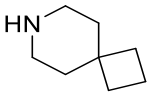
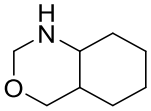
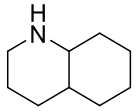
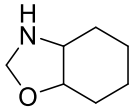
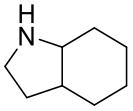
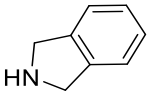
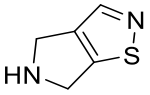
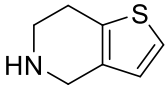
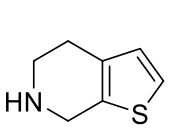
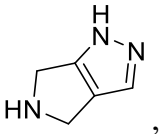
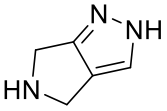
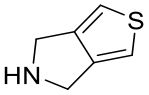
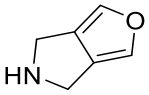
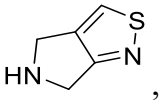
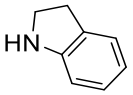
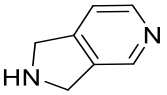
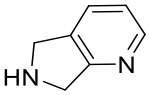
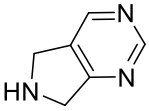
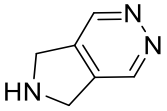
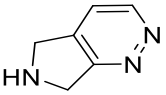
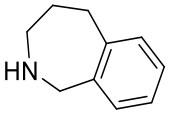
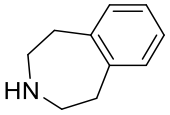
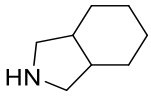
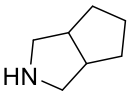
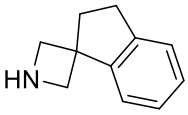
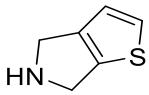
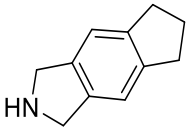
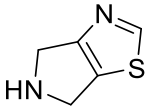
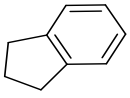
in some embodiments, R^{La} and R^{Lb} are each independently selected from a bond, C_{1-4} alkylene, or C_{2-4} alkenylene, wherein the alkylene and alkenylene are optionally further substituted with 1-4 R^{L1};
in some embodiments, R^{La} and R^{Lb} are each independently selected from a bond, C_{1-2} alkylene, or C_{2-4} alkenylene, wherein the alkylene and alkenylene are optionally further substituted with 1-4 R^{L1};
in some embodiments, R^{La} and R^{Lb} are each independently selected from a bond, $-CH_2-$, $-CH_2CH_2-$, $-CH=CH-$, $-CH_2-CH=CH-$, $-CH_2CH_2-CH=CH-$, $-CH(CH_3)-CH=CH-$, or $-CH_2-CH=CH-CH_2-$, or is selected from $-C(CH_3)=CH-$, or $-CH=C(CH_3)-$, wherein the CH_3, CH_2, and CH are optionally further substituted with 1-4 R^{L1};
each R^{L1} is independently selected from halogen, =O, C_{1-4} alkyl, C_{2-4} alkenyl, C_{1-4} alkoxy, or 3- to 6-membered cycloalkyl, wherein the alkyl, alkenyl, alkoxy, and cycloalkyl are optionally further substituted with 1-4 substituents selected from halogen, CN, OH and NH_2, or two R^{L1} on the same carbon atom or two adjacent carbon atoms, together with the atom to which they are connected, form 3- to 8-membered cycloalkyl, 5- to 10-membered heterocycloalkyl, or 5- to 6-membered heteroaryl;
in some embodiments, each R^{L1} is independently selected from halogen, C_{1-4} alkyl, C_{2-4} alkenyl, C_{1-4} alkoxy, or 3- to 6-membered cycloalkyl, wherein the alkyl, alkenyl, alkoxy, and cycloalkyl are optionally further substituted with 1-4 substituents selected from halogen, CN, OH and NH_2, or two R^{L1} on the same carbon atom or two adjacent carbon atoms, together with the atom to which they are connected, form 3- to 8-membered cycloalkyl, 5- to 10-membered heterocycloalkyl, or 5- to 6-membered heteroaryl;
in some embodiments, each R^{L1} is independently selected from halogen, =O, C_{1-4} alkyl, C_{2-4} alkenyl, C_{1-4} alkoxy, or 3- to 6-membered cycloalkyl, wherein the alkyl, alkoxy, and cycloalkyl are optionally further substituted with 1-4 substituents selected from halogen, CN, OH and NH_2, or two R^{L1} on the same carbon atom or two adjacent carbon atoms, together with the atom to which they are connected, form 3- to 8-membered cycloalkyl, 5- to 10-membered heterocycloalkyl, or 5- to 6-membered heteroaryl;

heterocycloalkyl, and heteroaryl are optionally further substituted with groups selected from halogen, OH, C_{1-2} alkyl, C_{1-2} alkoxy, or -$S(O)_2$-CH_3;
in some embodiments, R^a is selected from ethynyl, 3- to 5-membered cycloalkyl, or 4- to 6-membered heterocycloalkyl, wherein the cycloalkyl and heterocycloalkyl are optionally further substituted with groups selected from halogen, methyl, methoxy, ethoxy, OH, or -$S(O)_2$-CH_3;
in some embodiments, R^a is selected from 3- to 5-membered cycloalkyl, 4- to 6-membered heterocycloalkyl, or 5-membered heteroaryl, wherein the cycloalkyl, heterocycloalkyl, and heteroaryl are optionally further substituted with groups selected from halogen, OH, C_{1-2} alkyl, or -$S(O)_2$-CH_3;
in some embodiments, R^a is selected from 3- to 5-membered cycloalkyl, 4- to 6-membered heterocycloalkyl, or 5-membered heteroaryl, wherein the cycloalkyl, heterocycloalkyl, and heteroaryl are optionally further substituted with groups selected from halogen, OH, or C_{1-2} alkyl; in some embodiments, R^a is selected from 3- to 5-membered cycloalkyl, or 4- to 6-membered heterocycloalkyl, wherein the cycloalkyl and heterocycloalkyl are optionally further substituted with groups selected from F, Cl, Br, OH, methyl, ethyl, or -$S(O)_2$-CH_3;
in some embodiments, R^a is selected from 3- to 5-membered cycloalkyl, or 4- to 6-membered heterocycloalkyl, wherein the cycloalkyl and heterocycloalkyl are optionally further substituted with groups selected from F, Cl, Br, OH, methyl, or ethyl;
in some embodiments, R^a is selected from cyclopropyl, cyclobutyl, cyclopentyl, oxetanyl, azetidinyl, oxolanyl, or azacyclopentyl, wherein the cyclopropyl, cyclobutyl, cyclopentyl, oxetanyl, azetidinyl, oxolanyl, and azacyclopentyl are optionally further substituted with groups selected from F, Cl, Br, OH, methyl, ethyl, or -$S(O)_2$-CH_3;
in some embodiments, R^a is selected from cyclopropyl, cyclobutyl, cyclopentyl, oxetanyl, azetidinyl, oxolanyl, or oxolanyl, wherein the cyclopropyl, cyclobutyl, cyclopentyl, oxetanyl, azetidinyl, oxolanyl, and oxolanyl are optionally further substituted with groups selected from F, Cl, Br, OH, methyl, or ethyl;
each R^C is independently selected from H, CN, halogen, OH, C_{1-4} alkyl, halo C_{1-4} alkyl, -O-halo C_{1-4} alkyl, -Se-halo C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, =O, C_{3-6} cycloalkyl, -SCF_3, -SF_5, -$(NH)_q$-$P(O)(C_{1-4}$ alkyl$)_2$, -$(CH_2)_p$-O-C_{1-4} alkyl, -O-$(CH_2)_p$-C_{3-6} cycloalkyl or

