

C₁₋₈ alkyl (preferably C₁₋₆ alkyl, more preferably C₁₋₃ alkyl); R_a is bonded with R₁ and R₄ respectively and together form a bridged heterocycle;

(vi) when n is 1, R₁, R₃, R_a and R_b are each independently hydrogen, halogen, hydroxy, alkoxy, or C₁₋₈ alkyl (preferably C₁₋₆ alkyl, more preferably C₁₋₃ alkyl); R₂ and R₄ are bonded together to form a 5- to 7-membered saturated or unsaturated monoheterocyclic ring;

the alkyl, cycloalkyl, alkoxy, aryl, saturated or unsaturated monoheterocyclic ring, monocyclic heteroaryl ring, bicyclic heteroaryl ring, spiro heterocyclic ring, or bridged heterocyclic ring is unsubstituted or substituted with 1, 2 or 3 substituents selected from the group consisting of: hydroxymethyl, hydroxyethyl, hydroxy, carboxy, halogen, -O(CH₂)_pOC₁₋₈ alkyl, -O(CH₂)_pOH, -(CH₂)_pOC₁₋₈ alkyl, 4- to 6-membered saturated monoheterocyclic ring, C₁₋₈ alkyl (preferably C₁₋₆ alkyl, more preferably C₁₋₃ alkyl), C₃₋₈ cycloalkyl (preferably C₃₋₆ cycloalkyl), halogenated C₁₋₈ alkyl (preferably halogenated C₁₋₆ alkyl, more preferably halogenated C₁₋₃ alkyl), halogenated C₃₋₈ cycloalkyl (preferably halogenated C₃₋₆ cycloalkyl), hydroxy-substituted C₁₋₈ alkyl (preferably hydroxy-substituted C₁₋₆ alkyl, more preferably hydroxy-substituted C₁₋₃ alkyl), NR_{a0}R_{b0}, -C(O)OC₁₋₆ alkyl, acetyl, C₁₋₈ alkoxy (preferably C₁₋₆ alkoxy, more preferably C₁₋₃ alkoxy), C₁₋₈ alkoxy-substituted C₁₋₈ alkyl (preferably C₁₋₆ alkoxy-substituted C₁₋₆ alkyl, more preferably C₁₋₃ alkoxy-substituted C₁₋₃ alkyl), halogenated C₁₋₈ alkoxy (preferably halogenated C₁₋₆ alkoxy, more preferably halogenated C₁₋₃ alkoxy), -SO₂C₁₋₈ alkyl (preferably -SO₂C₁₋₆ alkyl, more preferably -SO₂C₁₋₃ alkyl), C₆₋₁₀ aryl (preferably phenyl), 5- to 6-membered monocyclic heteroaryl or -Y-L; wherein Y is (CH₂)_q or C(O); L is a 4- to 6-membered saturated monoheterocyclic ring or a 5- to 6-membered monocyclic heteroaryl ring; and p and q are each independently 1, 2 or 3; R_{a0} and R_{b0} are each independently hydrogen, acetyl, C₁₋₈ alkyl (preferably C₁₋₆ alkyl, more preferably C₁₋₃ alkyl).

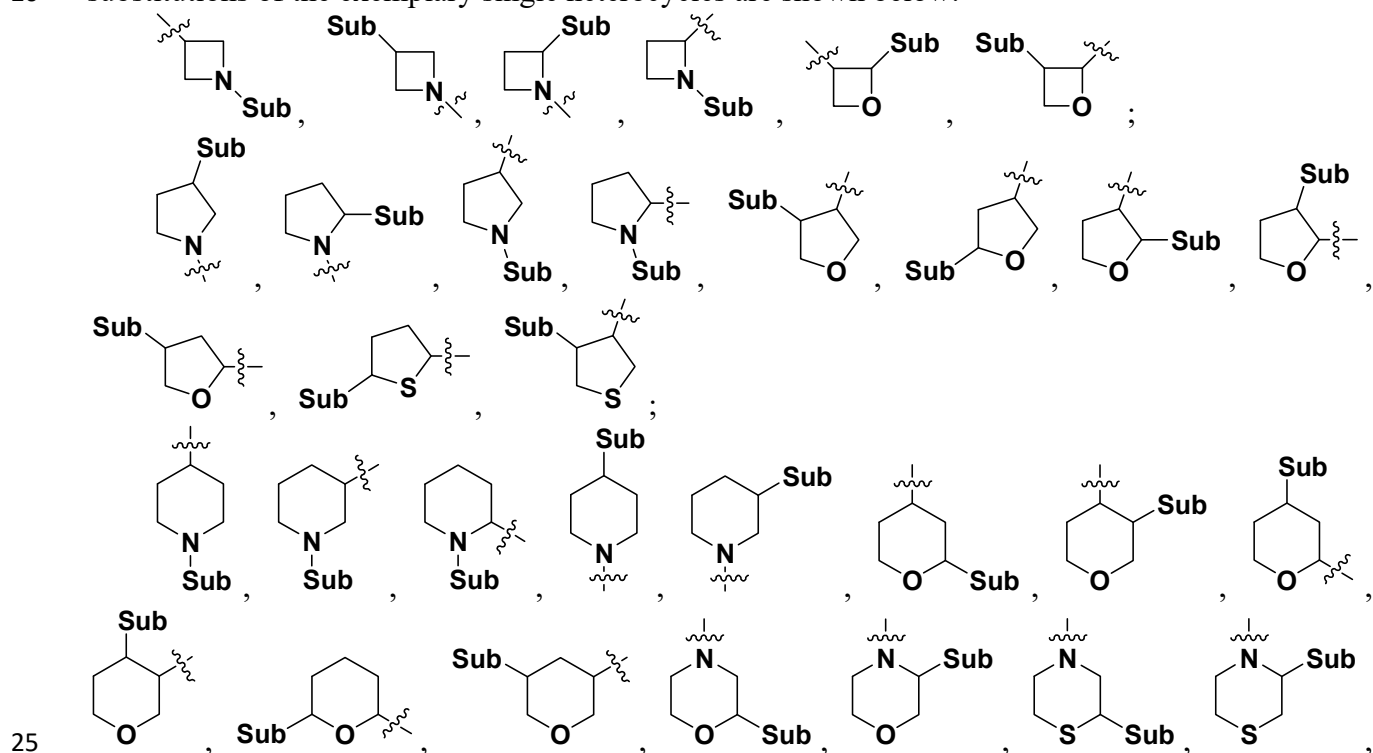
In another preferred embodiment, the 4- to 6-membered saturated monoheterocyclic ring in the substituents is unsubstituted or substituted with 1, 2 or 3 groups selected from the group consisting of halogen, hydroxy, C₁₋₆ alkyl, O=, NR_{a0}R_{b0}, hydroxymethyl, hydroxyethyl, carboxyl, -C(O)OC₁₋₆ alkyl, acetyl, halogenated C₁₋₃ alkyl, C₁₋₃ alkoxy, C₃₋₆ cycloalkyl, azetidine, oxetane, tetrahydrofuran, tetrahydrothiophene, tetrahydropyrrole, piperidine, oxazolidine, piperazine, dioxolane, dioxane, morpholine, thiomorpholine, thiomorpholine-1,1-dioxide, tetrahydropyran, a thiophene ring, a N-alkylpyrrole ring, a furan ring, a thiazole ring, an imidazole ring, an oxazole ring, a pyrrole ring, a pyrazole ring, a triazole ring, a tetrazole ring, an isoxazole ring, an oxadiazole ring, a thiadiazole ring, a pyridine ring, a pyridazine ring, a pyrimidine ring, and a pyrazine ring; wherein R_{a0} and R_{b0} are each independently hydrogen or C₁₋₃ alkyl.

