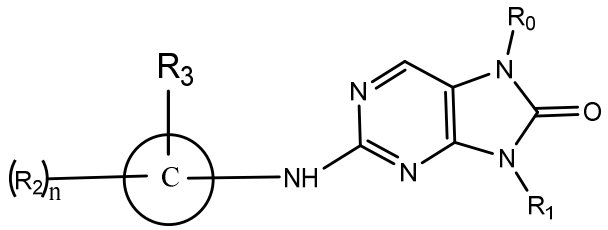
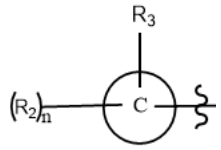
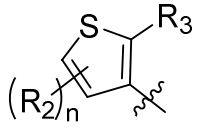
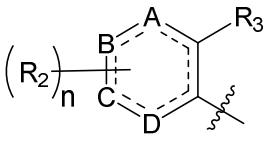
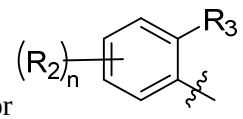
Claims

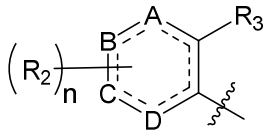
1. A compound of general formula (I), or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof,


(I)

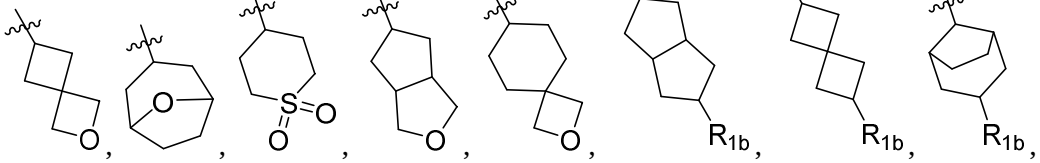
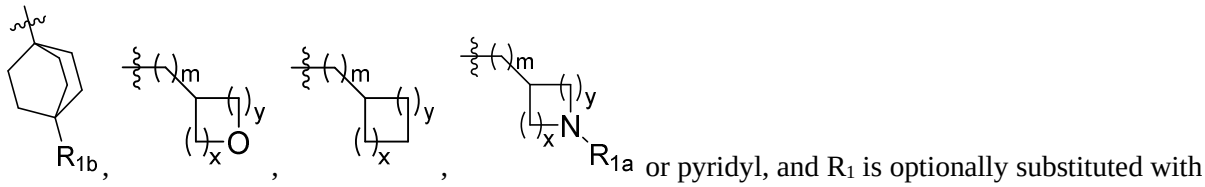
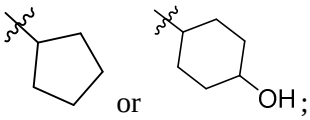
wherein

 is ,  or ;

 is a single bond or a double bond;

A, B, C, and D in the  are each independently C or N, and at least one of A, B, C, and D is N;

R_0 is H, C_{1-6} alkyl, or cyclopropyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from halogen and deuterium (D);

R_1 is ,  or pyridyl, and R_1 is optionally substituted with one or two substituents selected from D, halogen, cyano, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, provided that R_1 is not ;

R_{1a} is H or C_{1-6} alkyl;

R_{1b} is OH, cyano, or hydroxyl-substituted C_{1-6} alkyl;

R_2 is cyano, =O, carboxyl, -C(=O)$NR_{2a}R_{2b}$, C_{1-6} alkoxy, C_{1-6} alkyl, halogen, -S(=O)$_2R_{2a}$ or -C(=O)OC_{1-6} alkyl; wherein C_{1-6} alkyl or C_{1-6} alkoxy is optionally substituted with one or more substituents selected from halogen and deuterium;

R_{2a} and R_{2b} are each independently H, C_{1-6} alkyl or 3- to 5-membered cycloalkyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from OH, D, and halogen;

alternatively, R_{2a} and R_{2b} together with the atom to which they are attached form 5- to 6-membered heterocyclyl group containing 1, 2 or 3 heteroatoms selected from N, O and S, wherein 5- to 6-membered heterocyclyl group is optionally substituted with one or more substituents selected from OH and halogen;

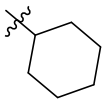
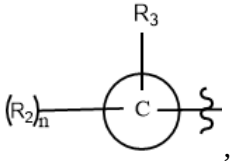
R_3 is halogen or C_{1-6} alkyl, wherein C_{1-6} alkyl is optionally substituted with 1 to 3 substituents selected from D and halogen;

m is 0 or 1;

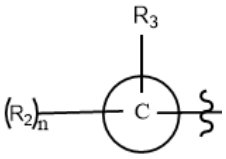
n is 1, or 2; and

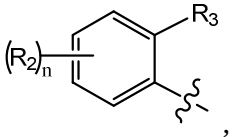
x and y are each independently 1, 2, or 3;

provided that

R_1 is not  when 

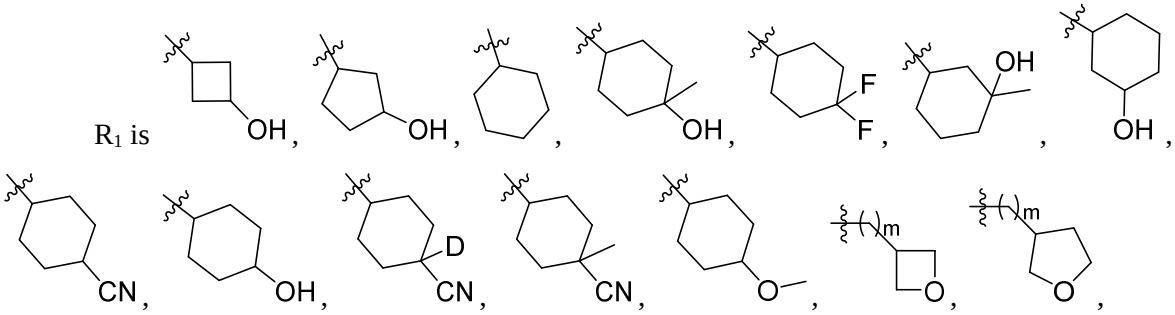
, R_0, R_2, and R_3 all satisfy the following condition:

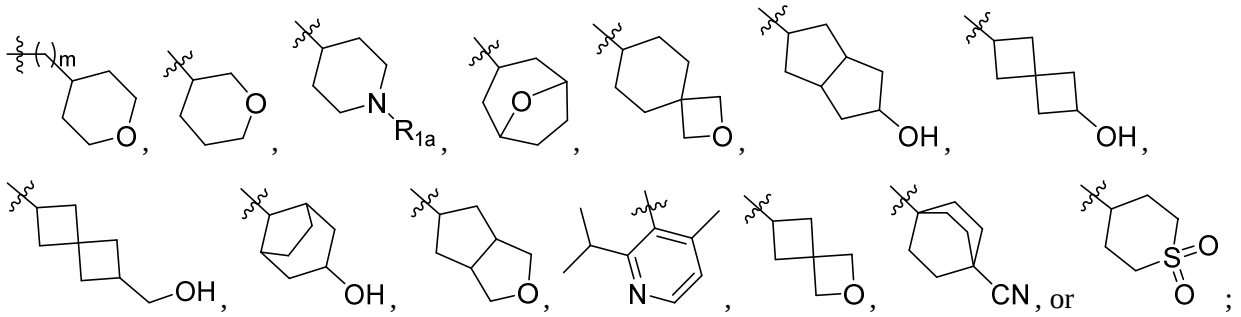


is 

, n is 1, R_0 is H or methyl, R_2 is methoxy or -S(=O)$_2$Me, and R_3 is methyl.