; or is selected from ; or is selected from , , , , , , or ; or is selected from ; ring C has one of the following structures: , , , , , , , , , , , , , , , , , , , or , or is selected from ; or is selected from  or ; or is selected from ;

L_1 is selected from a bond, -(C_{1-2} alkylene)-O-, -(C_{1-2} alkylene)-Se-, C_{1-2} alkylene, -O-(C_{1-2} alkylene)-, C_{2-4} alkenylene, -C(=O)-N(C_{1-2} alkylene)-, -O-, -C(=O)-O- or C_{2-4} alkynylene, wherein the alkylene and alkenylene are optionally further substituted with 1-3 R^{L1}; in some embodiments, L_1 is selected from a bond, -(C_{1-2} alkylene)-O-, -(C_{1-2} alkylene)-Se-, C_{1-2} alkylene, -O-(C_{1-2} alkylene)-, C_{2-4} alkenylene, -O- or C_{2-4} alkynylene, wherein the alkylene and alkenylene are optionally further substituted with 1-3 R^{L1}; in some embodiments, L_1 is selected from a bond, -(C_{1-2} alkylene)-O-, C_{1-2} alkylene, -O-(C_{1-2} alkylene)-, C_{2-4} alkenylene, -C(=O)-N(C_{1-2} alkylene)-, -O-, or -C(=O)-O-, wherein the alkylene and alkenylene are optionally substituted with 1-3 R^{L1};

L_2 is selected from a bond, C_{1-2} alkylene, -C(=O)-, -NH-, or -O-, wherein the alkylene is optionally further substituted with 1-3 R^{L1}; in some embodiments, L_2 is selected from a

[00593] 79C (0.50 g, 1.40 mmol) was dissolved in 1,4-dioxane (16 mL) and water (2 mL), and at room temperature, methyl boronic acid (355.22 mg, 5.60 mmol) and potassium carbonate (967.47 mg,7.00 mmol) were added. After the addition, the system was subjected to nitrogen replacement three times, and then tetrakis(triphenylphosphine)palladium (161.78 mg, 0.14 mmol) was added. After the addition, the mixture was subjected to nitrogen replacement three times and reacted at 100°C overnight. After the reaction was completed, the reaction solution was subjected to suction filtration, the filtrate was concentrated, and the residue was purified by column chromatography (petroleum ether/ethyl acetate =4/1, (v/v)) to obtain 79D (0.25 g, yield: 60%).

[00594] LC-MS (ESI): m/z= 294.1 $[M+H]^+$.

Step 4:

[00595] 79D (0.25 g, 0.85 mmol) was dissolved in aqueous hydrogen bromide solution (1 mL), and then at room temperature, phenol (159.99 mg, 1.70 mmol) was added. After the addition, the mixture was reacted at 100°C overnight. After the reaction was completed, the reaction solution was extracted with diethyl ether (15 mL×2), and the aqueous phase was directly concentrated to obtain crude 79E, which was directly used in the next reaction.

[00596] LC-MS (ESI): m/z= 140.1 $[M+H]^+$.

Step 5:

[00597] 16C (0.18 g, 0.54 mmol) was dissolved in dichloromethane (10 mL), and triethylamine (136.61 mg, 1.35 mmol) and methanesulfonyl chloride (92.79 mg, 0.81 mmol) were added at 0°C-5°C. After the addition, the mixture was reacted at room temperature for 30 min, and 79E (90.21 mg, 0.65 mmol) was added at room temperature. After the addition, the mixture was reacted at room temperature overnight. After the reaction was completed, the reaction solution was concentrated and purified by column chromatography (petroleum ether/ethyl acetate =1/1, (v/v)) to obtain compound 79F (110 mg, yield: 44%).

[00598] LC-MS (ESI): m/z= 401.4 $[M-55]^+$.

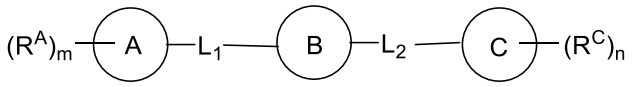
Step 6:

[00599] 79F (110 mg, 0.24 mmol) was dissolved in dichloromethane (4 mL), and at 0°C-5°C, trifluoroacetic acid (1 mL) was added. After the addition, the mixture was reacted at room temperature for 2 hrs. After the reaction was completed, the reaction mixture was concentrated to obtain crude 79G, which was directly used in the next reaction.

CLAIMS

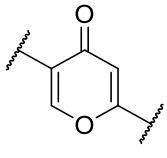
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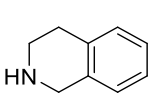
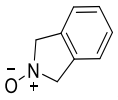
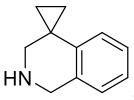
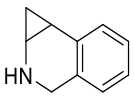
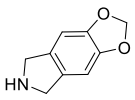
1. A compound as represented by formula (I), or a stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt, wherein



(I)

ring A is selected from 4- to 8-membered cycloalkyl, 4- to 7-membered monocyclic heterocycloalkyl, 6- to 12-membered bicyclic heterocycloalkyl, or 8- to 14-membered tricyclic heterocycloalkyl;

ring B is , and ring B is connected to L_1 on the left side;

ring C is selected from phenyl, 5- to 6-membered heteroaryl, 6- to 12-membered bicyclic carbocyclyl, 6- to 12-membered bicyclic heterocycloalkyl, or 8- to 14-membered tricyclic heterocycloalkyl, and ring C is not , , ,  and ;

L_1 is W_1-R^{La}-W_2, and L_1 is connected to A on the left side;

L_2 is W_3-R^{Lb}-W_4, and L_2 is connected to B on the left side, and L_1 and L_2 are not both a bond;