In another preferred embodiment, the 4- to 7-membered or 5- to 7-membered saturated or

-O(CH₂)_pOC₁₋₈ alkyl, -O(CH₂)_pOH, -(CH₂)_pOC₁₋₈ alkyl, 4- to 6-membered saturated monoheterocyclic ring, C₁₋₈ alkyl (preferably C₁₋₆ alkyl, more preferably C₁₋₃ alkyl), C₃₋₈ cycloalkyl (preferably C₃₋₆ cycloalkyl), halogenated C₁₋₈ alkyl (preferably halogenated C₁₋₆ alkyl, more preferably halogenated C₁₋₃ alkyl), halogenated C₃₋₈ cycloalkyl (preferably halogenated C₃₋₆ cycloalkyl), hydroxy-substituted C₁₋₈ alkyl (preferably hydroxy-substituted C₁₋₆ alkyl, more preferably hydroxy-substituted C₁₋₃ alkyl), hydroxymethyl, hydroxyethyl, hydroxy, carboxy, NR_{a0}R_{b0}, -C(O)OC₁₋₆ alkyl, acetyl, C₁₋₈ alkoxy (preferably C₁₋₆ alkoxy, more preferably C₁₋₃ alkoxy), C₁₋₈ alkoxy-substituted C₁₋₈ alkyl (preferably C₁₋₆ alkoxy-substituted C₁₋₆ alkyl, more preferably C₁₋₃ alkoxy-substituted C₁₋₃ alkyl), halogenated C₁₋₈ alkoxy (preferably halogenated C₁₋₆ alkoxy, more preferably halogenated C₁₋₃ alkoxy), -SO₂C₁₋₈ alkyl (preferably -SO₂C₁₋₆ alkyl, more preferably -SO₂C₁₋₃ alkyl), C₆₋₁₀ aryl (preferably phenyl), 5- to 6-membered monocyclic heteroaryl or -Y-L; wherein Y is (CH₂)_q or C(O); L is a 4- to 6-membered saturated monoheterocyclic ring or 5- or 6-membered monocyclic heteroaryl; and p and q are each independently 1, 2 or 3; R_{a0} and R_{b0} are each independently hydrogen, acetyl, C₁₋₈ alkyl (preferably C₁₋₆ alkyl, more preferably C₁₋₃ alkyl).

The above-mentioned various substituents of the present disclosure themselves can also be substituted with the groups described herein.

When 4-to 6-membered saturated single heterocycles described herein are substituted, the positions of the substituents may be at their possible chemical positions, and representative substitutions of the exemplary single heterocycles are shown below:



The reactions in the above various steps are conventional reactions known to those skilled in the art. Unless otherwise stated, the reagents and starting materials used in the synthetic routes are either commercially available or can be prepared according to the designed different compound structures by those skilled in the art by referring to known methods.

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The main advantages of the present disclosure over the prior art include the following:

A series of novel 4,6,7-trisubstituted 1,2-dihydropyrrolo[3,4-c]pyridin/pyrimidin-3-one derivatives are provided, and they have relatively high inhibitory activity against BTK WT enzyme and pBTK Y223 cell and the other cells and weak inhibitory activity against EGFR WT. They have
10 obvious selective inhibition and can be used as a drug for treating tumors.

The present invention will be further illustrated below with reference to the specific examples. It should be understood that these examples are only to illustrate the invention but not to limit the disclosure of the invention. The experimental methods without specific conditions in the following
15 embodiments are generally carried out according to conventional conditions, or in accordance with the conditions recommended by the manufacturer. Unless indicated otherwise, parts and percentage are calculated by weight. Unless otherwise defined, terms used herein are of the same meanings .that are familiar to those skilled in the art. In addition, any methods and materials similar with or equivalent to those described herein can be applied to the present invention.

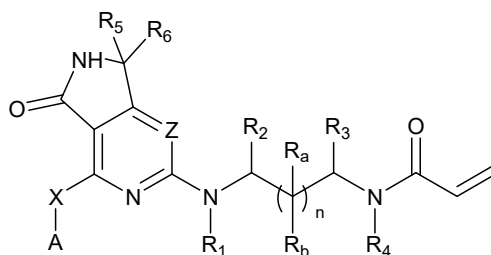
As used herein, DMB refers to 2,4-dimethoxybenzyl, THF refers to tetrahydrofuran, EA refers to ethyl acetate, PE refers to petroleum ether, Ac₂O refers to acetic anhydride, NBS refers to N-bromosuccinimide, DCM refers to dichloromethane, AIBN refers to azobisisobutyronitrile, Pd(dppf)Cl₂ refers to [1,1'-bis(diphenylphosphino)ferrocene]palladium dichloride, TFA refers to trifluoroacetic acid, TBSCl refers to tert-butyldimethylchlorosilane, NCS refers to
25 N-chlorosuccinimide, DHP refers to dihydrotetrahydropyran, LiAlH₄ refers to lithium aluminum hydride, PMB refers to p-methoxybenzyl, LiHMDS refers to lithium bistrimethylsilylamide, Pd₂(dba)₃ refers to tris(dibenzylideneacetone)dipalladium, RuPhos refers to 2-dicyclohexylphos-2',6'-diisopropoxy-1,1'-biphenyl, DMAP refers to 4-dimethylaminopyridine, THP is tetrahydrotetrahydropyran, n-BuLi refers to n-butyllithium, TMsOTf refers to trimethylsilyl
30 triflate, TEBAAC refers to triethyl benzylammonium chloride, HATU refers to 2-(7-azobenzotriazole)-N,N,N',N'-tetramethyluronium hexafluorophosphate, DMF refers to dimethylformamide, DMSO refers to dimethylsulfoxide, DIPEA refers to N,N-diisopropylethylamine, BINAP refers to (2R,3S)-2,2'-bis diphenylphosphino-1,1'- binaphthyl.

As used herein, room temperature refers to about 20-25 °C.

35 **Preparation of intermediate 1a**

CLAIMS

1. A compound of formula (I), or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof:



wherein X is a bond, NR_{a1}, S, SO, SO₂ or O; wherein R_{a1} is hydrogen, hydroxy or C₁₋₈ alkyl;

A is C₆₋₁₀ aryl, a 4- to 7-membered saturated or unsaturated monoheterocyclic ring, a 5- to 6-membered monocyclic heteroaryl ring, or an 8- to 10-membered bicyclic heteroaryl ring;

Z is N or CR_{b1}; wherein R_{b1} is hydrogen, halogen, cyano, C₁₋₈ alkyl, halogenated C₁₋₈ alkyl, C₁₋₈ alkoxy, C₃₋₈ cycloalkyl or C₃₋₈ cycloalkoxy;

R₅ and R₆ are each independently hydrogen, halogen, C₁₋₈ alkyl, halogenated C₁₋₈ alkyl, C₁₋₈ alkoxy, C₃₋₈ cycloalkyl or C₃₋₈ cycloalkoxy;

n is 0 or 1; wherein

(i) when n is 0, R₁ and R₃ are each independently hydrogen, halogen, hydroxy, alkoxy, or C₁₋₈ alkyl; R₂ and R₄ are bonded together to form a 4- to 7-membered saturated or unsaturated monoheterocyclic ring;

(ii) when n is 0, R₂ and R₄ are each independently hydrogen, halogen, hydroxy, alkoxy, or C₁₋₈ alkyl; R₁ and R₃ are bonded together to form a 4- to 7-membered saturated or unsaturated monoheterocyclic ring;

(iii) when n is 0, R₂ is hydrogen, halogen, or C₁₋₈ alkyl; R₃ is bonded with R₁ and R₄ to form a bridged heterocycle; or R₃ is hydrogen, halogen, or C₁₋₈ alkyl; R₂ is bonded with R₁ and R₄ to form a bridged heterocycle;

(iv) when n is 1, R₂ and R₃ are each independently hydrogen, halogen, hydroxy, alkoxy, or C₁₋₈ alkyl; R_a and R₁ are bonded and R_b and R₄ are bonded together to form a spiro heterocyclic ring;