2. The compound according to claim 1, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof, wherein

R_1 is 



R_{1a} is H or C_{1-6} alkyl;

R_2 is cyano, -C(=O)$NR_{2a}R_{2b}$, C_{1-6} alkoxy, halogen, -S(=O)$_2R_{2a}$ or -C(=O)OC_{1-6} alkyl; wherein C_{1-6} alkoxy is optionally substituted with one or more substituents selected from halogen and deuterium;

R_{2a} and R_{2b} are each independently H, C_{1-6} alkyl or 3- to 5-membered cycloalkyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from OH, D, and halogen;

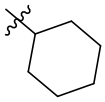
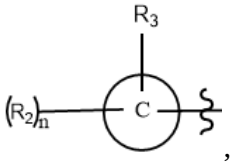
alternatively, R_{2a} and R_{2b} together with the atom to which they are attached form 5- to 6-membered heterocyclyl group containing 1 to 3 heteroatoms selected from N, O and S, wherein heterocyclyl group is optionally substituted with one or more substituents selected from OH and halogen;

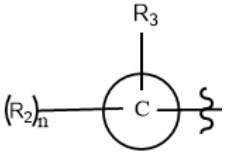
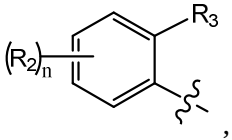
R_3 is halogen or C_{1-6} alkyl, wherein C_{1-6} alkyl is optionally substituted with 1 to 3 substituents selected from D and halogen;

m is 0 or 1; and

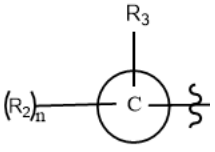
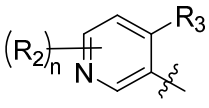
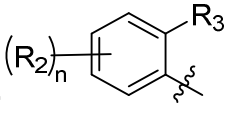
n is 1 or 2;

provided that

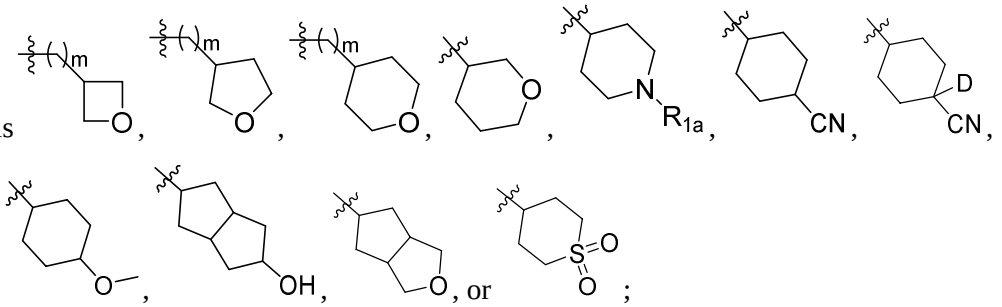
R_1 is not  when , R_0, R_2, and R_3 all satisfy the following condition:

 is , n is 1, R_0 is H or methyl, R_2 is methoxy or -S(=O)$_2$Me, and R_3 is methyl.

3. The compound according to claim 1, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof, wherein

 is  or ;

R_0 is H, C_{1-4} alkyl, or cyclopropyl, wherein C_{1-4} alkyl is optionally substituted with one or more substituents selected from halogen and D;

R_1 is , or ;

R_{1a} is H or C_{1-6} alkyl;

R_2 is cyano, -C(=O)$NR_{2a}R_{2b}$, C_{1-6} alkoxy, halogen, -S(=O)$_2R_{2a}$ or -C(=O)OC_{1-6} alkyl; wherein C_{1-6} alkoxy is optionally substituted with one or more substituents selected from halogen and deuterium;

R_{2a} and R_{2b} are each independently H, C_{1-6} alkyl or 3- to 5-membered cycloalkyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from OH, D, and halogen;

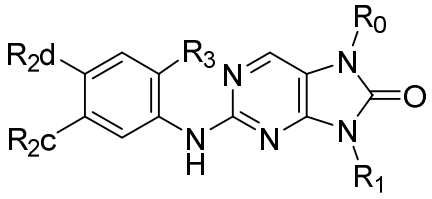
alternatively, R_{2a} and R_{2b} together with the atom to which they are attached form 5- to 6-membered heterocyclyl group containing 1 to 3 heteroatoms selected from N, O and S, wherein 5- to 6-membered heterocyclyl group is optionally substituted with one or more substituents selected from OH and halogen;

R_3 is halogen or C_{1-6} alkyl, wherein C_{1-6} alkyl is optionally substituted with 1 to 3 substituents selected from D and halogen;

m is 0 or 1; and

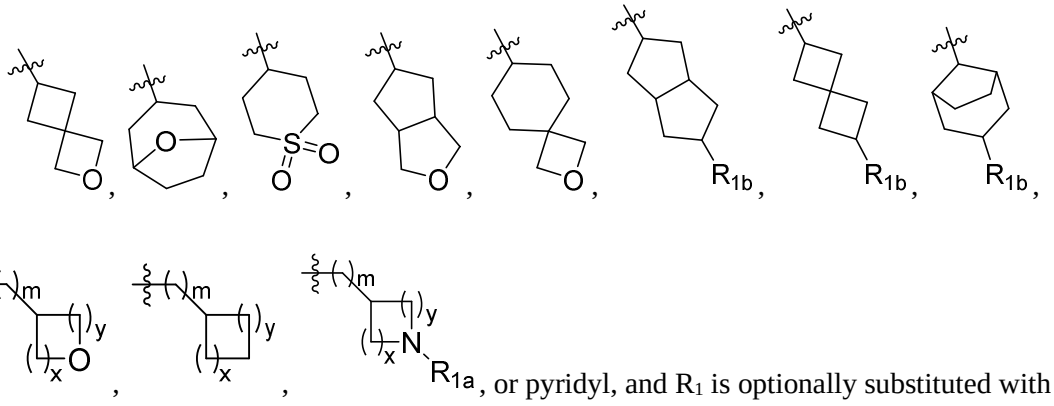
n is 1 or 2.

4. The compound according to claim 1, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof, wherein the compound is a compound of general formula (II):


(II)

wherein

R_0 is H, C_{1-6} alkyl, or cyclopropyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from halogen and deuterium;

R_1 is , or pyridyl, and R_1 is optionally substituted with one or two substituents selected from D, halogen, cyano, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy;

R_{1a} is H or C_{1-6} alkyl;

R_{1b} is OH, cyano, or hydroxyl-substituted C_{1-6} alkyl;

R_{2c} is cyano, halogen, or C_{1-6} alkoxy;

R_{2d} is H, cyano, carboxyl, $-C(=O)NR_{2a}R_{2b}$, C_{1-6} alkyl, halogen, $-S(=O)_2R_{2a}$ or $-C(=O)OC_{1-6}$ alkyl; wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from halogen and deuterium;

R_{2a} and R_{2b} are H, C_{1-6} alkyl or 3- to 5-membered cycloalkyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from OH, D, and halogen;

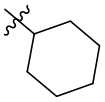
alternatively, R_{2a} and R_{2b} together with the atom to which they are attached form 5- to 6-membered heterocyclyl group containing 1 to 3 heteroatoms selected from N, O and S, wherein 5- to 6-membered heterocyclyl group is optionally substituted with one or more substituents selected from OH and halogen;

R_3 is halogen or C_{1-6} alkyl, wherein C_{1-6} alkyl is optionally substituted with 1 to 3 substituents selected from D and halogen;

m is 0 or 1; and

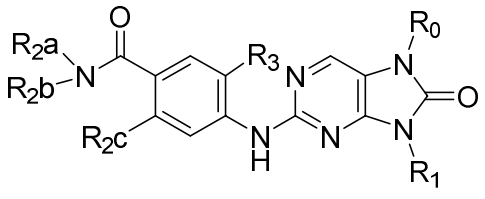
x and y are each independently 1, 2, or 3;

provided that

R_1 is not  when R_0, R_2, and R_3 all satisfy the following condition:

R_0 is H or methyl, R_2 is methoxy or $-S(=O)_2Me$, and R_3 is methyl.