R^{La} and R^{Lb} are each independently selected from a bond, C_{1-4} alkylene, C_{2-4} alkenylene, or C_{2-4} alkynylene, wherein the alkylene and alkenylene are optionally further substituted with 1-4 R^{L1};

each R^{L1} is independently selected from halogen, C_{1-4} alkyl, C_{2-4} alkenyl, C_{1-4} alkoxy, or 3- to 6-membered cycloalkyl, wherein the alkyl, alkenyl, alkoxy, and cycloalkyl are optionally further substituted with 1-4 substituents selected from halogen, CN, OH and NH_2, or two R^{L1} on the same carbon atom or two adjacent carbon atoms, together with the atom to which they are connected, form 3- to 8-membered cycloalkyl, 5- to 10-membered heterocycloalkyl, or 5- to 6-membered heteroaryl;

W_1, W_2, W_3, and W_4 are each independently selected from a bond, -O-, -S-, -NR^{W1}-, -Se-, or -C(O)-;

R^{W1} is selected from H, halogen, or C_{1-4} alkyl;

each R^A is independently selected from halogen, =O, CN, COOH, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, -O-C_{1-4} alkyl, -$S(O)_2$-C_{1-4} alkyl, -$S(O)_2$-$(CH_2)_{1-3}$-R^a, -P(O)-(C_{1-4} alkyl)$_2$, -C(O)-O-$(CH_2)_p$-R^a, -$(CH_2)_{1-2}$-C(O)-R^a, -C(O)-$(CH_2)_{1-2}$-R^a, -C(O)-O-halo C_{1-4} alkyl, -C(O)-(6- to 9-membered bicyclic heterocycloalkyl), -NH-C(O)-$(CH_2)_p$-R^a, -NH-R^a, -$N(CH_3)$-C(O)-$(CH_2)_p$-R^a, -NH-SO_2-$(CH_2)_{1-2}$-R^a, -NH-C(O)-O-R^a, -C(O)-$(CH_2)_p$-(4- to 6-membered monocyclic heterocycloalkyl), -C(O)-$(CH_2)_p$-(4- to 6-membered monocyclic cycloalkyl), -NH-C(O)-NH-R^a, -C(O)-deuterated C_{1-4} alkyl, -C(O)-NH-(4- to 6-membered monocyclic cycloalkyl), -C(O)-NH-(4- to 6-membered monocyclic heterocycloalkyl), -C(O)-NH-$S(O)_2$-C_{1-4} alkyl, -NH-C(O)deuterated C_{1-2} alkyl, -NH-C(O)-NH-C_{1-2} alkyl or -NH-C(O)-C_{1-2} alkyl, wherein the alkyl, alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl are optionally further substituted with 1-4 groups selected from halogen, OH, NH_2, CN, -$S(O)_2$-CH_3, -O-halo C_{1-4} alkyl, or -NH-$S(O)_2$-CH_3;

R^a is selected from deuterated C_{1-4} alkyl, C_{2-4} alkynyl, 3- to 5-membered cycloalkyl, 3- to 6-membered heterocycloalkyl, or 5- to 6-membered heteroaryl, wherein the alkynyl, cycloalkyl, heterocycloalkyl, and heteroaryl are optionally further substituted with 1-4 groups selected from halogen, OH, =O, C_{1-4} alkyl, deuterated C_{1-4} alkyl, C_{1-4} alkoxy, C_{2-4} alkynyl, -O-halo C_{1-4} alkyl, -$S(O)_2$-CH_3 or =CH_2;

each R^C is independently selected from H, CN, halogen, OH, C_{1-4} alkyl, halo C_{1-4} alkyl, -O-halo C_{1-4} alkyl, -Se-halo C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, =O, C_{3-6} cycloalkyl, -SCF_3, -SF_5, -$(NH)_q$-P(O)(C_{1-4} alkyl)$_2$, -$(CH_2)_p$-O-C_{1-4} alkyl, -O-$(CH_2)_p$-C_{3-6} cycloalkyl or -$(CH_2)_p$-O-C_{3-6} cycloalkyl, or any two R^C, together with the atom to which they are connected, form 3- to 8-membered cycloalkyl;

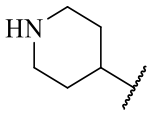
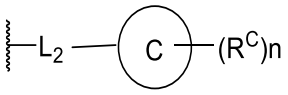
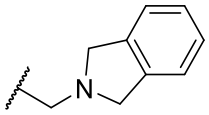
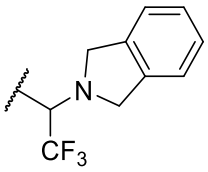
q is selected from 0 or 1;

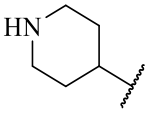
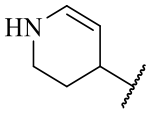
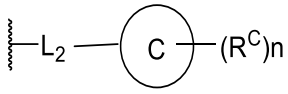
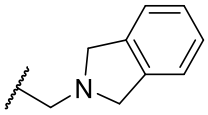
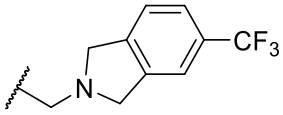
each p is independently selected from 0, 1, 2, 3, or 4;

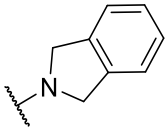
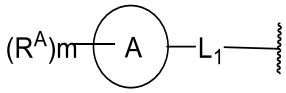
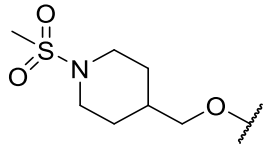
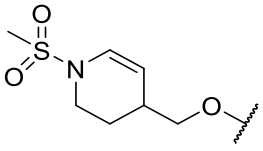
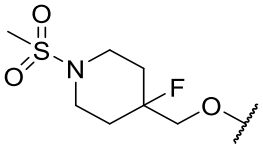
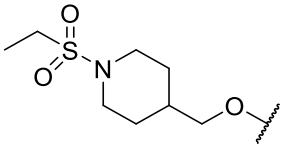
m is selected from 1, 2, 3, or 4;

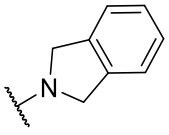
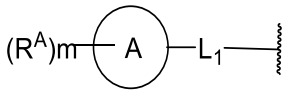
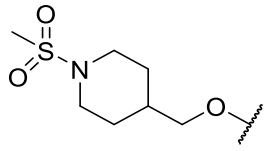
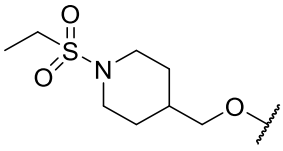
n is selected from 1, 2, 3, or 4;

provided that

(1) when ring A is , R^A is not $-S(O)_2-(CH_2)_{0-1}CH_3$, and  is not  and ;

(2) when R^A is $-S(O)_2-(CH_2)_{0-1}CH_3$, ring A is not  and , and  is not  and ;

(3) when ring C is , R^C is not H, and  is not , ,  and ;

(4) when R^C is H, ring C is not , and  is not  and .