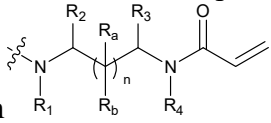
(v) when n is 1, R₂, R₃ and R_b are each independently hydrogen, halogen, hydroxy, alkoxy, or C₁₋₈ alkyl; R_a is bonded with R₁ and R₄ respectively together to form a bridged heterocyclic ring;

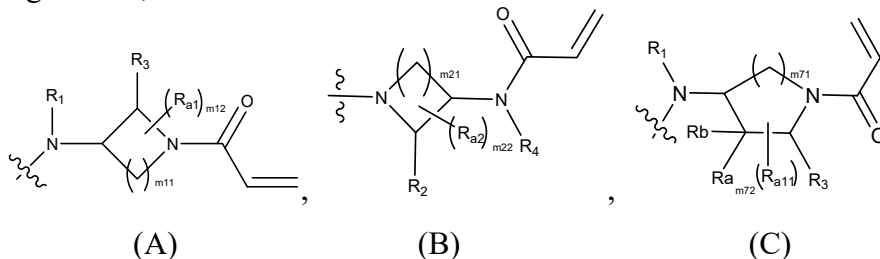
(vi) when n is 1, R₁, R₃, R_a, R_b are each independently hydrogen, halogen, hydroxy, alkoxy, or C₁₋₈ alkyl; R₂ and R₄ are bonded together to form a 5- to 7-membered saturated or unsaturated monoheterocyclic ring;

the alkyl, cycloalkyl, alkoxy, aryl, saturated or unsaturated monoheterocyclic ring, monocyclic heteroaryl ring, bicyclic heteroaryl ring, spiro heterocyclic ring, or bridged heterocyclic ring is unsubstituted or substituted with 1, 2 or 3 substituents selected from the group consisting of:

hydroxymethyl, hydroxyethyl, hydroxy, carboxy, halogen, $-\text{O}(\text{CH}_2)_p\text{OC}_{1-8}$ alkyl, $-\text{O}(\text{CH}_2)_p\text{OH}$, $-(\text{CH}_2)_p\text{OC}_{1-8}$ alkyl, 4- to 6-membered saturated monoheterocyclic ring, C_{1-8} alkyl, C_{3-8} cycloalkyl, halogenated C_{1-8} alkyl, halogenated C_{3-8} cycloalkyl, hydroxy-substituted C_{1-8} alkyl, $\text{NR}_{a0}\text{R}_{b0}$, $-\text{C}(\text{O})\text{OC}_{1-6}$ alkyl, acetyl, C_{1-8} alkoxy, C_{1-8} alkoxy-substituted C_{1-8} alkyl, halogenated C_{1-8} alkoxy, $-\text{SO}_2\text{C}_{1-8}$ alkyl, C_{6-10} aryl, 5- to 6-membered monocyclic heteroaryl or $-\text{Y-L}$; wherein Y is $(\text{CH}_2)_q$ or $\text{C}(\text{O})$; L is a 4- to 6-membered saturated monoheterocyclic ring or a 5- to 6-membered monocyclic heteroaryl ring; and p and q are each independently 1, 2 or 3; R_{a0} and R_{b0} are each independently hydrogen, acetyl, C_{1-8} alkyl, C_{1-8} alkoxy-substituted C_{1-8} alkyl.

2. The compound of claim 1, or a pharmaceutically acceptable salt, stereoisomer, solvate or

10 prodrug thereof, wherein  is a structure as shown in formula (A), (B) or (C):



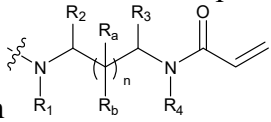
wherein, m11 and m21 are each independently 1, 2, 3 or 4; m71 is 1, 2 or 3;

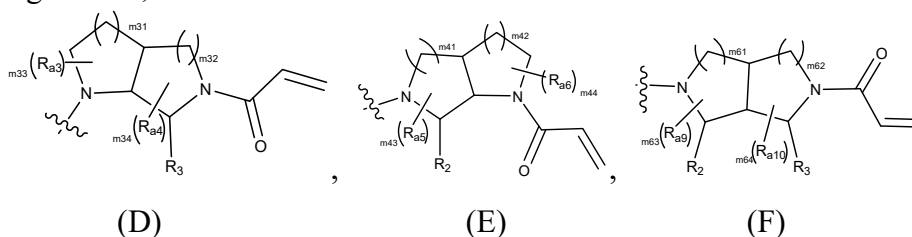
m12 and m22 are each independently 0, 1, 2, 3 or 4; m72 is 0, 1, 2 or 3;

15 R_{a1} , R_{a2} , and R_{a11} are each independently halogen, C_{1-8} alkyl, halogenated C_{1-8} alkyl, hydroxy-substituted C_{1-8} alkyl, C_{1-8} alkoxy, C_{1-8} alkoxy-substituted C_{1-8} alkyl, or C_{3-8} cycloalkyl;

R_1 , R_2 , R_3 , R_4 , R_a and R_b are as defined in claim 1.

3. The compound of claim 1, or a pharmaceutically acceptable salt, stereoisomer, solvate or

prodrug thereof, wherein  is a structure as shown in formula (D), (E) or (F):



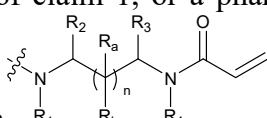
wherein, m31, m32, m41, m42, m61 and m62 are each independently 0, 1, 2, or 3;

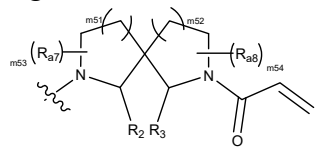
m33, m34, m43, m44, m63 and m64 are each independently 0, 1, 2, or 3;

25 R_{a3} , R_{a4} , R_{a5} , R_{a6} , R_{a9} and R_{a10} are each independently halogen, C_{1-8} alkyl, halogenated C_{1-8} alkyl, hydroxy-substituted C_{1-8} alkyl, C_{1-8} alkoxy, C_{1-8} alkoxy-substituted C_{1-8} alkyl, or C_{3-8} cycloalkyl;

R_2 and R_3 are as defined in claim 1.

4. The compound of claim 1, or a pharmaceutically acceptable salt, stereoisomer, solvate or

prodrug thereof, wherein  is a structure as shown in formula (G):



(G)

5 wherein, m51 and m52 are each independently 0, 1, 2, or 3;

m53 and m54 are each independently 0, 1, 2, 3 or 4;

R_{a7} and R_{a8} are each independently halogen, C₁₋₈ alkyl, halogenated C₁₋₈ alkyl, hydroxy-substituted C₁₋₈ alkyl, C₁₋₈ alkoxy, C₁₋₈ alkoxy-substituted C₁₋₈ alkyl, or C₃₋₈ cycloalkyl;

R₂ and R₃ are as defined in claim 1.

10 5. The compound of claim 1, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein X is a bond or NR_{a1}; wherein R_{a1} is hydrogen or C₁₋₃ alkyl.

6. The compound of any of the preceding claims, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein A is C₆₋₁₀ aryl or a 5- to 6-membered monocyclic heteroaryl ring; A is optionally substituted with 1, 2 or 3 substituents selected from a group A1 consisting of halogen, -O(CH₂)_pOC₁₋₈ alkyl, -O(CH₂)_pOH, -(CH₂)_pOC₁₋₈ alkyl, 4- to 6-membered saturated monoheterocyclic ring, C₁₋₈ alkyl, C₃₋₈ cycloalkyl, halogenated C₁₋₈ alkyl, halogenated C₃₋₈ cycloalkyl, hydroxy-substituted C₁₋₈ alkyl, hydroxymethyl, hydroxyethyl, hydroxy, carboxy, NR_{a0}R_{b0}, -C(O)OC₁₋₆ alkyl, acetyl, C₁₋₈ alkoxy, C₁₋₈ alkoxy-substituted C₁₋₈ alkyl, halogenated C₁₋₈ alkoxy, -SO₂C₁₋₈ alkyl, C₆₋₁₀ aryl, 5- to 6-membered monocyclic heteroaryl and -Y-L; wherein Y is (CH₂)_q or C(O); L is a 4- to 6-membered saturated monoheterocyclic ring; and p and q are each independently 1, 2 or 3; R_{a0} and R_{b0} are each independently hydrogen, acetyl, C₁₋₈ alkyl, or C₁₋₈ alkoxy-substituted C₁₋₈ alkyl.

