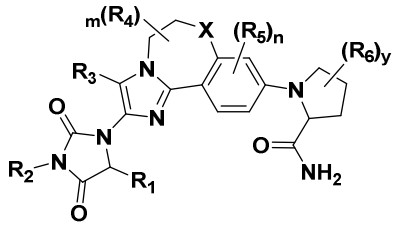
Claims

1. A compound of Formula (I) or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof,



Formula (I)

wherein,

X is selected from O and S;

R_1 is selected from H, CN, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl, C_{5-8} heteroaryl, OR_a and $-NR_aR_b$; wherein C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl and C_{5-8} heteroaryl are each optionally substituted with one or more substituents selected from halogen, CN, OR_a, oxo, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl and C_{3-6} heterocyclyl;

R_2 is selected from H, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl, C_{5-8} heteroaryl; wherein C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl and C_{5-8} heteroaryl are each optionally substituted with one or more substituents selected from halogen, CN, -OH, $-NO_2$, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} haloalkenyl, C_{2-6} alkynyl, C_{2-6} haloalkynyl, C_{3-6} cycloalkyl, C_{3-6} halocycloalkyl, C_{3-6} heterocyclyl, C_{3-6} haloheterocyclyl, C_{6-8} aryl, C_{6-8} haloaryl, C_{5-8} heteroaryl, C_{5-8} haloheteroaryl, oxo, $-OR_a$, $-NR_aR_b$, $-C(O)R_a$, $-C(O)O\ R_a$, $-C(O)NR_aR_b$, $-S(O)R_a$ and $-S(O)_2R_a$;

R_3 is selected from H, halogen, CN, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, $-OR_a$ and $-NR_aR_b$; wherein C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl are each optionally substituted with one or more substituents selected from halogen, CN, $-OR_a$, $-NR_aR_b$, $-C(O)R_a$, $-C(O)OR_a$, $-C(O)NR_aR_b$, $-S(O)R_a$ and $-S(O)_2R_a$;

R_4 is selected from H, halogen, CN, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, oxo, C_{1-6} haloalkyl, C_{2-6} haloalkenyl, C_{2-6} haloalkynyl, C_{1-6} alkoxy, C_{1-6} halo alkoxy, $-OR_a$, $-NR_aR_b$, $-C(O)R_a$, $-C(O)OR_a$, $-C(O)NR_aR_b$, $-S(O)R_a$ and $-S(O)_2R_a$;

R_5 is selected from H, halogen, CN, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{2-6} haloalkenyl, C_{2-6} haloalkynyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, $-OR_a$, $-NR_aR_b$, $-S(O)R_a$ and $-S(O)_2R_a$;

R_6 is selected from H, halogen, CN, oxo, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} alkoxy, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl, C_{5-8} heteroaryl, $-OR_a$, $-NR_aR_b$, $-C(O)R_a$, $-C(O)O\ R_a$, -

C(O) NR_aR_b, -S(O)R_a and -$S(O)_2R_a$; wherein C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} alkoxy, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl and C_{5-8} heteroaryl are each optionally substituted with one or more substituents selected from halogen, CN, oxo, -NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, -OR_a, -NR_aR_b, -C(O)R_a, -C(O)O R_a, -C(O)NR_aR_b, -S(O)R_a and -$S(O)_2R_a$; or,

two R_6 take with the C atoms which they are attached to form C_{3-6} cycloalkyl or C_{3-6} heterocyclyl;

R_a and R_b are independently selected from H, C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6} alkoxy, C_{3-6}cycloalkyl, C_{3-6}heterocyclyl, C_{6-8}aryl, C_{5-8}heteroaryl; wherein C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} alkoxy, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl, C_{5-8} heteroaryl are optionally substituted with halogen, CN, -OH, -NH_2, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy;

m is selected from 0, 1, 2, 3 and 4;

n is selected from 0, 1, 2 and 3; and

y is selected from 0, 1, 2, 3, 4, 5 and 6.

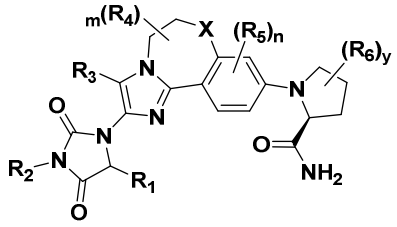
2. The compound of claim 1, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein R_1 is C_{1-6} alkyl or C_{3-6} cycloalkyl, said C_{1-6} alkyl and C_{3-6} cycloalkyl can be substituted optionally and independently with halogen.