2. The compound as represented by formula (I), or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt according to claim 1, wherein

ring A is selected from 4- to 8-membered cycloalkyl, 4- to 7-membered monocyclic heterocycloalkyl, 5- to 6-membered heterocycloalkyl fused 5- to 6-membered heterocycloalkyl, 4- to 6-membered heterocycloalkyl spiro 5- to 6-membered heterocycloalkyl, 5- to 6-membered heterocycloalkyl spiro 4- to 6-memberedcycloalkyl, 5- to 6-membered heterocycloalkyl spiro 5- to 6-membered cycloalkyl, 5- to 6-membered heterocycloalkyl spiro 3- to 6-membered

cycloalkyl, 10- to 14-membered partially unsaturated tricyclic heterocycloalkyl, or 7- to 8-membered bicyclic bridged heterocyclyl;

ring C is selected from phenyl, 5-membered heteroaryl, 6-membered heteroaryl, 5- to 7-membered heterocycloalkyl fused phenyl, 5- to 6-membered carbocyclyl fused phenyl, 5- to 6-membered heterocycloalkyl fused 5- to 6-membered heteroaryl, 5- to 6-membered heterocycloalkyl fused 3- to 6-membered cycloalkyl, or 9- to 12-membered tricyclic heterocycloalkyl;

R^{La} and R^{Lb} are each independently selected from a bond, C_{1-2} alkylene, C_{2-4} alkenylene, or C_{2-4} alkynylene, wherein the alkylene and alkenylene are optionally further substituted with 1-4 R^{L1};

each R^{L1} is independently selected from halogen, C_{1-2} alkyl, C_{2-4} alkenyl, C_{1-2} alkoxy, or 3- to 6-membered cycloalkyl, wherein the alkyl, alkoxy, and cycloalkyl are optionally further substituted with 1-4 substituents selected from halogen, CN, OH and NH_2, or two R^{L1} on the same carbon atom or two adjacent carbon atoms, together with the atom to which they are connected, form 3- to 6-membered cycloalkyl;

R^{W1} is selected from H, halogen, or C_{1-2} alkyl;

each R^A is independently selected from halogen, =O, CN, COOH, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, -OC_{1-4} alkyl, -S(O)$_2$-C_{1-4} alkyl, -S(O)$_2$-$(CH_2)_{1-3}$-R^a, -P(O)-(C_{1-4} alkyl)$_2$, -C(O)-O-$(CH_2)_p$-R^a, -$(CH_2)_{1-2}$-C(O)-R^a, -C(O)-$(CH_2)_{1-2}$-R^a, -NH-R^a, -C(O)-O-halo C_{1-4} alkyl, -C(O)-(6- to 9-membered bicyclic heterocycloalkyl), -NH-C(O)-$(CH_2)_p$-R^a, -N(CH_3)-C(O)-$(CH_2)_p$-R^a, -NH-SO_2-$(CH_2)_{1-2}$-R^a, -NH-C(O)-O-R^a, -C(O)-$(CH_2)_p$-(4- to 6-membered monocyclic heterocycloalkyl), -C(O)-$(CH_2)_p$-(4- to 6-membered monocyclic cycloalkyl), -NH-C(O)-NH-R^a, -C(O)-deuterated C_{1-4} alkyl, -C(O)-NH-(4- to 6-membered monocyclic cycloalkyl), -C(O)-NH-(4- to 6-membered monocyclic heterocycloalkyl), -C(O)-NH-S(O)$_2$-C_{1-4} alkyl, -NH-C(O)deuterated C_{1-2} alkyl, -NH-C(O)-NH-C_{1-2} alkyl or -NH-C(O)-C_{1-2} alkyl, wherein the alkyl, alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl are optionally further substituted with 1-4 groups selected from halogen, OH, NH_2, CN, -S(O)$_2$-CH_3, or -NH-S(O)$_2$-CH_3;

R^a is selected from deuterated C_{1-2} alkyl, C_{2-4} alkynyl, 3- to 5-membered cycloalkyl, 4- to 6-membered heterocycloalkyl, or 5-membered heteroaryl, wherein the cycloalkyl, heterocycloalkyl, and heteroaryl are optionally further substituted with groups selected from halogen, C_{1-2} alkyl, OH, =O, -S(O)$_2$-CH_3, C_{1-2} alkoxy, deuterated C_{1-2} alkyl or =CH_2;

each R^C is independently selected from H, CN, halogen, OH, C_{1-4} alkyl, halo C_{1-4} alkyl, -O-halo C_{1-4} alkyl, -Se-halo C_{1-2} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, =O, C_{3-6} cycloalkyl, $-SCF_3$, $-SF_5$, $-(NH)_q-P(O)(C_{1-4}\text{ alkyl})_2$, $-(CH_2)_p-O-C_{1-4}$ alkyl, $-O-(CH_2)_p-C_{3-6}$ cycloalkyl or $-(CH_2)_p-O-C_{3-6}$ cycloalkyl, or any two R^C, together with the atom to which they are connected, form 3- to 6-membered cycloalkyl;

each p is independently selected from 0, 1, 2, or 3;

m is selected from 1, 2, or 3;

n is selected from 1, 2, or 3.

3. The compound as represented by formula (I), or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt according to claim 2, wherein

ring A is selected from 4- to 6-membered cycloalkyl, 4- to 7-membered monocyclic heterocycloalkyl, 5-membered heterocycloalkyl fused 5-membered heterocycloalkyl, 5-membered heterocycloalkyl fused 6-membered heterocycloalkyl, 5-membered heterocycloalkyl spiro 5-membered heterocycloalkyl, 5-membered heterocycloalkyl spiro 6-membered heterocycloalkyl, 4-membered heterocycloalkyl spiro 6-membered heterocycloalkyl, 4-membered cycloalkyl spiro 6-membered heterocycloalkyl, 5-membered cycloalkyl spiro 6-membered heterocycloalkyl, 5-membered heterocycloalkyl fused 5-membered cycloalkyl, 6-membered heterocycloalkyl fused 5-membered cycloalkyl, or 10- to 14-membered partially unsaturated tricyclic heterocycloalkyl;

ring C is selected from 5- to 7-membered heterocycloalkyl fused phenyl, 5- to 6-membered heterocycloalkyl fused 5- to 6-membered heteroaryl, 5- to 6-membered heterocycloalkyl fused 3- to 6-membered cycloalkyl, or 9- to 12-membered tricyclic heterocycloalkyl;