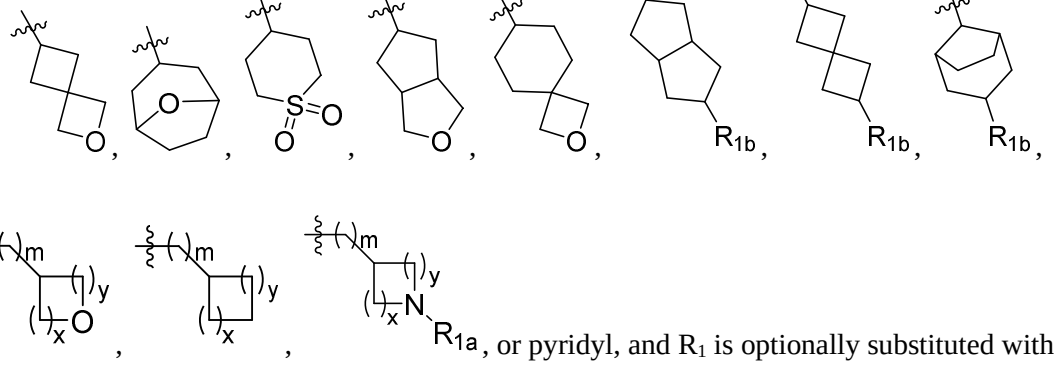
5. The compound according to claim 4, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof, wherein the compound is a compound of general formula (III):



(III)

wherein

R_0 is H, C_{1-6} alkyl, or cyclopropyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from halogen and deuterium;

R_1 is 

, or pyridyl, and R_1 is optionally substituted with one or two substituents selected from D, halogen, cyano, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy;

R_{1b} is H, OH, cyano, or hydroxyl-substituted C_{1-6} alkyl;

R_{2a} and R_{2b} are each independently H, C_{1-6} alkyl or 3- to 5-membered cycloalkyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from D and halogen;

alternatively, R_{2a} and R_{2b} together with the atom to which they are attached form 5- to 6-membered heterocyclyl group containing 1 to 3 heteroatoms selected from N, O and S, wherein 5- to 6-membered heterocyclyl group is optionally further substituted with one or more substituents selected from OH and halogen;

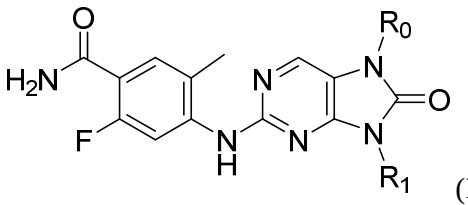
R_{2c} is H, cyano, halogen, or C_{1-6} alkoxy, wherein C_{1-6} alkoxy is optionally substituted with one or more D;

R_3 is halogen or C_{1-3} alkyl, wherein C_{1-3} alkyl is optionally substituted with 1 to 3 substituents selected from D and halogen;

m is 0 or 1; and

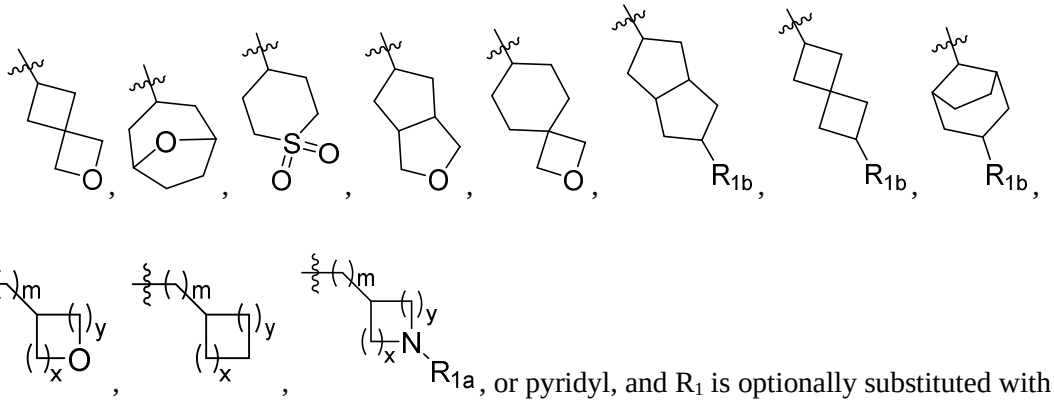
x and y are each independently 1, 2, or 3.

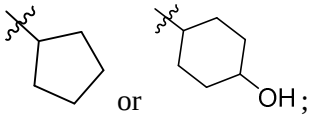
6. A compound of general formula (IV), or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof,


(IV)

wherein

R_0 is H, C_{1-6} alkyl, or cyclopropyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from halogen and deuterium; and

R_1 is , or pyridyl, and R_1 is optionally substituted with one or two substituents selected from halogen, cyano, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, provided that

R_1 is not ;

R_{1a} is H or C_{1-6} alkyl;

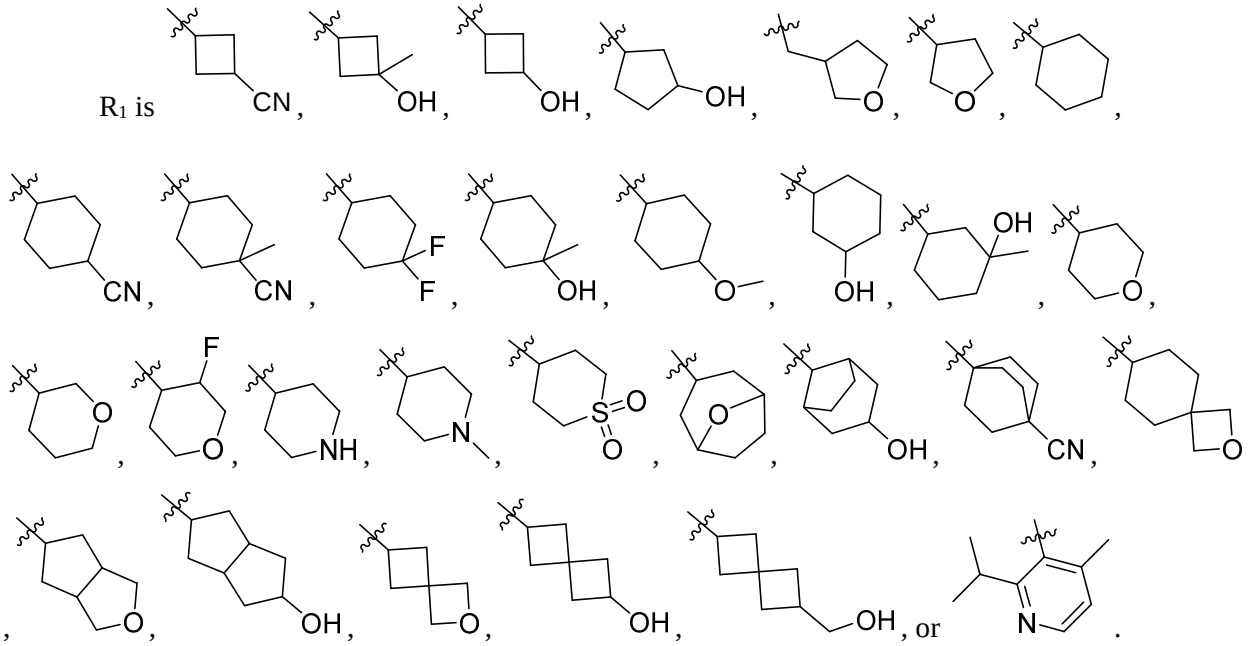
R_{1b} is OH, cyano, or hydroxyl-substituted C_{1-6} alkyl;