3. The compound of any one of claims 1-2, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein R_2 is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl and C_{5-8} heteroaryl; said C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl and C_{5-8} heteroaryl are each optionally substituted with one or more substituents selected from halogen, -CN, -OH, -NR_aR_b , C_{1-6}alkyl and C_{1-6} haloalkyl; said R_a and R_b are independently selected from H and C_{1-6} alkyl.

4. The compound of any one of claims 1-3, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein R_3 is selected from H, halogen, CN, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{2-6} haloalkenyl and C_{2-6} haloalkynyl.

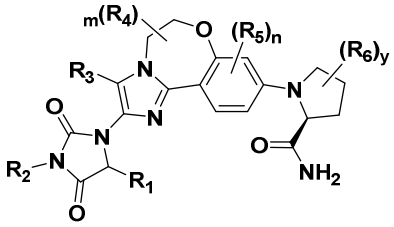
5. The compound of any one of claims 1-4, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein R_6 is selected from H, halogen, CN, -NH_2, oxo, -OH, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{2-6} haloalkenyl, C_{2-6} haloalkynyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl and C_{5-8} heteroaryl.

6. The compound of any one of claims 1-5, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein the compound is of Formula (II):



Formula (II).

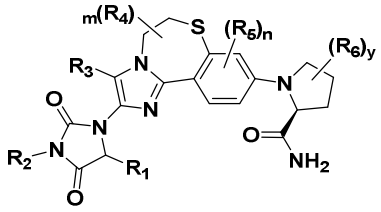
7. The compound of any one of claims 1-6, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein the compound is of Formula(III-1):



Formula (III-1)

wherein, R_1 is C_{1-6} alkyl or C_{1-6} haloalkyl.

8. The compound of any one of claims 1-6, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein the compound is of Formula(III-2):

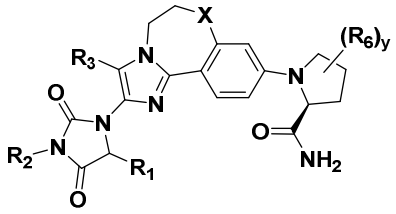


Formula (III-2).

9. The compound of any one of claims 1-8, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein R_3 is selected from H, halogen, C_{1-6} alkyl and C_{2-6} alkenyl.

10. The compound of any one of claims 1-9, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein R_4 and R_5 are both H.

11. The compound of any one of claims 1-6, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein the compound is of Formula(IV):



Formula (IV)

wherein:

R_1 is C_{1-6}alkyl or C_{1-6} haloalkyl;

R_2 is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl and C_{5-8} heteroaryl; wherein C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_{6-8} aryl and C_{5-8} heteroaryl are each optionally substituted with one or more substituents selected from halogen, -CN, -OH, -NR_aR_b , C_{1-6}alkyl, C_{1-6}haloalkyl, C_{1-6} alkoxy and C_{1-6} halo alkoxy;

R_3 is selected from H, halogen, C_{1-6} alkyl and C_{2-6} alkenyl;

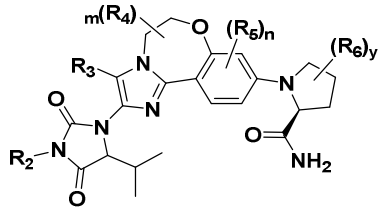
R_6 is selected from H, halogen, -NH_2, oxo, -OH, C_{1-6}alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} halo alkoxy, C_{3-6} cycloalkyl and C_{6-8} aryl;

R_a and R_b are independently selected from H and C_{1-6} alkyl; and

y is selected from 0, 1, 2, 3, 4, 5 and 6.

12. The compound of claim 11, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein X is O.

13. The compound of any one of claims 1-7, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein the compound is of Formula(V):



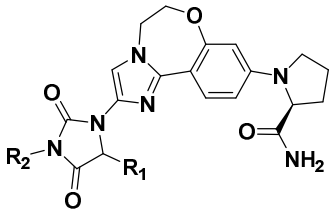
Formula (V).

14. The compound of any one of claims 1-13, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein R_2 is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_6 aryl and C_{5-6} heteroaryl; wherein C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_6 aryl and C_{5-6}

heteroaryl are each optionally substituted with 1 or more substituents selected from halogen, -CN, -OH, -N-$(CH_3)_2$, C_{1-6} alkyl and C_{1-6} haloalkyl.

15. The compound of any one of claims 1-14, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein R_6 is selected from H, halogen, -NH_2, oxo, -OH, C_{1-6} alkyl, C_{1-6} alkoxy, C_{3-6} cycloalkyl and C_6 aryl.