each R^A is independently selected from halogen, =O, CN, COOH, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, $-OC_{1-4}$ alkyl, $-S(O)_2-C_{1-4}$ alkyl, $-S(O)_2-(CH_2)_{1-3}-R^a$, $-C(O)-O-(CH_2)_p-R^a$, $-(CH_2)_{1-2}-C(O)-R^a$, $-C(O)-(CH_2)_{1-2}-R^a$, -C(O)-O-halo C_{1-4} alkyl, $-NH-R^a$, -C(O)-(6- to 9-membered bicyclic heterocycloalkyl), $-N(CH_3)-C(O)-(CH_2)_p-R^a$, $-NH-C(O)-O-R^a$, $-C(O)-(CH_2)_p-$(4- to 6-membered monocyclic heterocycloalkyl), $-C(O)-(CH_2)_p-$(4- to 6-membered monocyclic cycloalkyl), $-NH-C(O)-NH-R^a$, -C(O)-deuterated C_{1-4} alkyl, -C(O)-NH-(4- to 6-membered monocyclic cycloalkyl), -C(O)-NH-(4- to 6-membered monocyclic heterocycloalkyl), $-C(O)-NH-S(O)_2-C_{1-4}$ alkyl, -NH-C(O)deuterated C_{1-2} alkyl, $-NH-C(O)-NH-C_{1-2}$ alkyl or $-NH-C(O)-C_{1-2}$ alkyl, wherein the alkyl,

alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl are optionally further substituted with 1-4 groups selected from halogen, OH, NH_2, CN, $-S(O)_2-CH_3$, or $-NH-S(O)_2-CH_3$;

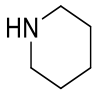
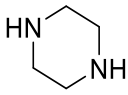
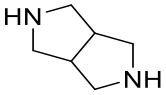
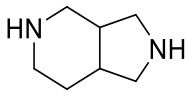
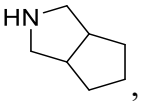
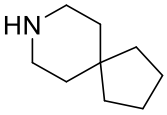
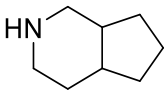
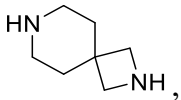
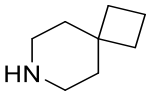
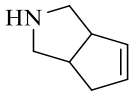
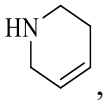
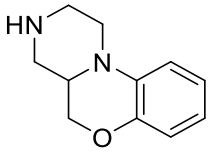
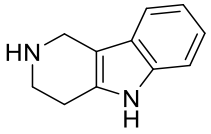
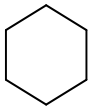
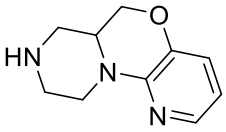
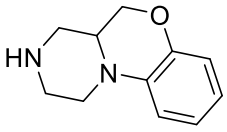
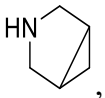
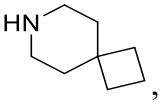
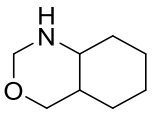
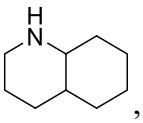
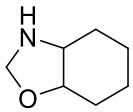
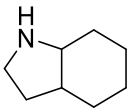
R^a is selected from deuterated C_{1-2} alkyl, ethynyl, 3- to 5-membered cycloalkyl, 4- to 6-membered heterocycloalkyl, or 5-membered heteroaryl, wherein the cycloalkyl, heterocycloalkyl, and heteroaryl are optionally further substituted with groups selected from halogen, OH, =O, C_{1-2} alkyl, deuterated C_{1-2} alkyl, C_{1-2} alkoxy, $-S(O)_2-CH_3$ or $=CH_2$;

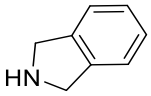
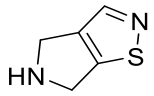
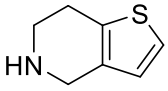
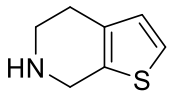
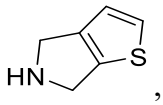
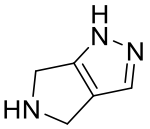
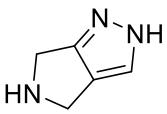
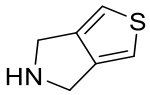
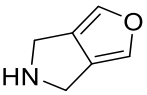
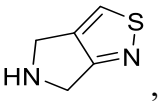
each p is independently selected from 0, 1, or 2;

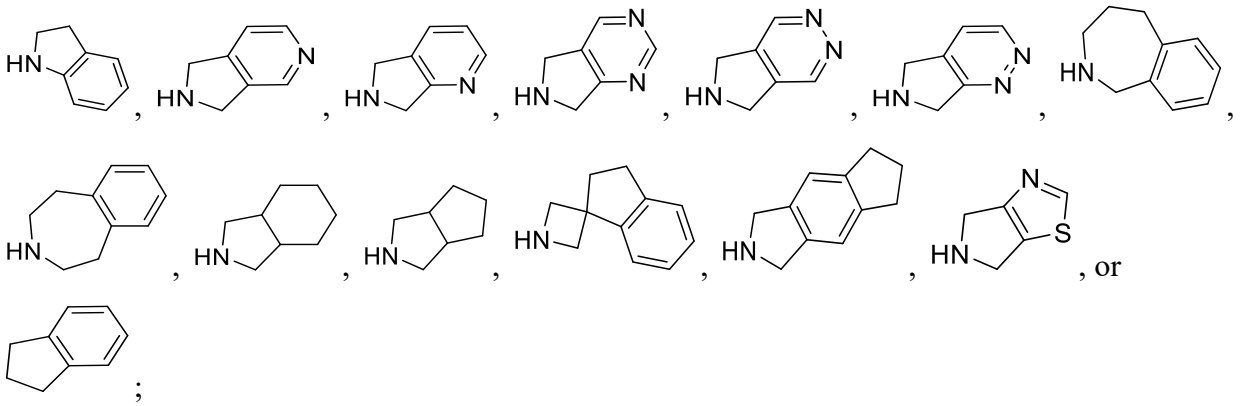
m is selected from 1, 2, or 3;

n is selected from 1, 2, or 3.

4. The compound as represented by formula (I), or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt according to claim 1, wherein

ring A has one of the following structures: , , , , , , , , , , , , , , , , , , , , , , , , , , , , , or ;

ring C has one of the following structures: , , , , , , , , , .