m is 0 or 1; and

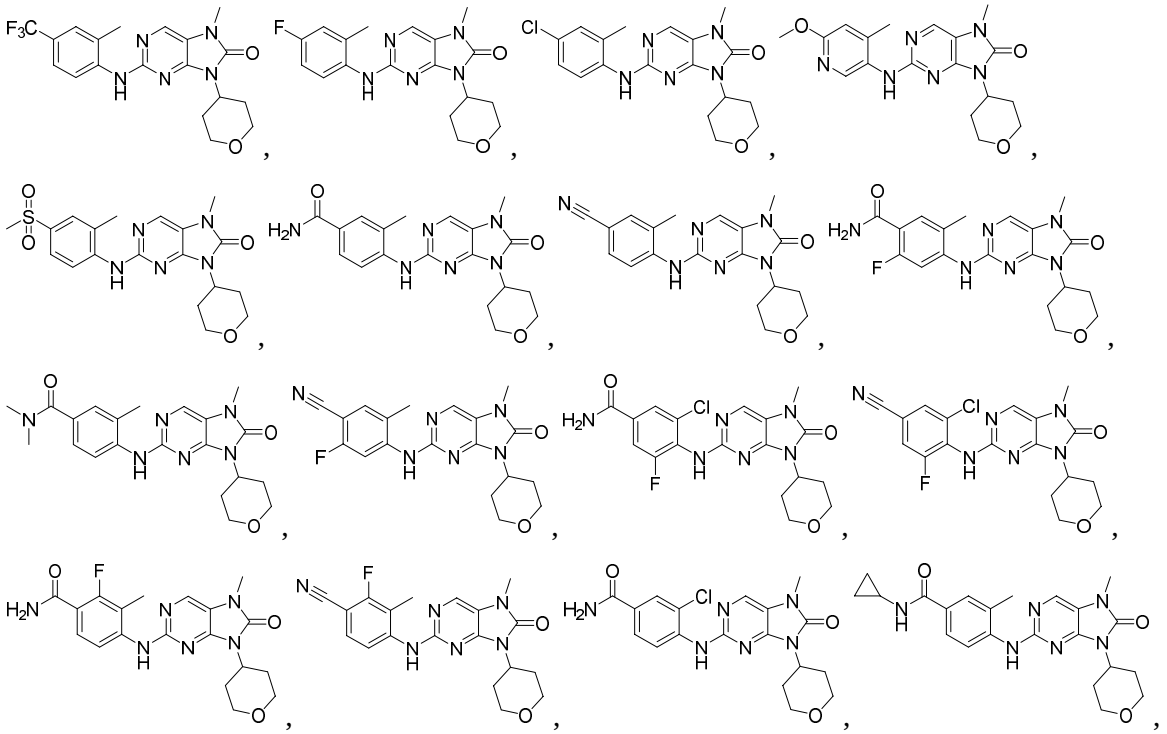
x and y are each independently 1, 2, or 3.

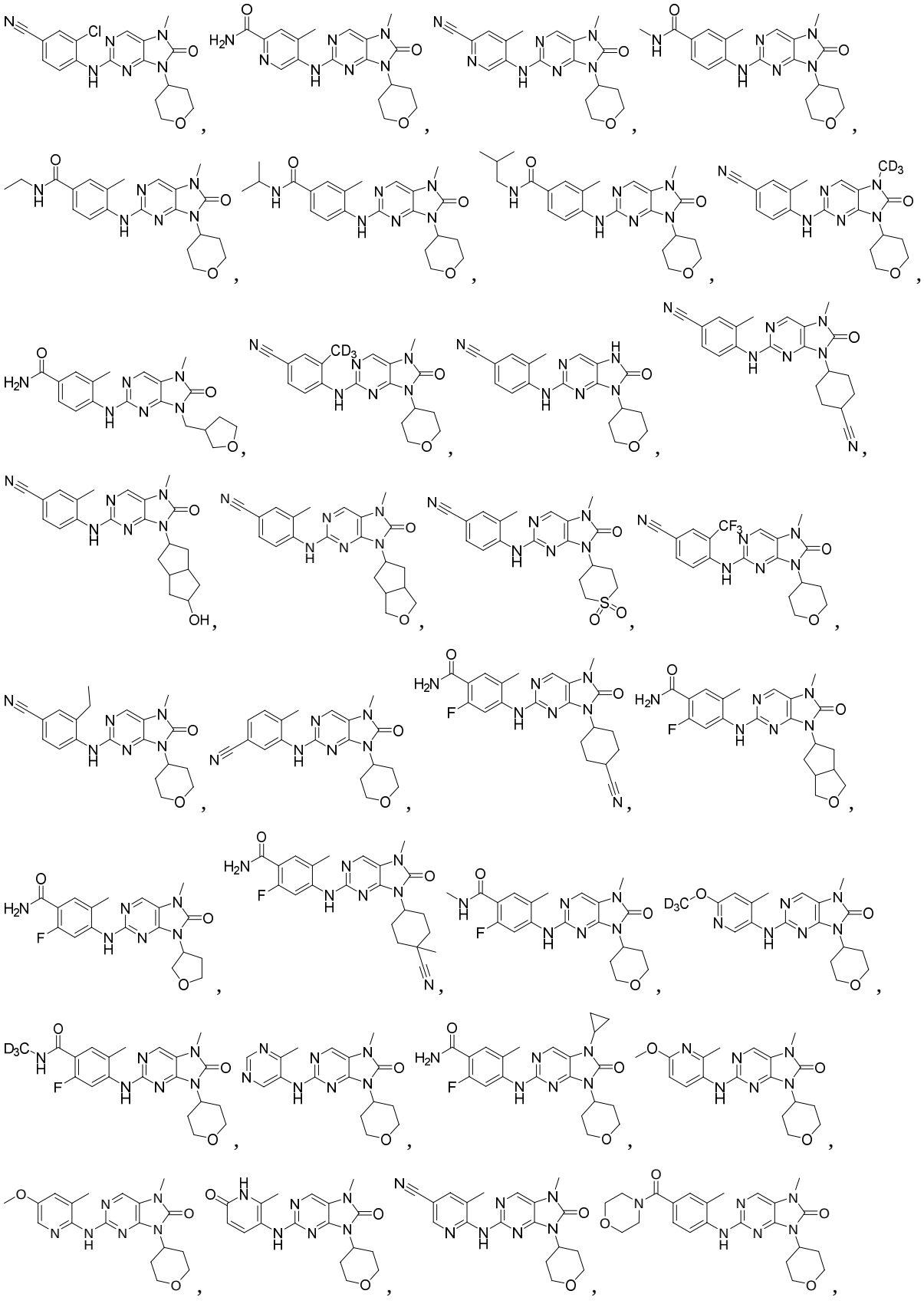
7. The compound according to claim 6, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof, wherein