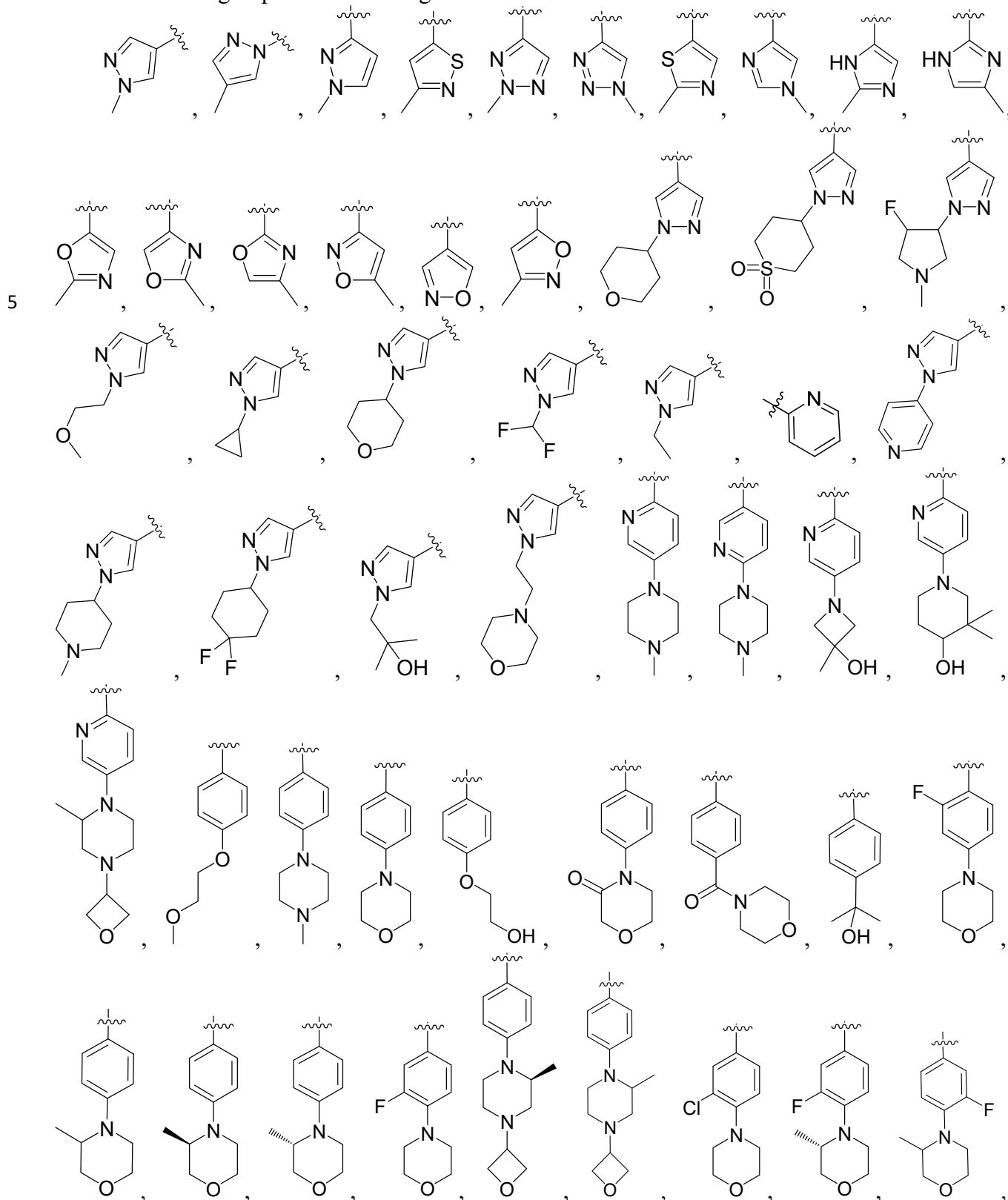
7. The compound of any of the preceding claims, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein X is NH; A is C₆₋₁₀ aryl or a 5- to 6-membered monocyclic heteroaryl ring; A is optionally substituted with 1, 2 or 3 substituents selected from a group A1 consisting of halogen, -O(CH₂)_pOC₁₋₈ alkyl, -O(CH₂)_pOH, -(CH₂)_pOC₁₋₈ alkyl, 4- to 6-membered saturated monoheterocyclic ring, C₁₋₈ alkyl, C₃₋₈ cycloalkyl, halogenated C₁₋₈ alkyl, halogenated C₃₋₈ cycloalkyl, hydroxy-substituted C₁₋₈ alkyl, hydroxymethyl, hydroxyethyl, hydroxy, carboxy, NR_{a0}R_{b0}, -C(O)OC₁₋₆ alkyl, acetyl, C₁₋₈ alkoxy, C₁₋₈ alkoxy-substituted C₁₋₈ alkyl, halogenated C₁₋₈ alkoxy, -SO₂C₁₋₈ alkyl, C₆₋₁₀ aryl, 5- to 6-membered monocyclic heteroaryl and -Y-L; wherein Y is (CH₂)_q or C(O); L is a 4- to 6-membered saturated monoheterocyclic ring; and p and q are each independently 1, 2 or 3; R_{a0} and R_{b0} are each independently hydrogen, acetyl, C₁₋₈

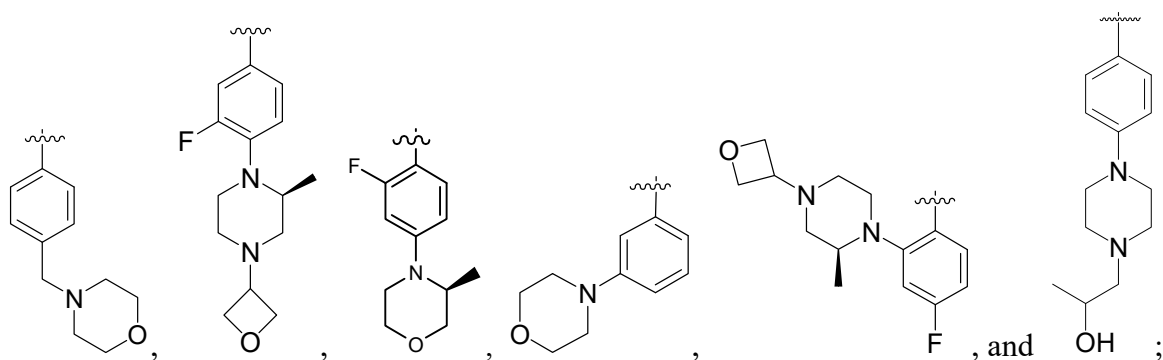
8. The compound of any of the preceding claims 1 to 6, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein X is a bond; A is a 5- to 6-membered monocyclic heteroaryl ring; A is optionally substituted with 1, 2 or 3 substituents selected from a group A1 consisting of halogen, $-\text{O}(\text{CH}_2)_p\text{OC}_{1-8}$ alkyl, $-\text{O}(\text{CH}_2)_p\text{OH}$, $-(\text{CH}_2)_p\text{OC}_{1-8}$ alkyl, 4- to 6-membered saturated monoheterocyclic ring, C_{1-8} alkyl, C_{3-8} cycloalkyl, halogenated C_{1-8} alkyl, halogenated C_{3-8} cycloalkyl, hydroxy-substituted C_{1-8} alkyl, hydroxymethyl, hydroxyethyl, hydroxy, carboxy, $\text{NR}_{a0}\text{R}_{b0}$, $-\text{C}(\text{O})\text{OC}_{1-6}$ alkyl, acetyl, C_{1-8} alkoxy, C_{1-8} alkoxy-substituted C_{1-8} alkyl, halogenated C_{1-8} alkoxy, $-\text{SO}_2\text{C}_{1-8}$ alkyl, C_{6-10} aryl, 5- to 6-membered monocyclic heteroaryl and $-\text{Y}-\text{L}$; wherein Y is $(\text{CH}_2)_q$ or $\text{C}(\text{O})$; L is a 4- to 6-membered saturated monoheterocyclic ring; and p and q are each independently 1, 2 or 3; R_{a0} and R_{b0} are each independently hydrogen, acetyl, C_{1-8} alkyl, or C_{1-8} alkoxy-substituted C_{1-8} alkyl.

