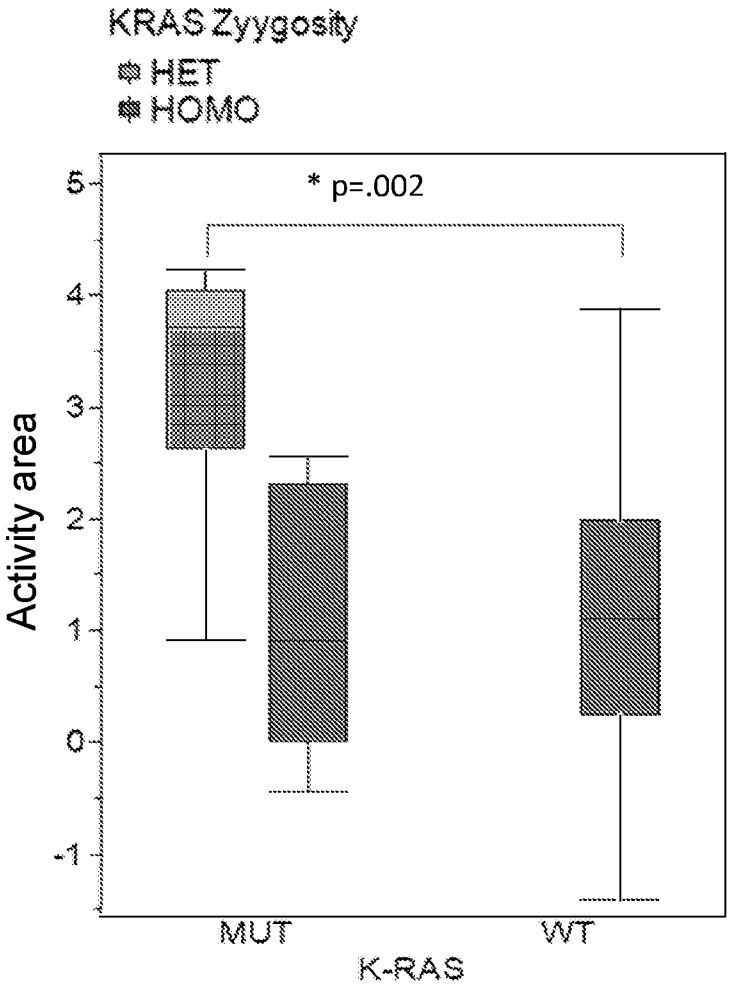

KRAS Zyygosity
HET
HOMO
* p=.002
Activity area
5
4
3
2
1
0
-1
MUT
WT
K-RAS

Figure 2

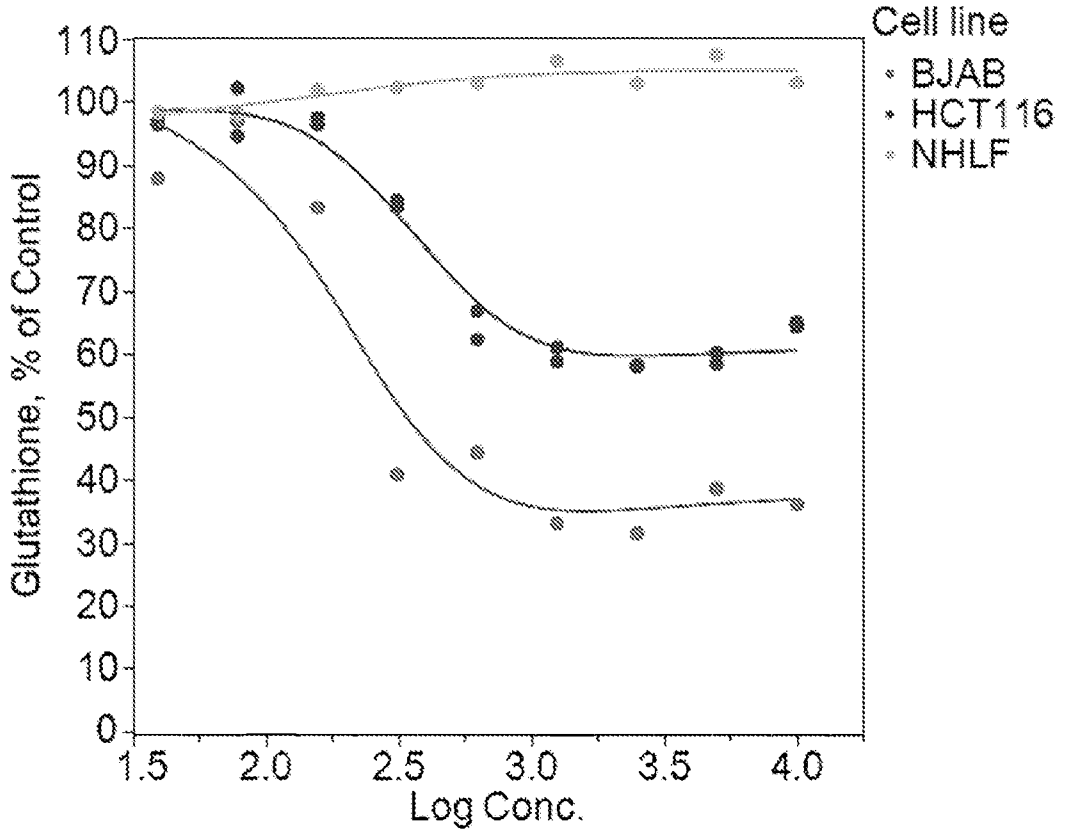

Cell line
BJAB
HCT116
NHLF
Glutathione, % of Control