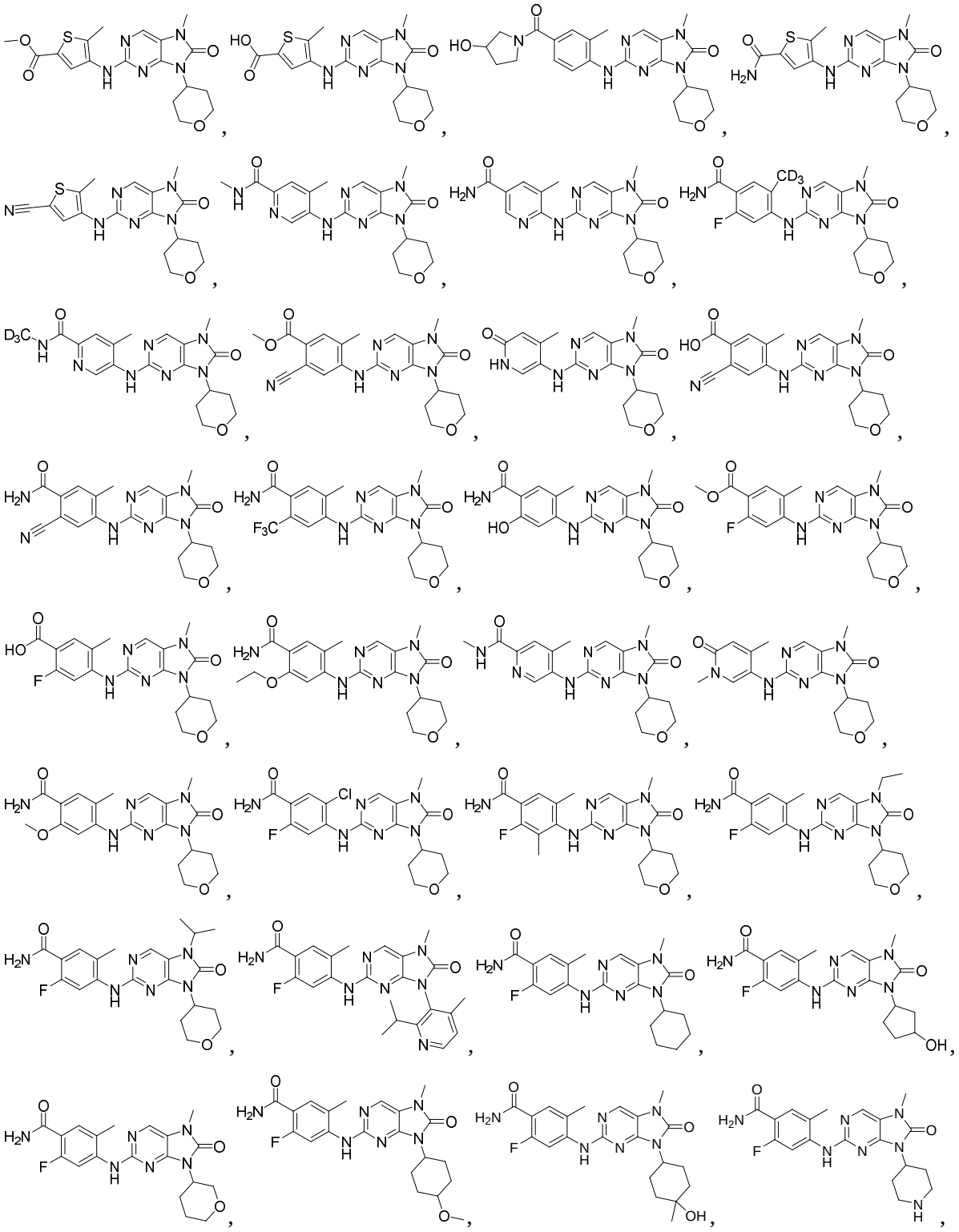
R_0 is C_{1-4} alkyl, wherein C_{1-4} alkyl is optionally substituted with one or more substituents selected from halogen and deuterium; and

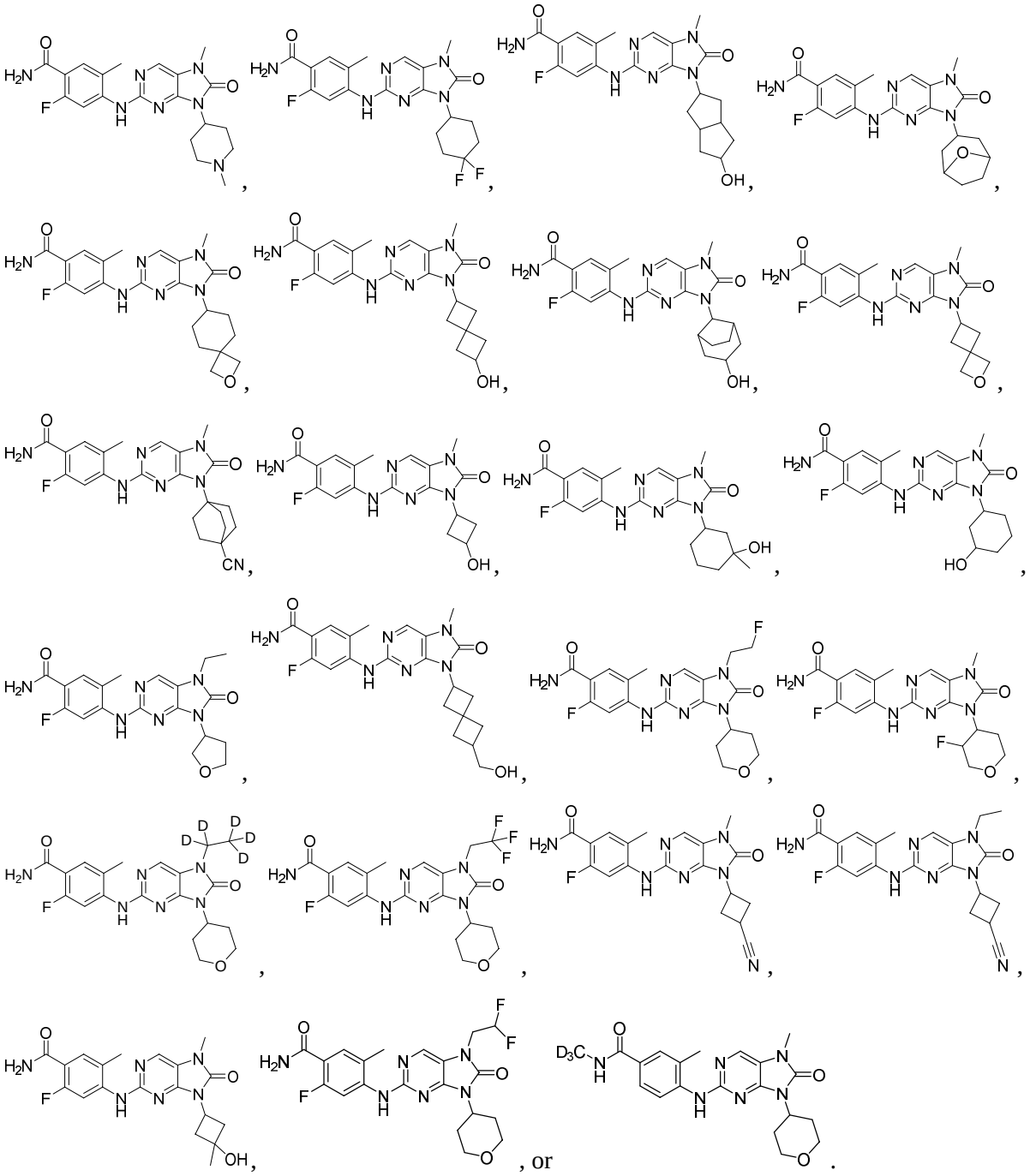
R_1 is 

8. The compound according to any one of claims 1 to 7, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof, wherein the compound is:

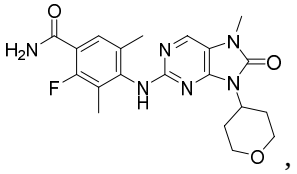






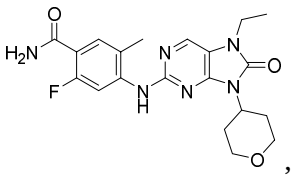


9. A compound according to any one of claims 1 to 8 that is



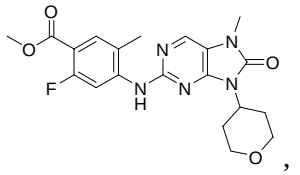
or a solvate or pharmaceutically acceptable salt thereof.