, or ;

L_1 is selected from a bond, -(C_{1-2} alkylene)-O-, -(C_{1-2} alkylene)-Se-, C_{1-2} alkylene, -O-(C_{1-2} alkylene)-, C_{2-4} alkenylene, -O-, or C_{2-4} alkynylene, wherein the alkylene and alkenylene are optionally further substituted with 1-3 R^{L1};

L_2 is selected from a bond, C_{1-2} alkylene, -NH-, or -O-, wherein the alkylene, alkenylene and cycloalkyl are optionally further substituted with 1-3 R^{L1};

each R^{L1} is independently selected from halogen, C_{1-2} alkyl, halo C_{1-2} alkyl, C_{2-4} alkenyl, C_{1-2} alkoxy, halo C_{1-2} alkoxy, or 3- to 6-membered cycloalkyl, or two R^{L1} on the same carbon atom or two adjacent carbon atoms, together with the atom to which they are connected, form 3- to 6-membered cycloalkyl;

each R^A is independently selected from =O, C_{1-4} alkyl, -$S(O)_2$-C_{1-4} alkyl, -$S(O)_2$-$(CH_2)_{1-3}$-R^a, -C(O)-O-$(CH_2)_p$-R^a, -$(CH_2)_{1-2}$-C(O)-R^a, -C(O)-$(CH_2)_{1-2}$-R^a, -C(O)-O-halo C_{1-3} alkyl, -C(O)-(6- to 9-membered bicyclic heterocycloalkyl), -NH-C(O)-$(CH_2)_p$-R^a, -NH-R^a, -N(CH_3)-C(O)-$(CH_2)_p$-R^a, -NH-SO_2-$(CH_2)_{1-2}$-R^a, -NH-C(O)-O-R^a, -C(O)-$(CH_2)_p$-(4- to 6-membered monocyclic heterocycloalkyl), -C(O)-$(CH_2)_p$-(4- to 6-membered monocyclic cycloalkyl), -NH-C(O)-NH-R^a, -C(O)-deuterated C_{1-2} alkyl, -C(O)-NH-(4- to 6-membered monocyclic cycloalkyl), -C(O)-NH-(4- to 6-membered monocyclic heterocycloalkyl), -C(O)-NH-$S(O)_2$-C_{1-4} alkyl, -NH-C(O)deuterated C_{1-2} alkyl, -NH-C(O)-NH-C_{1-2} alkyl or -NH-C(O)-C_{1-2} alkyl, wherein the alkyl, cycloalkyl, and heterocycloalkyl are optionally further substituted with 1-4 groups selected from halogen, OH, NH_2, CN, -$S(O)_2$-CH_3, or -NH-$S(O)_2$-CH_3;

R^a is selected from deuterated C_{1-2} alkyl, ethynyl, 3- to 5-membered cycloalkyl, 4- to 6-membered heterocycloalkyl, or 5- to 6-membered heteroaryl, wherein the cycloalkyl, heterocycloalkyl, and heteroaryl are optionally further substituted with groups selected from halogen, methyl, deuterated methyl, methoxy, ethoxy, OH, =O, -$S(O)_2$-CH_3 or =CH_2;

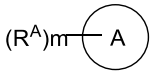
each R^C is independently selected from H, CN, F, Cl, Br, OH, -SF_5, methyl, difluoromethyl, trifluoromethyl, ethyl, ethynyl, cyclopropyl, -O-cyclopropyl, -O-CH_2-cyclopropyl, cyclobutyl, -O-cyclobutyl, -O-CH_2-cyclobutyl, or -Se-trifluoromethyl, or any two R^C, together with the atom to which they are connected, form 3- to 6-membered cycloalkyl;

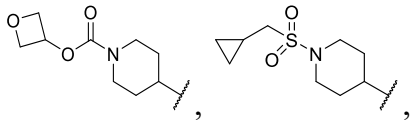
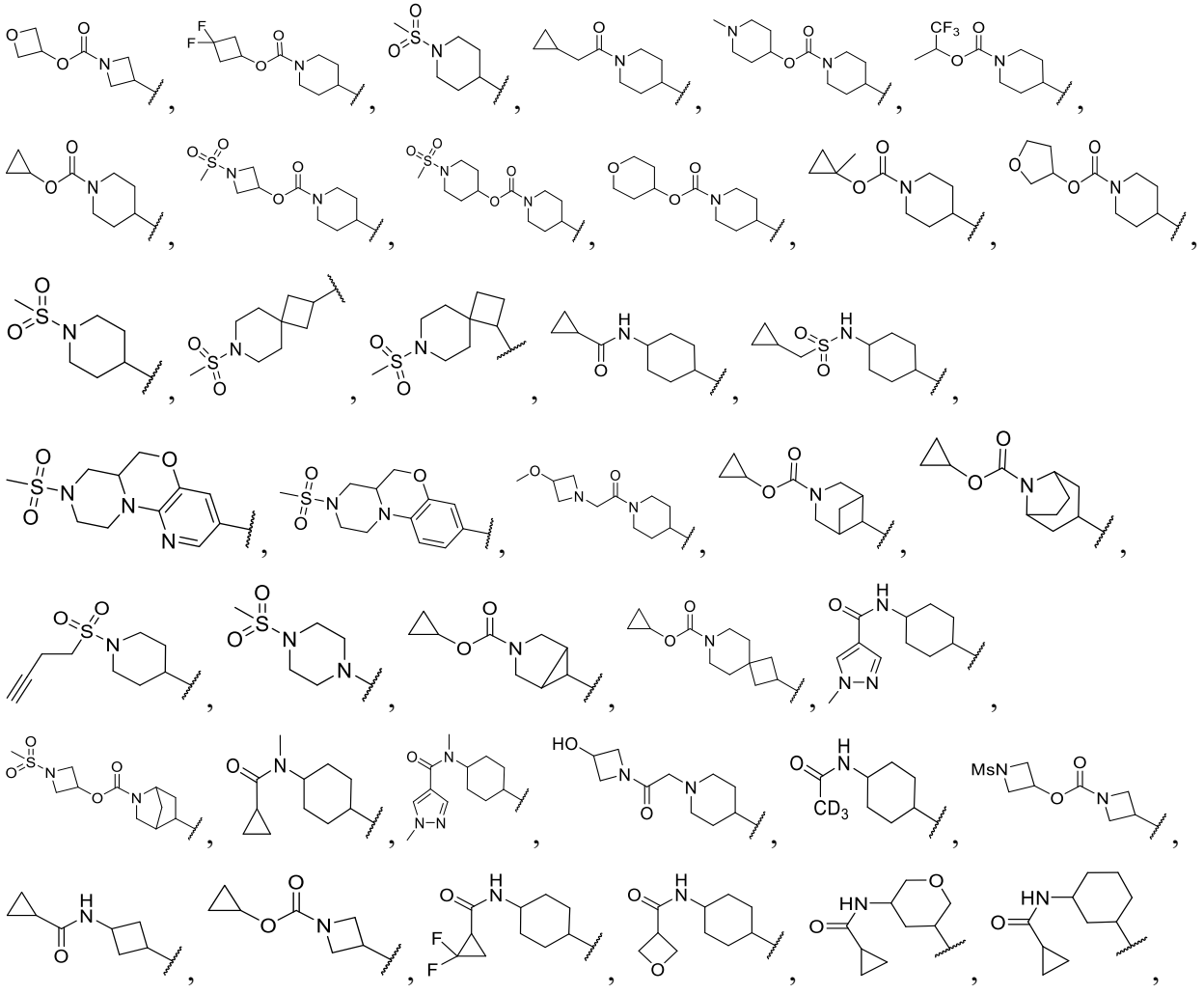
each p is independently selected from 0, 1, or 2;