16. The compound of any one of claims 1-7, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein the compound is of Formula(VI):



Formula (VI)

wherein,

R_1 is selected from C_{1-6} alkyl and C_{1-6} haloalkyl;

R_2 is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_6 aryl and C_{5-6} heteroaryl; wherein C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_6 aryl and C_{5-6} heteroaryl are each optionally substituted with one or more substituents selected from halogen, -CN, -OH, -N-$(CH_3)_2$, C_{1-6} alkyl and C_{1-6} haloalkyl.

~~17.~~ The compound of any one of claims 1-16, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein R_1 is C_{1-4} alkyl, wherein R_1 is substituted optionally with halogen, preferably, ~~.~~

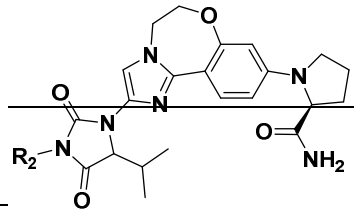
~~18.~~17. ~~The compound of any one of claims 1-17, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, noncovalent complex or prodrug thereof, wherein~~ R_1 is selected from -$CH(CH_3)_2$, -$C(CH_3)_3$, -CF_3 and -CHF_2.

~~19.~~ The compound of any one of claims 1-~~18~~17, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein R_2 is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_6 aryl and C_5-C_6 heteroaryl, wherein R_2 is substituted optionally with halogen~~.~~

~~20. The compound of any one of claims 1-19, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, noncovalent complex or~~

prodrug thereof, wherein, preferably, R_2 is selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{3-6} cycloalkyl, C_{3-6} halocycloalkyl, phenyl and halophenyl.

21. The compound of any one of claims 1-7, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, noncovalent complex or prodrug thereof , wherein the compound is of Formula(VII):



Formula (VII)

wherein, R_2 is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} heterocyclyl, C_6 aryl and C_{5-6} heteroaryl; and said R_2 is substituted optionally with halogen.

22. The compound of any one of claims 1-21, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, noncovalent complex or prodrug thereof, wherein R_2 is selected from -CH_3, -CH_2CH_3, -$CH(CH_3)_2$, -CH_2CF_3, cyclopropyl-, cyclobutyl, phenyl and pyridyl; wherein -CH_3, -CH_2CH_3, -$CH(CH_3)_2$, -CH_2CF_3, cyclopropyl–, cyclobutyl, phenyl and pyridyl are each optionally substituted with halogen, more preferably, -.

23.18. The compound of any one of claims 1-22, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, noncovalent complex or prodrug thereof, wherein R_2 is selected from -CH_3, -$CH(CH_3)_2$, cyclopropyl, phenyl and halogen substituted phenyl .

24.19. The compound of claim 1, or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof, wherein the compound is selected from:

1) (2S)-1-(2-(5-isopropyl-3-methyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;
2) (2S)-1-(2-(3-cyclopropyl -5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;
3) (2S)-1-(2-(5-isopropyl-2,4-dioxo-3-(2,2,2-trifluoroethyl)imidazolidine-1-yl)-5,6-dihydrobenzo[f] imidazo [1, 2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;
4) (2S)-1-(2-(3-(4-fluorophenyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;
5) (2S)-1-(2-(5-cyclopropyl -3-methyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

6) (2S)-1-(2-(3-cyclobutyl-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

7) (2S)-1-(2-(3-ethyl-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

8) (2S)-1-(2 -(5-difluoromethyl-3-methyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

9) (2S)-1-(2-(5-isopropyl-2,4-dioxo-3-phenylimidazolidine-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

10) (S)-1-(2-((S)-5-isopropyl-2,4-dioxo-3-phenylimidazolidine-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

11) (S)-1-(2-((R)-5-isopropyl-2,4-dioxo-3-phenylimidazolidine-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

12) (2S)-1-(2-(5-isopropyl-2,4-dioxo-3-(4-(trifluoromethyl)phenyl)imidazolidine-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2 -d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

13) (2S)-1-(2-(5-isopropyl-2,4-dioxo-3-propylimidazolidine-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

14) (2S)-1-(2-(3-cyclopropyl -5-isopropyl)-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)-2-methylpyrrolidine-2-carboxamide;

15) (2S)-1-(2-(3-cyclopropyl -5-isopropyl)-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] thiazepin-9-yl)-4,4-difluoropyrrolidine-2-carboxamide;