10. A compound according to any one of claims 1 to 8 that is



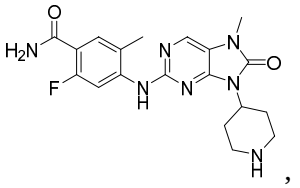
or a solvate or pharmaceutically acceptable salt thereof.

11. A compound according to any one of claims 1 to 8 that is



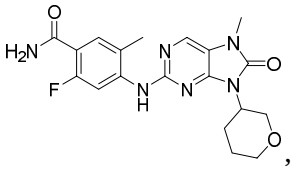
or a solvate or pharmaceutically acceptable salt thereof.

12. A compound according to any one of claims 1 to 8 that is



or a solvate or pharmaceutically acceptable salt thereof.

13. A compound according to any one of claims 1 to 8 that is



or a solvate or pharmaceutically acceptable salt thereof.

14. A pharmaceutical composition, comprising:

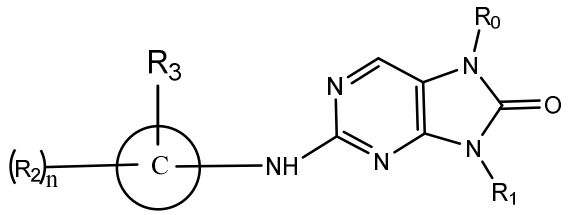
(1) a compound according to any one of claims 1 to 13, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof,

(2) optionally one or more additional active ingredients; and

(3) a pharmaceutically acceptable carrier and/or excipient.

15. Use of the compound according to any one of claims 1 to 13, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof, or the pharmaceutical composition according to claim 14, in the manufacture of a medicament for treatment of cancer.

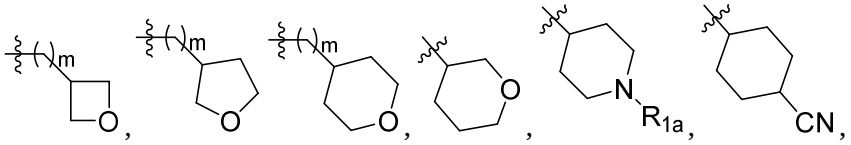
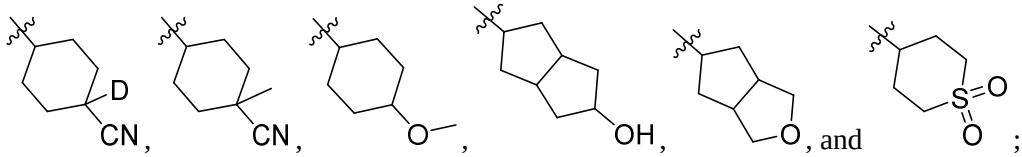
16. A compound of general formula (I'), or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof,


(I')

wherein

C is selected from phenyl pyridinyl, pyrimindyl, pyrazinyl, and pyridazinyl;

R_0 is selected from H, C_{1-6} alkyl, and cyclopropyl, wherein alkyl is optionally substituted with one or more substituents selected from halogen and deuterium;

R_1 is selected from , , and ;

R_{1a} is C_{1-6} alkyl;

R_2 is selected from cyano, carboxyl, -C(=O)$NR_{2a}R_{2b}$, C_{1-6} alkoxy, C_{1-6} alkyl, halogen, -S(=O)$_2R_{2a}$ and -C(=O)OC_{1-6} alkyl; wherein alkyl or alkoxy is optionally substituted with one or more substituents selected from halogen and deuterium;

R_{2a} and R_{2b} are selected from H, C_{1-6} alkyl and 3- to 5-membered cycloalkyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from OH, D, and halogen;

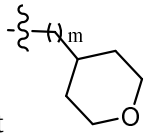
alternatively, R_{2a} and R_{2b} together with the atom to which they are attached form 5- to 6-membered heterocyclyl group containing 1 to 3 heteroatoms selected from N, O and S, wherein heterocyclyl group is optionally substituted with one or more substituents selected from OH and halogen;

R_3 is selected from halogen and C_{1-3} alkyl, wherein alkyl is optionally substituted with 1 to 3 substituents selected from D and halogen;

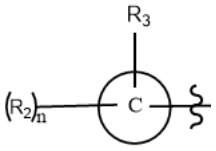
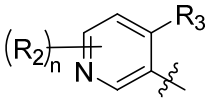
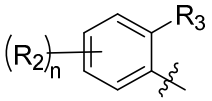
m is selected from 0 and 1; and

n is selected from 0, 1, and 2;

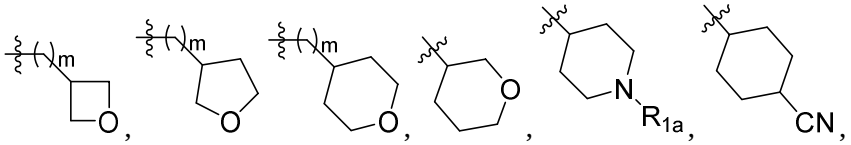
provided that

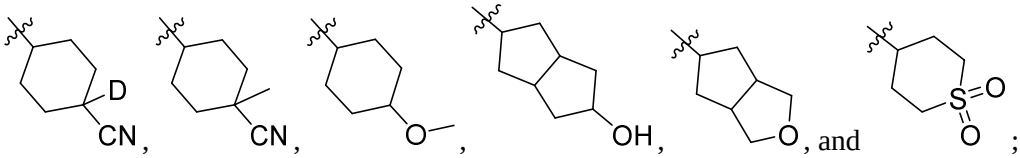
R_1 is not  when R_0 is H.

17. The compound according to claim 16, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof, wherein

 is  or  ;

R_0 is selected from H, C_{1-4} alkyl, and cyclopropyl, wherein alkyl is optionally substituted with one or more substituents selected from halogen and deuterium;

R_1 is selected from 

 ;

R_{1a} is C_{1-6} alkyl;

R_2 is selected from cyano, $-C(=O)NR_{2a}R_{2b}$, C_{1-6} alkoxy, halogen, $-S(=O)_2R_{2a}$ and $-C(=O)OC_{1-6}$ alkyl; wherein alkyl or alkoxy is optionally substituted with one or more substituents selected from halogen and deuterium;

R_{2a} and R_{2b} are selected from H, C_{1-6} alkyl and 3- to 5-membered cycloalkyl, wherein C_{1-6} alkyl is optionally substituted with one or more substituents selected from OH, D, and halogen;

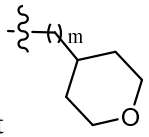
alternatively, R_{2a} and R_{2b} together with the atom to which they are attached form 5- to 6-membered heterocyclyl group containing 1 to 3 heteroatoms selected from N, O and S, wherein heterocyclyl group is optionally substituted with one or more substituents selected from OH and halogen;

R_3 is selected from halogen or C_{1-3} alkyl, wherein alkyl is optionally substituted with 1 to 3 substituents selected from D and halogen;

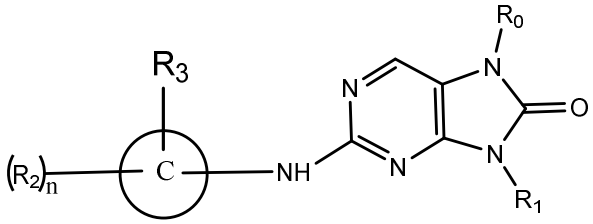
m is selected from 0 and 1; and

n is selected from 0, 1, and 2;

provided that

R_1 is not  when R_0 is H.