10. The compound of any of the preceding claims 1 to 5, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein X is NH; A is a structure selected from a group B1,

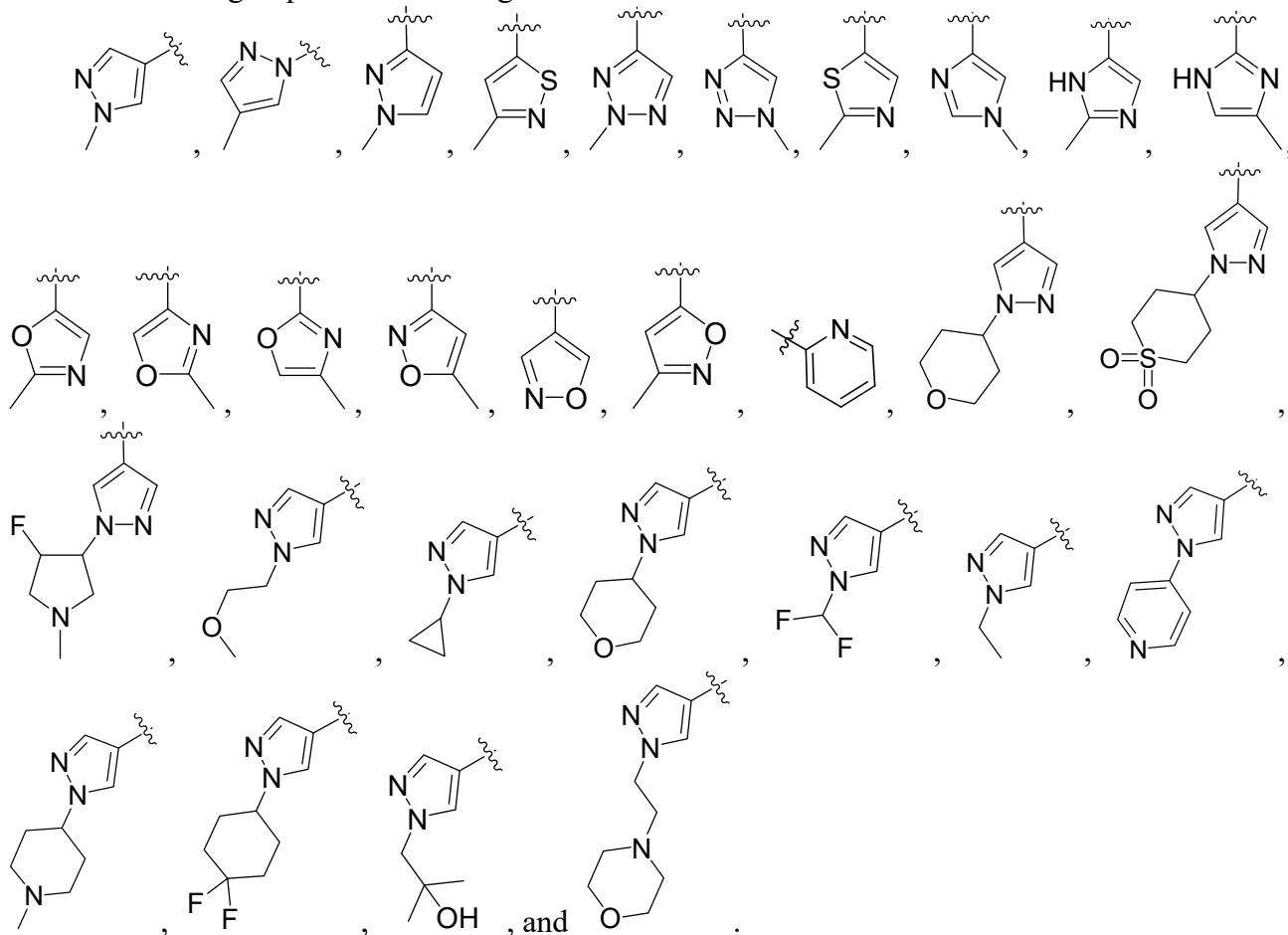
stereoisomer, solvate or prodrug thereof, wherein X is a bond; A is a structure selected from a group B1 or a group B2,

wherein the group B1 is consisting of:



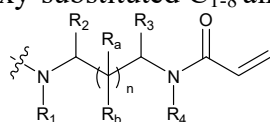


wherein the group B2 is consisting of:



12. The compound of claim 2, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein X is NH; A is C₆₋₁₀ aryl or a 5- to 6-membered monocyclic heteroaryl ring; A is optionally substituted with 1, 2 or 3 substituents selected from a group A1 consisting of halogen, -O(CH₂)_pOC₁₋₈ alkyl, -O(CH₂)_pOH, -(CH₂)_pOC₁₋₈ alkyl, 4- to 6-membered saturated monoheterocyclic ring, C₁₋₈ alkyl, C₃₋₈ cycloalkyl, halogenated C₁₋₈ alkyl, halogenated C₃₋₈ cycloalkyl, hydroxy-substituted C₁₋₈ alkyl, hydroxymethyl, hydroxyethyl, hydroxy, carboxy, NR_{a0}R_{b0}, -C(O)OC₁₋₆ alkyl, acetyl, C₁₋₈ alkoxy, C₁₋₈ alkoxy-substituted C₁₋₈ alkyl, halogenated C₁₋₈ alkoxy, -SO₂C₁₋₈ alkyl, C₆₋₁₀ aryl, 5- to 6-membered monocyclic heteroaryl and -Y-L; wherein Y is (CH₂)_q or C(O); L is a 4- to 6-membered saturated monoheterocyclic ring; and p and q are each independently 1, 2 or 3; R_{a0} and R_{b0} are each independently hydrogen, acetyl, C₁₋₈ alkyl, or C₁₋₈

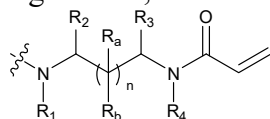
alkoxy-substituted C₁₋₈ alkyl;



is a structure of formula (A); wherein the groups in the formula (A) are defined as in claim 2;

R₁ is hydrogen or C₁₋₈ alkyl.

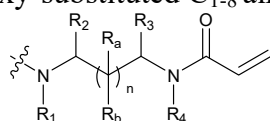
- 5 13. The compound of claim 2, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein X is NH; A is a structure selected from a group B1 ;



is a structure of formula (A); wherein the groups in the formula (A) are defined as in claim 2;

R₁ is hydrogen or C₁₋₈ alkyl.