16) (2S)-1-(2-(5-isopropyl-3-(1-methyl-1H-1,2,4-triazol-5-yl)-2,4-dioxoimidazolidin-1-yl)-5,6 -dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

17) (2S,4S)-4-amino-1-(2-(3-cyclopropyl -5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f] imidazo [1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

18) (2S)-1-(2-(3-(2-fluorophenyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

19) (2S)-1-(2-(3-(4-chlorophenyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

20) (2S)-4-(tertbutoxy)-1-(2-(3-cyclopropyl -5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f] imidazo [1,2] -d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

21) (2S)-1-(2-(3-cyclopropyl -5-isopropyl)-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)-4,4-dimethylpyrrolidine-2-carboxamide;

22) (2S)-1-(2-(3-(2,2-difluoroethyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

23) (2S)-1-(2-(3,5-diisopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin- 9-yl)pyrrolidine-2-carboxamide;

24) (2S)-1-(2-(3-cyclopropyl -5-isopropyl)-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)-4-phenylpyrrolidine-2-carboxamide;

25) (2S)-1-(2-(3-(3-chloro5-cyanophenyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2 -d] [1,4] thiazepin-9-yl)pyrrolidine-2-carboxamide;

26) (2S)-1-(2-(3,5-diisopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]thiazepin- 9-yl)pyrrolidine-2-carboxamide;

27) (2S)-1-(2- (3-azetidin-3-yl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

28) (2S)-1-(2-(3-methyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

29) (2S)-1-(2- (5-tertbutyl-3-methyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

30) (S)-1-(2-((R)-3-(4-fluorophenyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2]-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

31) (S)-1-(2-((S)-3-(4-fluorophenyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2] -d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

32) (2S)-1-(2-((5R)-3-cyclopropyl -5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

33) (2S)-1-(2-((5S)-3-cyclopropyl -5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

34) (2S)-1-(2-(3-(2-hydroxyethyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

35) (2S)-1-(2-(3-(2-fluoroethyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

36) (2S)-1-(2-(3-(2-(dimethylamino)ethyl)-5-)isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2- d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

37) (2S)-1-(2-(3-cyclopropyl -5-isopropyl)-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]thiazepin-9-yl)pyrrolidine-2-carboxamide;

38) (2S)-1-(2-(3-(6-fluoropyridin-3-yl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2 -d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

39) (2S)-1-(2-(3-(5-fluoropyridin-3-yl)-5-isopropyl-2,4-dioxoimidazolidin1-yl)-5,6-dihydrobenzo[f]imidazo[1,2] -d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

40) (2S)-1-(2-(3-(3-cyano-5-fluorophenyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2 -d] [1,4]oxazepin-9-yl)-4-fluorinepyrrolidine-2-carboxamide;

41) (2S)-1-(2-(3-(3-chloropyrimidin-2-yl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2 -d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

42) (2S)-1-(2-(3-cyclopentyl-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] oxazepin-9-yl)pyrrolidine-2-carboxamide;

43) (2S)-1-(2-(3-(cyanomethyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

44) (2S)-1-(2-(5-isopropyl-3-methyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4] thiazepin-9-yl)pyrrolidine-2-carboxamide;

45) (2S)-1-(2-(3-(2,2-difluoroethyl)-5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]thiazepin-9-yl)pyrrolidine-2-carboxamide;

46) (2S)-1-(2-(3-cyclopropyl -5-isopropyl-2,4-dioxoimidazolidin-1-yl)-3-vinyl-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

47) (2S)-1-(3-chloro-2-(3-cyclopropyl -5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide;

48) (2S)-1-(2-(3-cyclopropyl -5-(difluoromethyl)-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1, 4]thiazepin-9-yl)pyrrolidine-2-carboxamide;

49) (2S,3S)-1-(2-(3-cyclopropyl -5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)-3- hydroxypyrrolidine -2-carboxamide;

50) (2S)-1-(2-(3-cyclopropyl -5-isopropyl-2,4-dioxoimidazolidin-1-yl)-3-methyl-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)-4-oxopyrrolidine-2-carboxamide;

51) (2S)-4-cyclohexyl-1-(2-(3-cyclopropyl -5-isopropyl-2,4-dioxoimidazolidin-1-yl)-5,6-dihydrobenzo[f]imidazo[1,2-d] [1,4]oxazepin-9-yl)pyrrolidine-2-carboxamide; and

52) (2S)-1-(2-(3-cyclopropyl -5-isopropyl-2, 4-dioxoimidazolidin-1-yl)-5, 6-dihydrobenzo[f] imidazo [1, 2-d] [1, 4] thiazepin-9-yl)-5-oxopyrrolidine-2-carboxamide.