110
100
90
80
70
60
50
40
30
20
10
0
1.5
2.0
2.5
3.0
3.5
4.0
Log Conc.

Figure 3

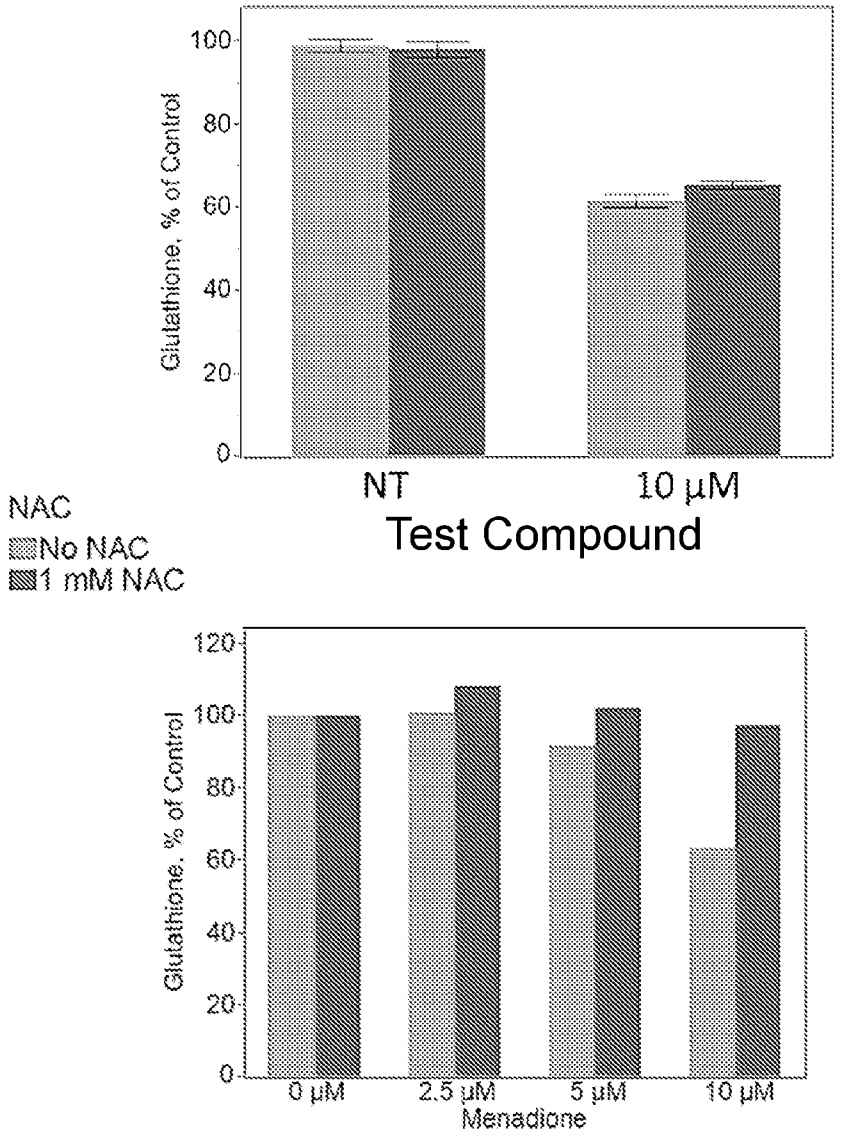
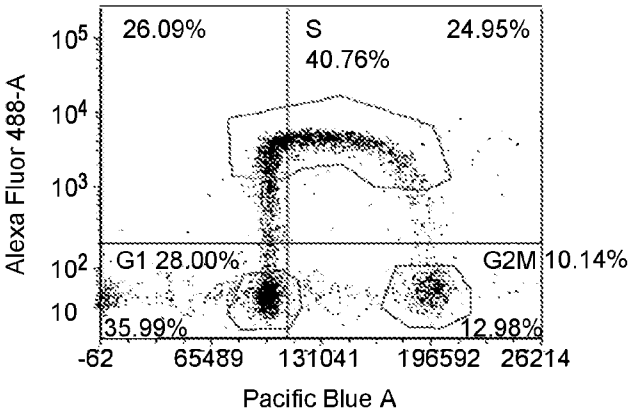
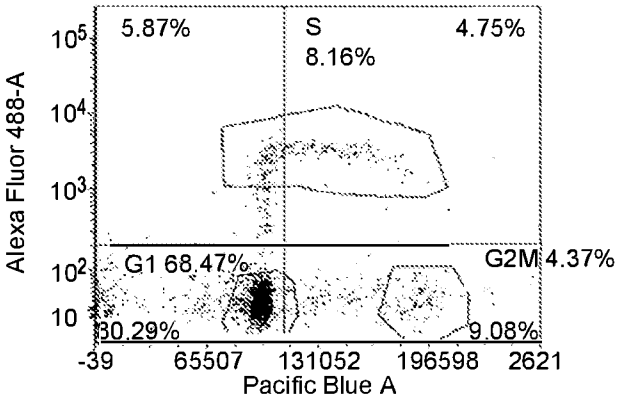