18. A compound of general formula (I''), or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof,

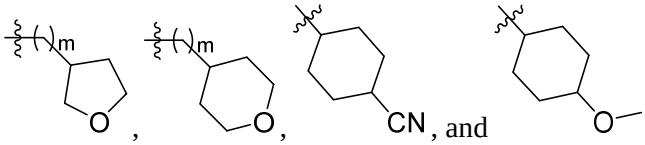


(I'')

wherein

C is selected from phenyl pyridinyl, pyrimindyl, pyrazinyl, and pyridazinyl;

R_0 is selected from H and C_{1-6} alkyl, wherein alkyl is optionally substituted with one or more substituents selected from halogen and deuterium;

R_1 is selected from ;

R_2 is selected from cyano, carboxyl, $-C(=O)NR_{2a}R_{2b}$, C_{1-2} alkoxy, methyl, F, Cl, $-S(=O)_2R_{2a}$ and $-C(=O)OCH_3$; wherein methyl is optionally substituted with one or more substituents selected from halogen and deuterium;

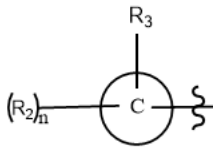
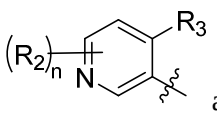
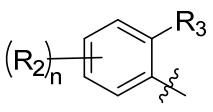
R_{2a} and R_{2b} are selected from H, C_{1-3} alkyl and 3-membered cycloalkyl;

R_3 is selected from methyl, F, and Cl, wherein methyl is optionally substituted with 1 to 3 substituents selected from D and halogen;

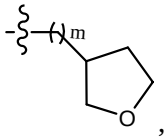
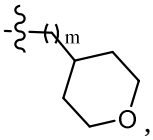
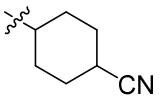
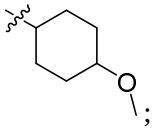
m is 0; and

n is selected from 1 and 2.

19. The compound according to claim 18, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof, wherein

 is selected from  and ;

R_0 is selected from H and C_{1-4} alkyl, wherein alkyl is optionally substituted with one or more substituents selected from halogen and deuterium;

R_1 is selected from , , , and ;

R_2 is selected from cyano, -C(=O)$NR_{2a}R_{2b}$, C_{1-2} alkoxy, F, Cl, -S(=O)$_2R_{2a}$ and -C(=O)OCH_3;

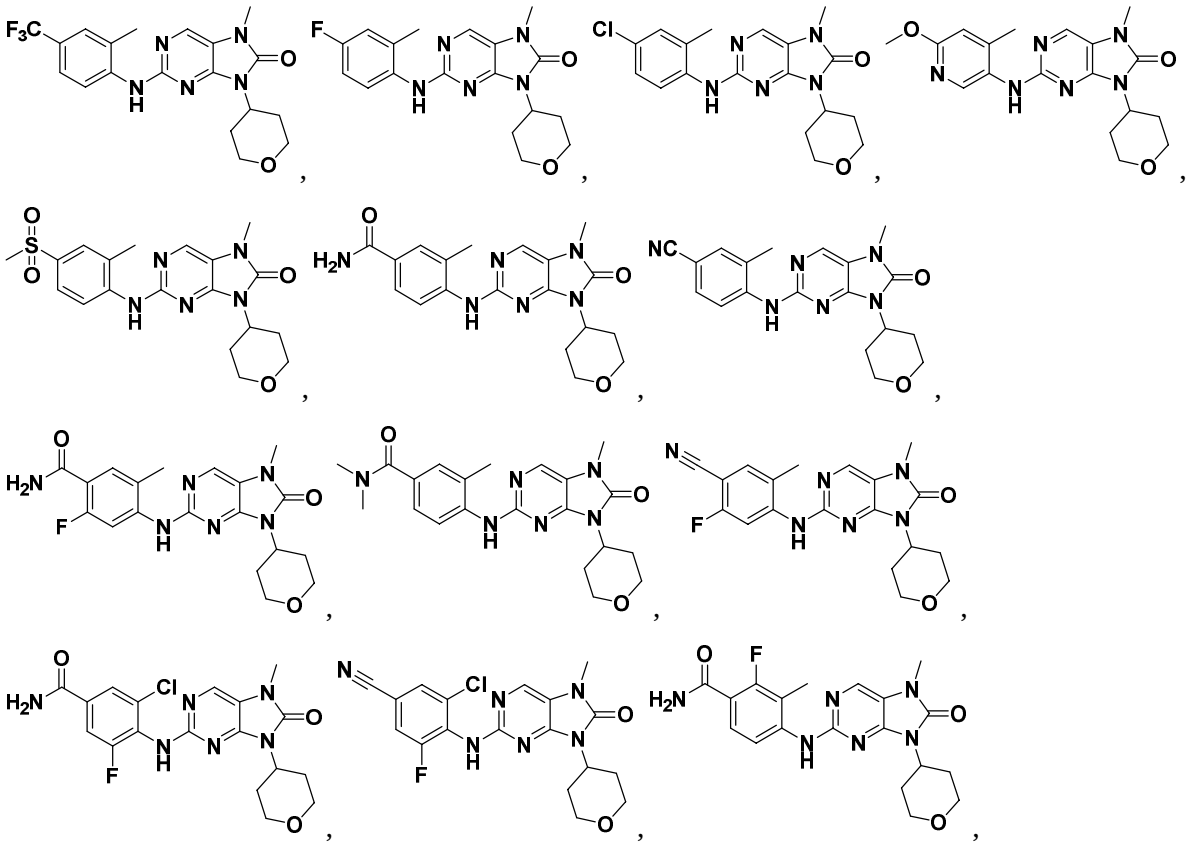
R_{2a} and R_{2b} are selected from H, C_{1-3} alkyl and 3-membered cycloalkyl;

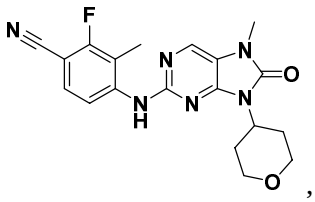
R_3 is selected from methyl, F, and Cl, wherein methyl is optionally further substituted with 1 to 3 substituents selected from D and halogen;

m is 0; and

n is selected from 1 and 2.

20. The compound according to claim 18 or 19, or a stereoisomer, solvate, pharmaceutically acceptable salt, or co-crystal thereof, wherein the compound is selected from