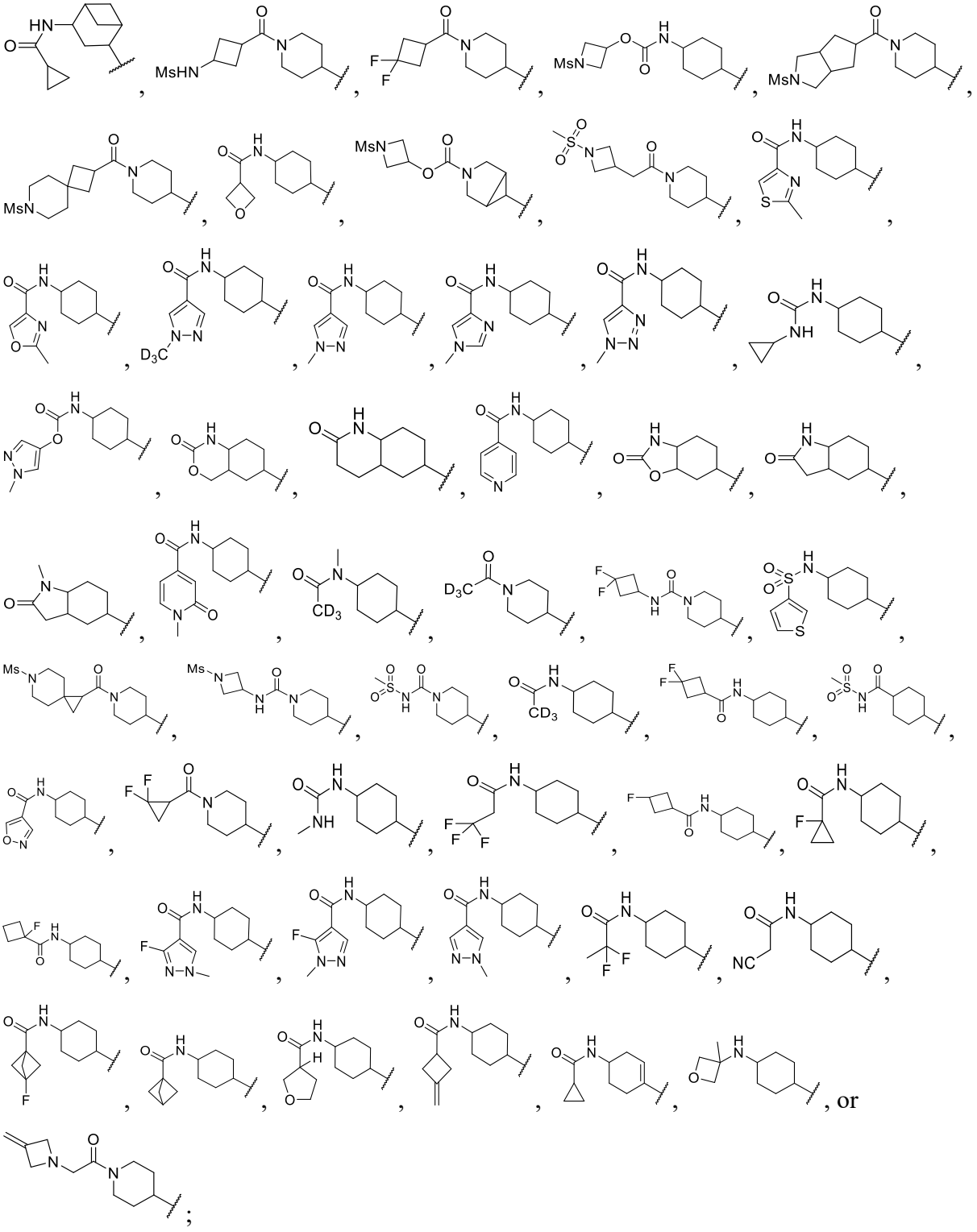
m is selected from 1 or 2;

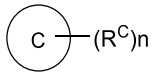
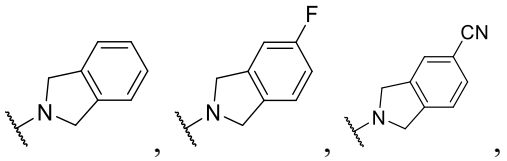
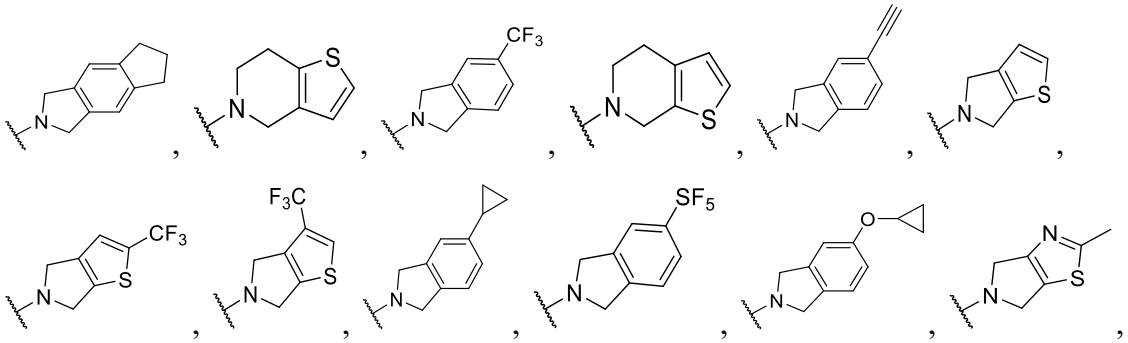
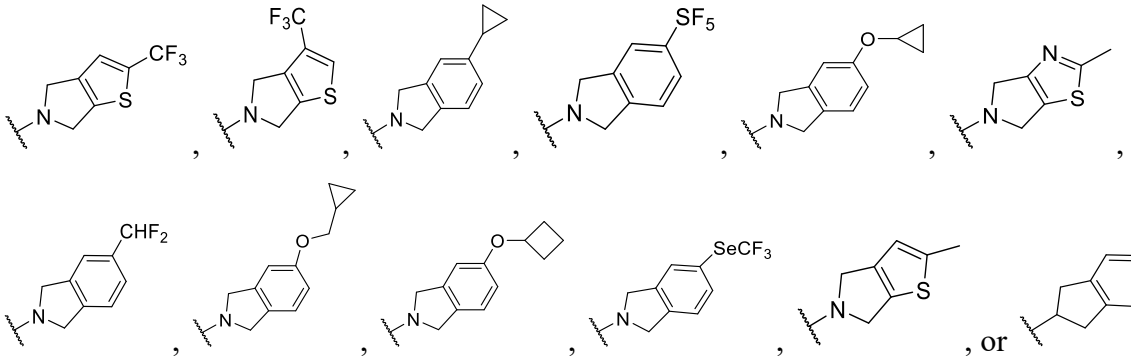
n is selected from 1 or 2.