100
80
60
40
20
0
Glutathione, % of Control
NT
10 µM
Test Compound
NAC
No NAC
1 mM NAC
120
100
80
60
40
20
0
Glutathione, % of Control
0 µM
2.5 µM
5 µM
10 µM
Menadione

Figure 4A

DMSO



Serum Starvation



Test Compound

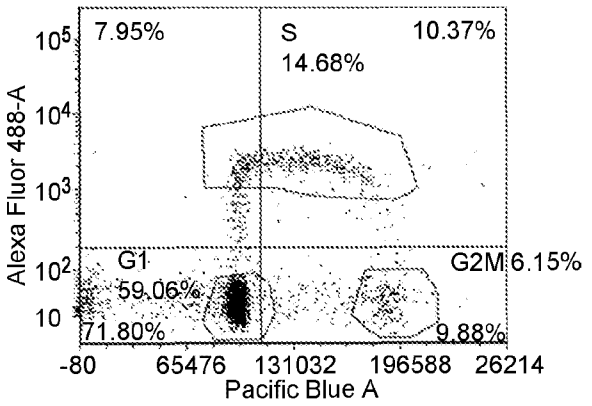
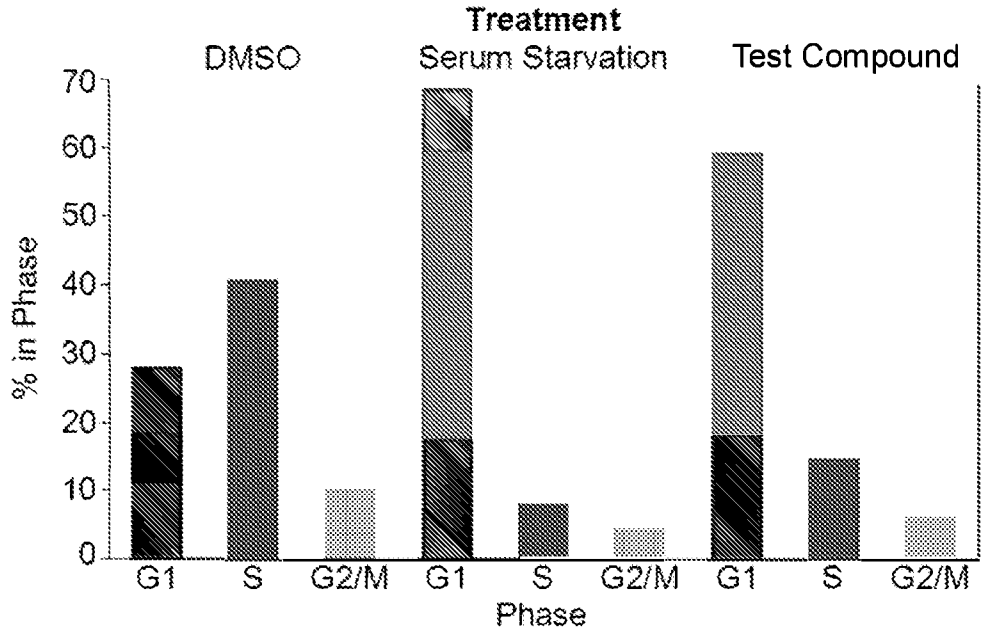
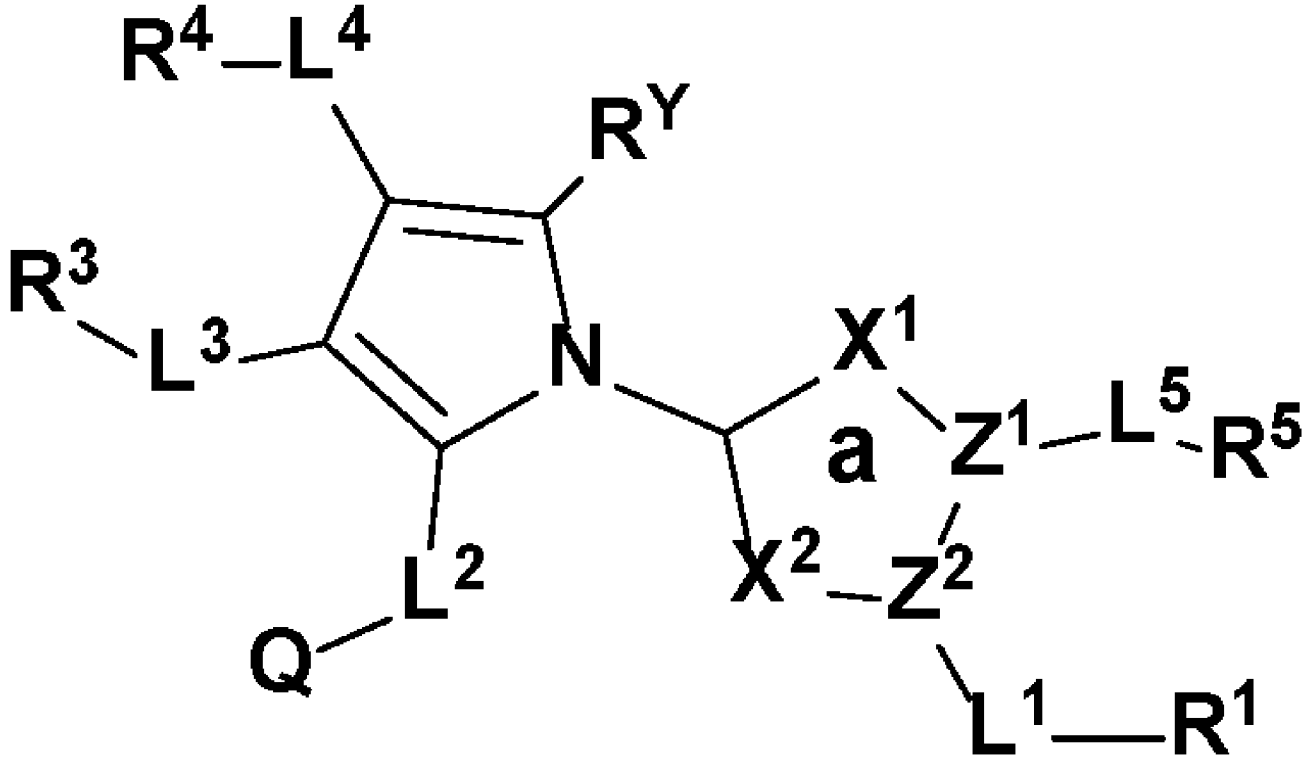


Figure 4B


Treatment
DMSO
Serum Starvation
Test Compound
% in Phase
70
60
50
40
30
20
10
0
G1
S
G2/M
G1
S
G2/M
G1
S
G2/M
Phase



(I)