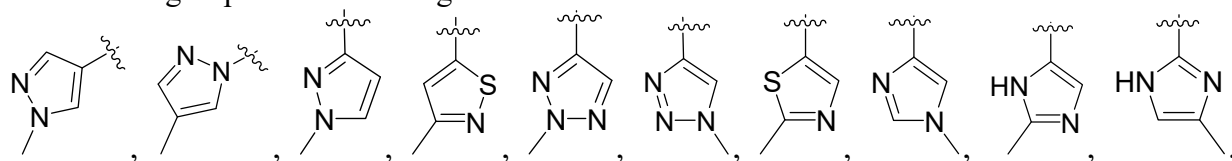
- 10 14. The compound of claim 2, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein X is a bond; A is a 5- to 6-membered monocyclic heteroaryl ring; A is optionally substituted with 1, 2 or 3 substituents selected from a group A1 consisting of halogen, -O(CH₂)_pOC₁₋₈ alkyl, -O(CH₂)_pOH, -(CH₂)_pOC₁₋₈ alkyl, 4- to 6-membered saturated monoheterocyclic ring, C₁₋₈ alkyl, C₃₋₈ cycloalkyl, halogenated C₁₋₈ alkyl, halogenated C₃₋₈ cycloalkyl, hydroxy-substituted C₁₋₈ alkyl, hydroxymethyl, hydroxyethyl, hydroxy, carboxy, NR_{a0}R_{b0}, -C(O)OC₁₋₆ alkyl, acetyl, C₁₋₈ alkoxy, C₁₋₈ alkoxy-substituted C₁₋₈ alkyl, halogenated C₁₋₈ alkoxy, -SO₂C₁₋₈ alkyl, C₆₋₁₀ aryl, 5- to 6-membered monocyclic heteroaryl and -Y-L; wherein Y is (CH₂)_q or C(O); L is a 4- to 6-membered saturated monoheterocyclic ring; and p and q are each independently 1, 2 or 3; R_{a0} and R_{b0} are each independently hydrogen, acetyl, C₁₋₈ alkyl, or C₁₋₈ alkoxy-substituted C₁₋₈ alkyl;

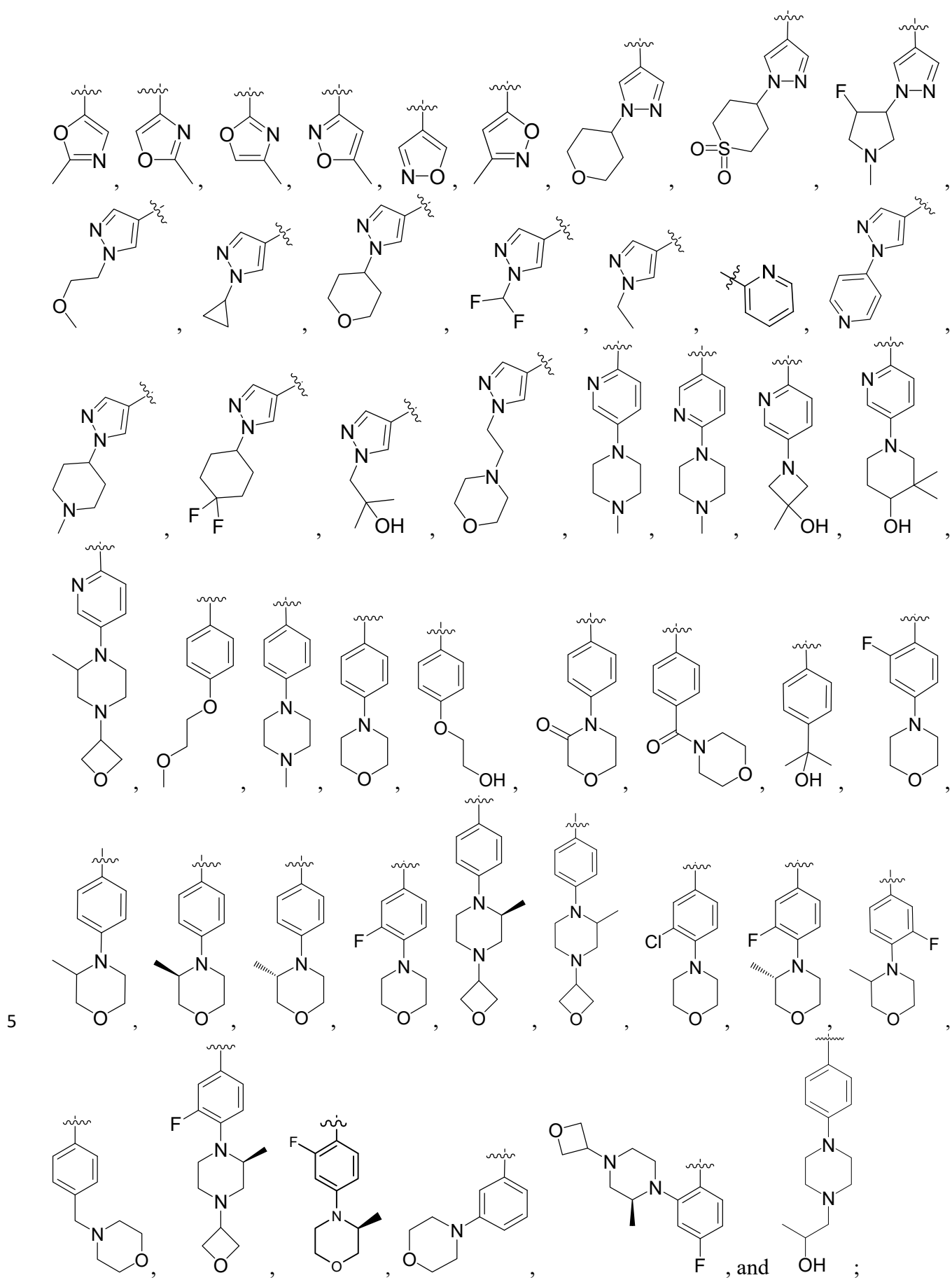


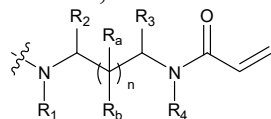
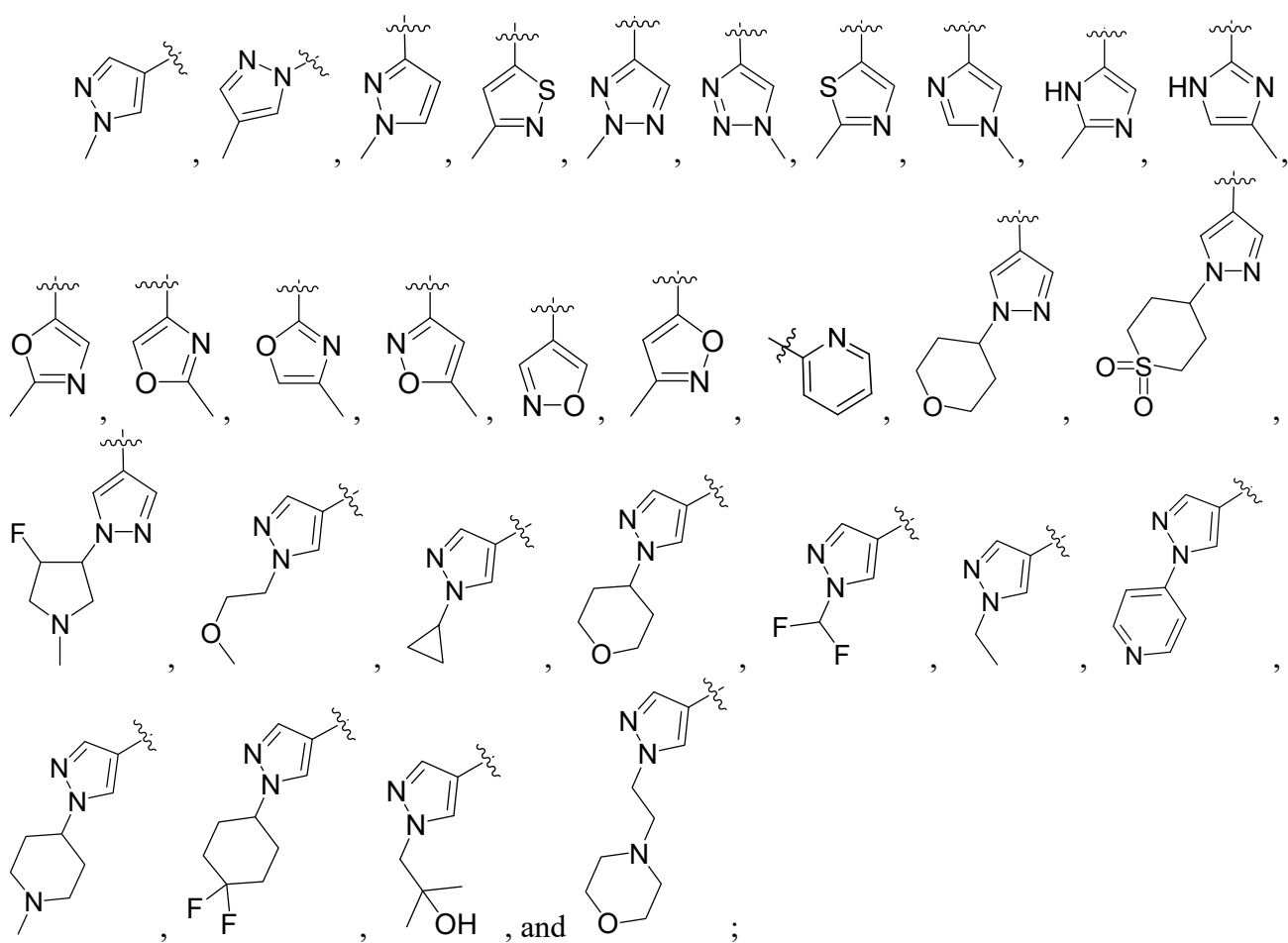
is a structure of formula (A); wherein the groups in the formula (A) are defined as in claim 2;