5. The compound as represented by formula (I), or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt according to claim 1, wherein

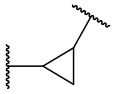

has one of the following structures:



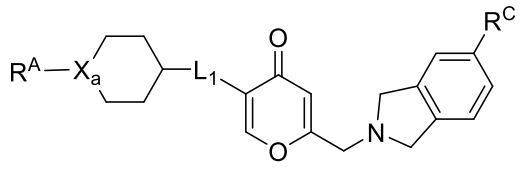

has one of the following structures: 



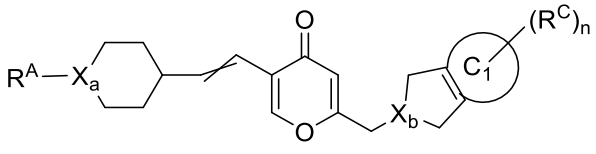
, or ;

L_1 is selected from a bond, -CH_2-O-, -CH_2-Se-, -CH=CH-, -CF=CH-, -CH_2-, -CH_2CH_2-, , -O-, -$C(CH_3)$=CH-, -CH=$C(CH_3)$-, or ;

L_2 is -CH_2-.

6. The compound, or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt according to claim 1, wherein the compound has a structure of formula (I-a) or (I-c):


(I-a)


(I-c)

wherein

Xa is selected from CH or N;

X_b is selected from CH or N;

ring C_1 is selected from 5- to 6-membered heteroaryl, phenyl or benzo 5- to 6-membered cycloalkyl.

7. The compound, or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt according to claim 6, wherein

R^A is selected from -$S(O)_2$-$(CH_2)_{1-3}$-R^a, -C(O)-O-$(CH_2)_p$-R^a, -$(CH_2)_{1-2}$-C(O)-R^a, -C(O)-$(CH_2)_{1-2}$-R^a, -C(O)-O-halo C_{1-4} alkyl, -C(O)-(6- to 9-membered bicyclic heterocycloalkyl), -NH-C(O)-$(CH_2)_p$-R^a, -$N(CH_3)$-C(O)-$(CH_2)_p$-R^a, -NH-SO_2-$(CH_2)_{1-2}$-R^a, -NH-C(O)-O-R^a, -NH-R^a, -C(O)-$(CH_2)_p$-(4- to 6-membered monocyclic heterocycloalkyl), -C(O)-$(CH_2)_p$-(4- to 6-membered monocyclic cycloalkyl), -NH-C(O)-NH-R^a, -C(O)-deuterated C_{1-4} alkyl, -C(O)-NH-(4- to 6-membered monocyclic cycloalkyl), -C(O)-NH-(4- to 6-membered monocyclic heterocycloalkyl), -C(O)-NH-$S(O)_2$-C_{1-4} alkyl, -NH-C(O)deuterated C_{1-2} alkyl, -NH-C(O)-NH-C_{1-2} alkyl or -NH-C(O)-C_{1-2} alkyl, wherein the alkyl, cycloalkyl, and heterocycloalkyl are optionally further substituted with 1-3 groups selected from halogen, OH, NH_2, CN, -$S(O)_2$-CH_3, -O-halo C_{1-4} alkyl, or -NH-$S(O)_2$-CH_3;

R^a is selected from deuterated C_{1-4} alkyl, C_{2-4} alkynyl, 3- to 5-membered cycloalkyl, 3- to 6-membered heterocycloalkyl, or 5- to 6-membered heteroaryl, wherein the alkynyl, cycloalkyl, heterocycloalkyl, and heteroaryl are optionally further substituted with 1-4 groups selected from halogen, OH, =O, C_{1-4} alkyl, deuterated C_{1-4} alkyl, C_{1-4} alkoxy, C_{2-4} alkynyl, -O-halo C_{1-4} alkyl, -$S(O)_2$-CH_3 or $=CH_2$;

R^C is selected from F, Cl, halo C_{1-2} alkyl, C_{2-4} alkynyl, 3-4-membered cycloalkyl, or -O-C_{3-4} cycloalkyl;

L_1 is selected from -(C_{1-2} alkylene)-O-, C_{1-2} alkylene, C_{2-4} alkenylene, or -C(O)-NH-;

n is selected from 1 or 2;

p is selected from 0, 1 or 2.

8. The compound, or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt according to claim 6, wherein

R^A is selected from -C(O)-O-$(CH_2)_p$-R^a, -C(O)-$(CH_2)_{1-2}$-R^a, -NH-C(O)-$(CH_2)_p$-R^a, -$N(CH_3)$-C(O)-$(CH_2)_p$-R^a, or -NH-C(O)-O-R^a;

R^a is selected from 3- to 5-membered cycloalkyl, 3- to 6-membered heterocycloalkyl, or 5- to 6-membered heteroaryl, wherein the cycloalkyl, heterocycloalkyl, and heteroaryl are

optionally further substituted with 1-4 groups selected from halogen, C_{1-4} alkyl, deuterated C_{1-4} alkyl, or $-S(O)_2-CH_3$;

R^C is selected from F, Cl, CHF_2, CF_3, ethynyl, cyclopropyl, cyclobutyl, -O-cyclopropyl, or -O-cyclobutyl.

9. The compound, or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt according to claim 1 or 6, wherein L_1 is selected from -CH=CH-.

10. The compound, or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt according to claim 1, wherein the compound is selected from one of the structures in Table 1.

11. A pharmaceutical composition or pharmaceutical preparation comprising the compound, or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt thereof according to any one of claims 1-10, and a pharmaceutically acceptable carrier and/or excipient.

12. The pharmaceutical composition or pharmaceutical preparation according to claim 11, comprising 1-1500 mg of the compound, or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt thereof according to any one of claims 1-10, and a carrier and/or excipient.

13. Use of the compound, or the stereoisomer, tautomer, deuterated compound, solvate, co-crystal or pharmaceutically acceptable salt thereof according to any one of claims 1-10, or the composition according to claim 11 or 12 in the preparation of a drug for treating/preventing a CYP11A1-mediated disease.

14. The use according to claim 13, wherein the CYP11A1-mediated disease is steroid hormone-dependent cancer.