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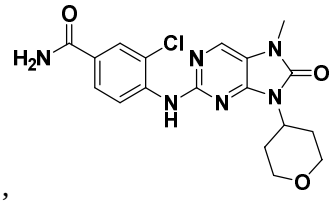
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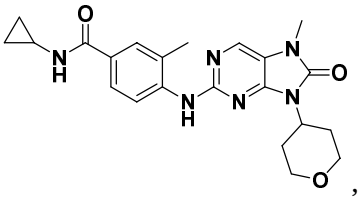
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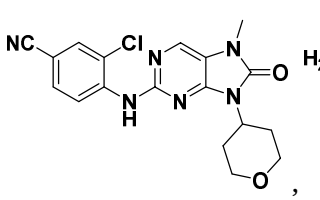
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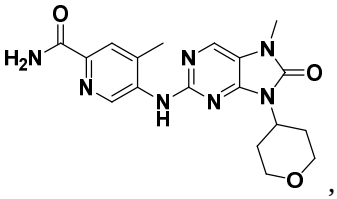
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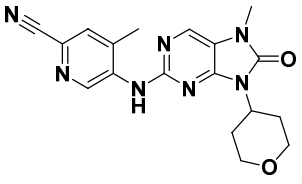
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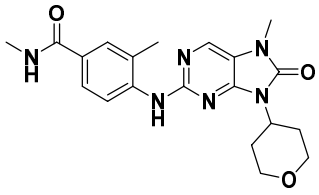
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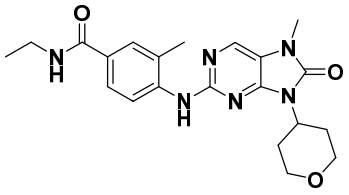
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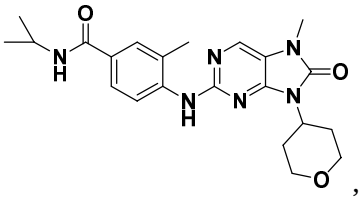
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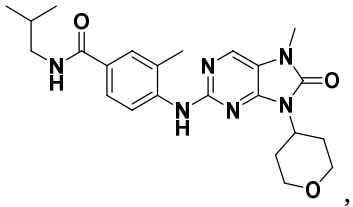
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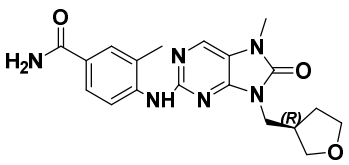
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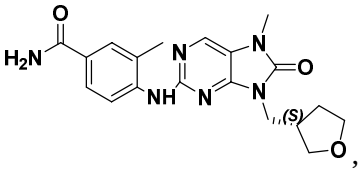
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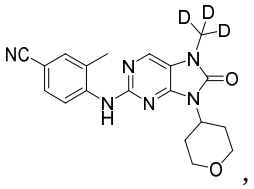
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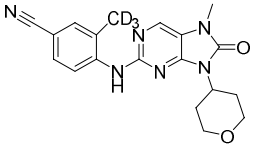
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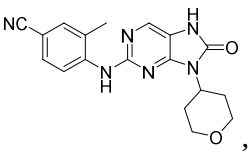
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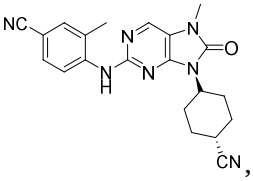
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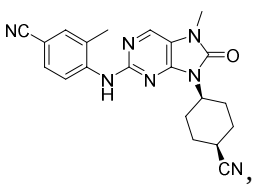
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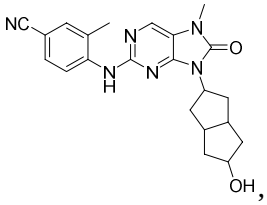
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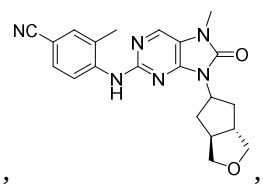
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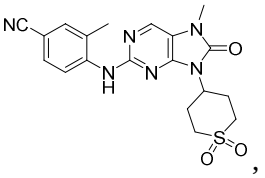
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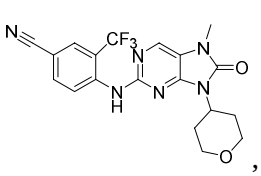
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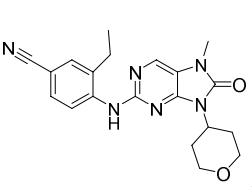
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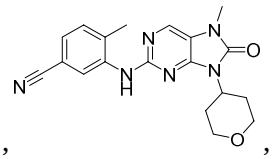
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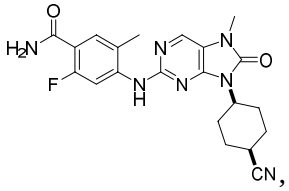
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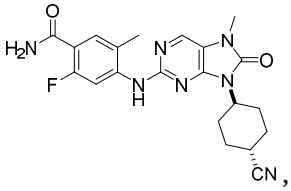
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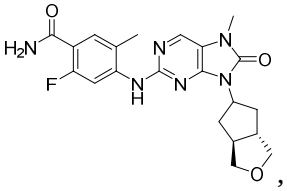
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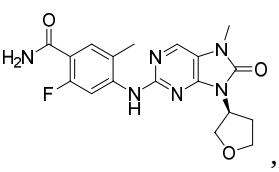
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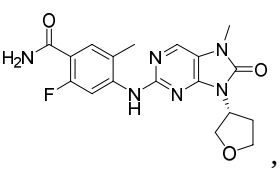
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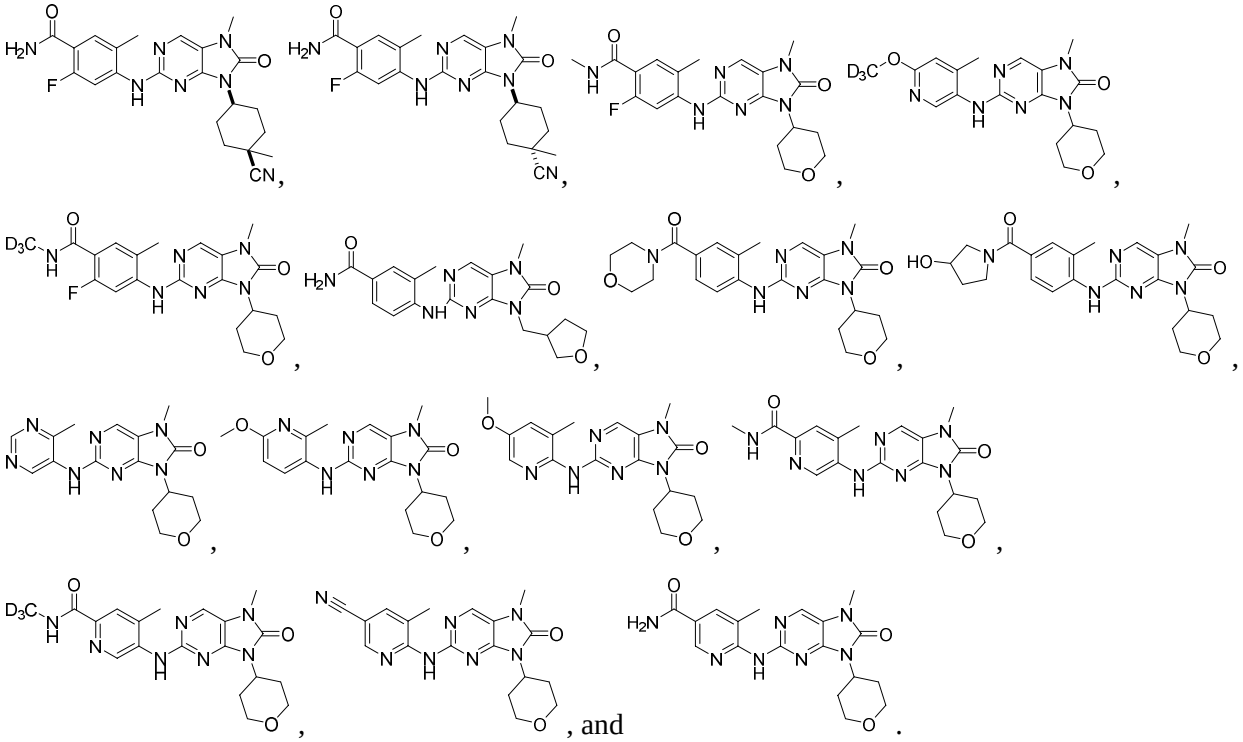

21. A pharmaceutical composition, comprising:

(1) a compound according to any one of claims 18 to 20, or a stereoisomer, solvate, pharmaceutically acceptable salt or prodrug thereof,

(2) optionally one or more additional active ingredients; and

(3) a pharmaceutically acceptable carrier and/or excipient.

22. Use of the compound according to any one of claims 18 to 20, or a stereoisomer, solvate, pharmaceutically acceptable salt or prodrug thereof, or the pharmaceutical composition according to claim 21, in the manufacture of medicament for the treatment of cancer.