R₁ is hydrogen or C₁₋₈ alkyl.

- 15 15. The compound of claim 2, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein X is a bond; A is a structure selected from a group B1 or a group B2; wherein the group B1 is consisting of:



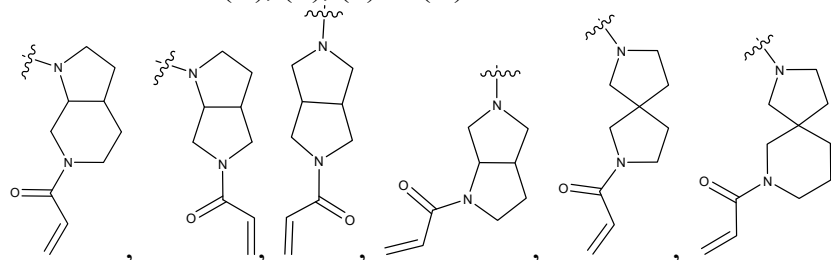




5 is a structure of formula (A); wherein the groups in the formula (A) are defined as in claim 2;

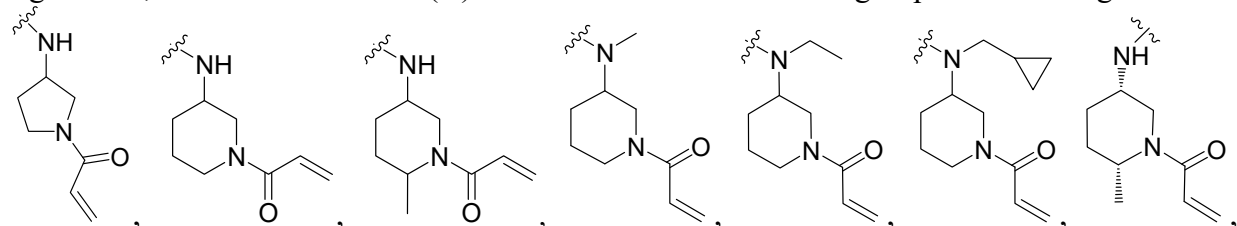
R_1 is hydrogen or C_{1-8} alkyl.

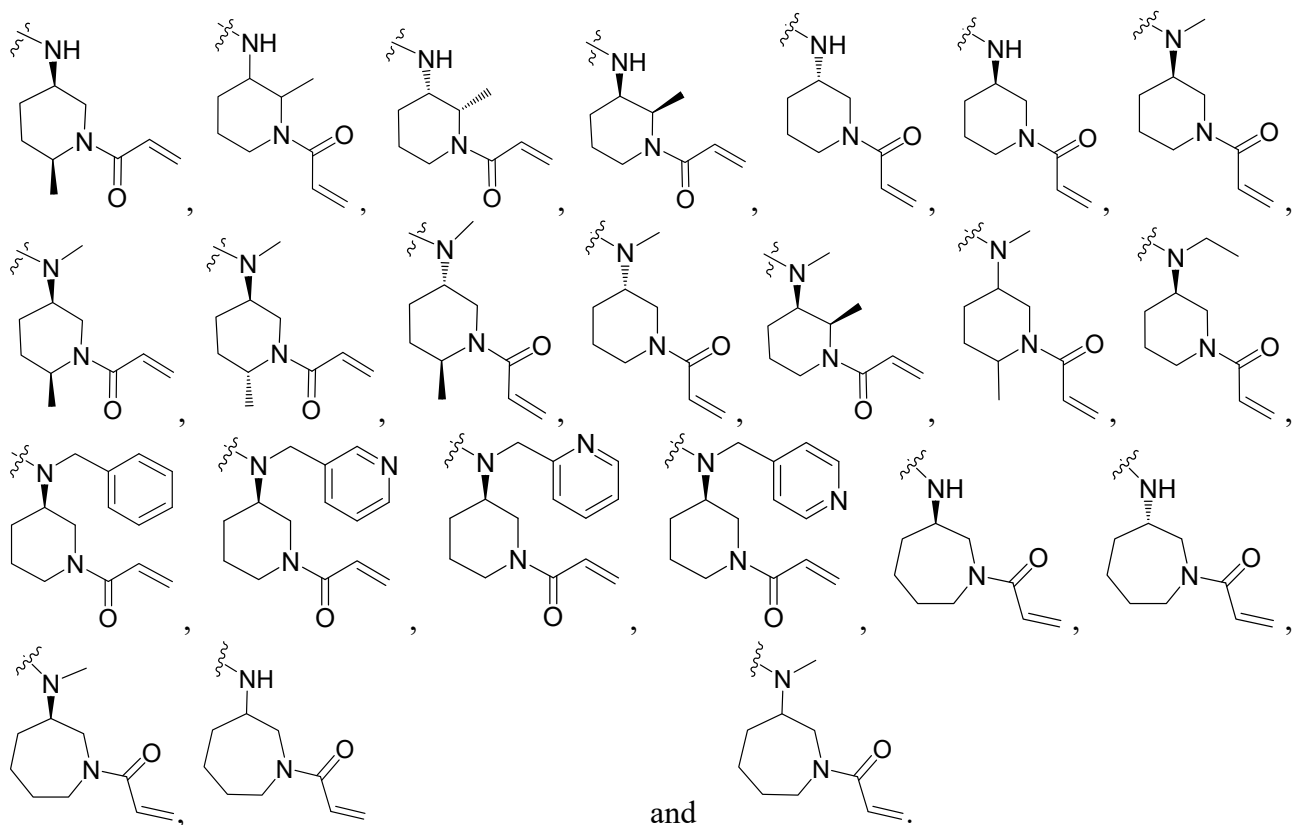
16. The compound of claim 3 or 4, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein formula (D), (E), (F) or (G) is selected from:



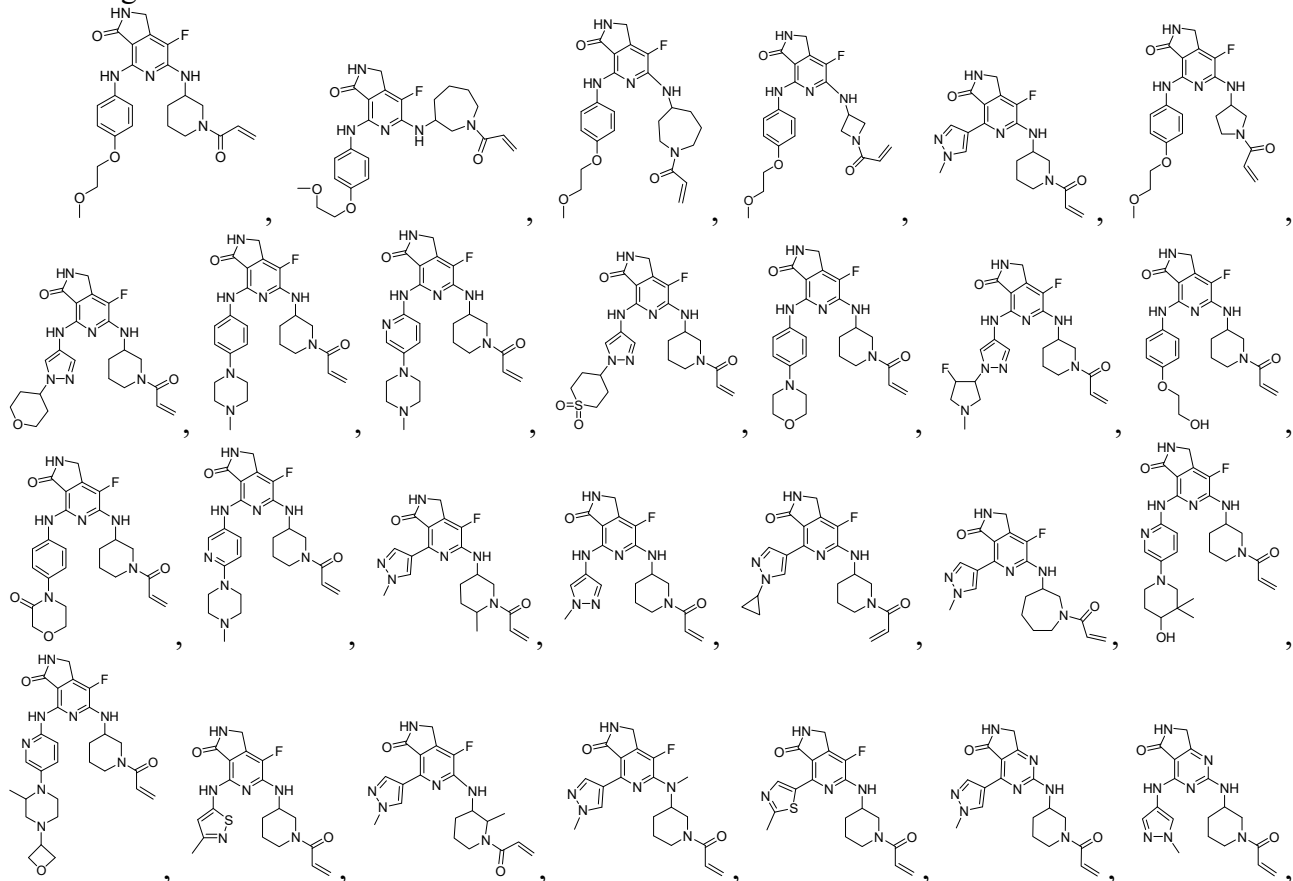
10

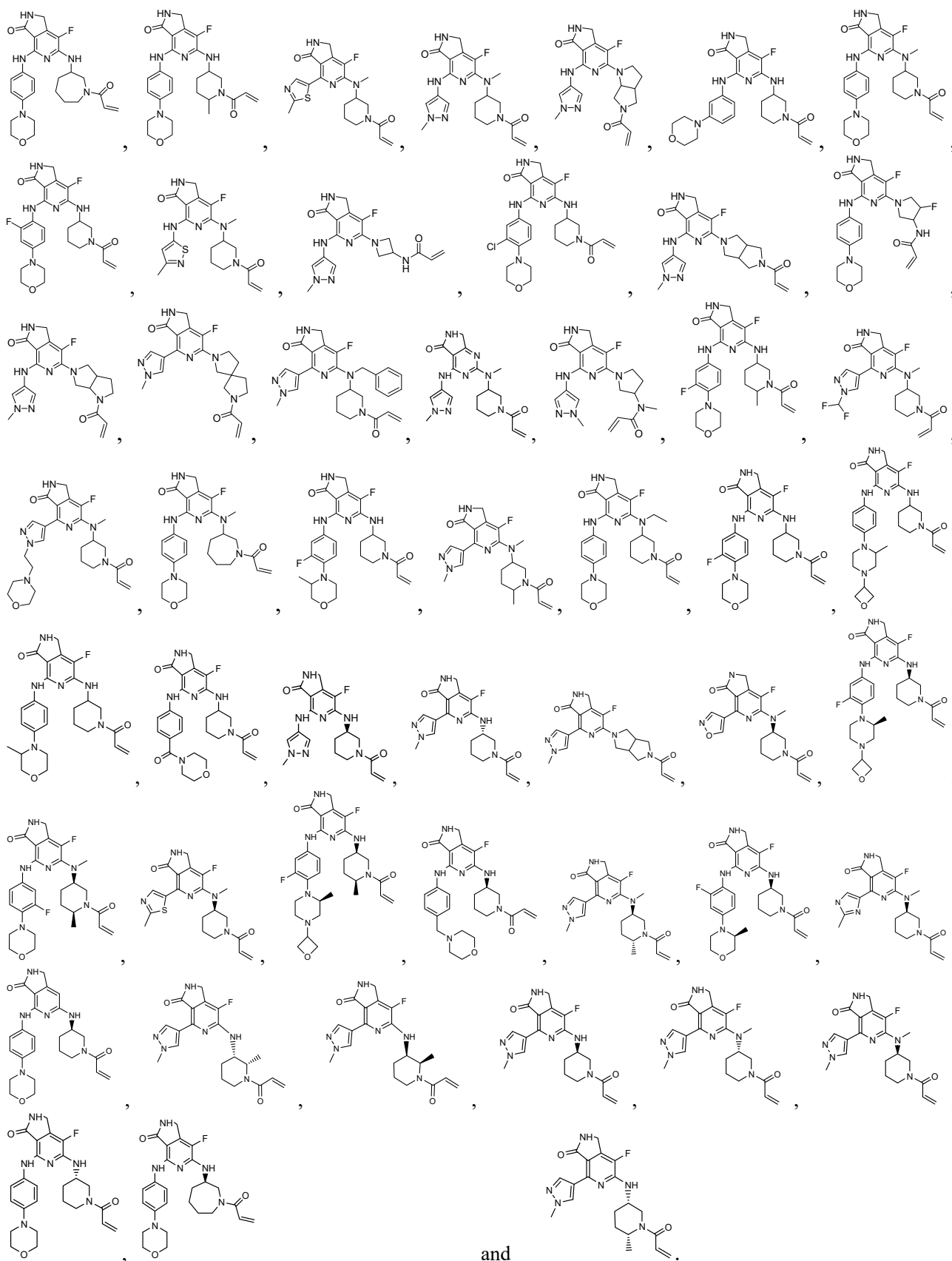
17. The compound of claim 2, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein the formula (A) is a structure selected from a group C1 consisting of:





- 5 18. The compound of claim 1, or a pharmaceutically acceptable salt, stereoisomer, solvate or prodrug thereof, wherein the compound of formula (I) is a structure selected from a group D1 consisting of:





19. A pharmaceutical composition comprising the compound of any of the preceding claims and a pharmaceutically acceptable carrier or excipient.

20. Use of the compound of any of claims 1-18 or the pharmaceutical composition of claim 19

in the preparation of a kinase inhibitor drug.