~~25.~~ A pharmaceutical composition, which comprises: a) a therapeutically effective amount of at least one compound of any one of claims 1-~~24~~19 or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof and b) at least one pharmaceutical acceptable excipient, preferably~~.~~

~~26.~~20. ~~The pharmaceutical composition of claim 25, wherein~~ a~~the~~ weight ratio of ~~the said compound or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, noncovalent complex or prodrug thereof and the pharmaceutical acceptable excipien~~a) and b) ~~t~~is in the range from 0.0001~~-~~ to 10.

~~27.~~21. The ~~use of the~~ compound of any one of claims 1-~~24~~ 19 or a stereoisomer, geometric isomer or tautomer, or a pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof or the pharmaceutical composition of claim~~s 25 or 26~~20 for use as ~~the preparation of~~ a medicament.

~~28.~~22. The compound, or a stereoisomer, geometric isomer, tautomer, pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof or the pharmaceutical composition for use of claim ~~27~~21, wherein the said medicament is used to treat, prevent, delay or stop the occurrence or progression of cancer or cancer metastasis.

~~29. The use of claim 28, wherein the medicament is a PI3K inhibitor.~~

~~30.~~ The compound, or a stereoisomer, geometric isomer, tautomer, pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof or the pharmaceutical composition for use of claim ~~27~~21, wherein the medicament is used for the treatment of the disease mediated by PI3K, ~~.~~

~~31. The use of claim 29 or 30,~~ wherein the PI3K is PI3Kα, PI3Kβ, PI3Kδ and /or PI3Kγ~~.~~, preferably

~~32. The use of claim 31, wherein~~ the PI3K is PI3Kα, more preferably ~~.~~

~~33.~~23. ~~The use of claim 30, wherein~~ the disease mediated by PI3K is cancer.

~~34.~~24. The compound, or a stereoisomer, geometric isomer, tautomer, pharmaceutically acceptable salt, solvate, chelate, non-covalent complex or prodrug thereof or the pharmaceutical composition for use of claim ~~33~~23, wherein the cancer is selected from sarcoma, prostate cancer, breast cancer, pancreatic cancer, gastrointestinal cancer, colorectal cancer, thyroid cancer, liver cancer, adrenal cancer, glioma, endometrial cancer, melanoma, kidney cancer, bladder cancer, uterine cancer, vagina cancer, ovarian cancer, multiple myeloma, esophageal cancer, leukemia, brain cancer, oral and pharyngeal cancer, laryngeal cancer, lymphoma, basal cell carcinoma, polycythemia vera, essential thrombocythemia.

~~35. A method for the treatment or prevention of a disease mediated by PI3K, wherein the method comprising administering to said subject in need thereof a therapeutically effective amount of the compound of any one of claims 1-24 or the pharmaceutical composition of claim 25 or 26.~~

~~36. The method of claim 35, wherein the PI3K include PI3Kα, PI3Kβ, PI3Kδ and /or PI3Kγ.~~

~~37. The method of claim 35, wherein PI3K is PI3Kα.~~

~~38. The method of any one of claims 35~37, wherein the disease mediated by PI3K is cancer.~~

~~39. The method of claim 38, wherein the cancer is sarcoma, prostate cancer, breast cancer, pancreatic cancer, gastrointestinal cancer, colorectal cancer, thyroid cancer, liver cancer, adrenal cancer, glioma, endometrial cancer, melanoma, kidney cancer, bladder cancer, uterine cancer, vagina cancer, ovarian cancer, multiple myeloma, esophageal cancer, leukemia, brain cancer, oral and pharyngeal cancer, laryngeal cancer, lymphoma, basal cell carcinoma, polycythemia vera, essential thrombocythemia.~~

~~40. A method for the treatment of cancer, comprising administering to subject in need thereof a therapeutically effective amount of the compound of any one of claims 1-24 or the pharmaceutical composition of claim 25 or 26, wherein the cancer is sarcoma, prostate cancer, breast cancer, pancreatic cancer, gastrointestinal cancer, colorectal cancer, thyroid cancer, liver cancer, adrenal cancer, glioma, endometrial cancer, melanoma, kidney cancer, bladder cancer, uterine cancer, vagina cancer, ovarian cancer, multiple myeloma, esophageal cancer, leukemia, brain cancer, oral and pharyngeal cancer, laryngeal cancer, lymphoma, basal cell carcinoma, polycythemia vera, essential thrombocythemia.~~

~~41. The method of claim 40, wherein the subject is human.~~