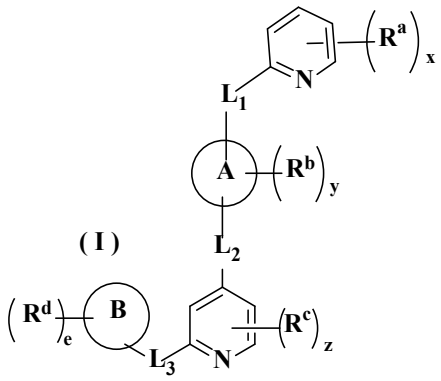
Claims

1. A compound represented by general formula (I), or a stereoisomer or pharmaceutically acceptable salt thereof:



(I)

wherein:

ring A is selected from cycloalkyl, heterocyclyl, aryl, or heteroaryl;

ring B is selected from cycloalkyl, heterocyclyl, aryl, or heteroaryl;

L_1 is selected from a bond, substituted or unsubstituted alkenylene, substituted or unsubstituted alkynylene, $-(CH_2)_n-$, $-(CH_2)_nC(O)(CR_{aa}R_{bb})_{n1}-$, $-(CH_2)_nC(O)NR_{cc}(CH_2)_{n1}-$, $-(CH_2)_n(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_nO(CH_2)_{n1}-$, $-(CH_2)_nO(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_nS(CH_2)_{n1}-$, $-(CH_2)_nS(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_n(CH_2)_{n1}NR_{cc}-$, $-(CH_2)_nNR_{cc}(CR_{aa}R_{bb})_{n1}-$, $-(CH_2)_nNR_{cc}C(O)-$, $-(CH_2)_nP(O)_pR_{aa}-$, $-(CH_2)_nS(O)_m-$, $-(CH_2)_nS(O)_mNR_{cc}-$, and $-(CH_2)_nNR_{cc}S(O)_m-$;

R_{aa}, R_{bb}, and R_{cc} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, alkyl, deuteroalkyl, haloalkyl, hydroxyalkyl, alkoxy, deuteroalkoxy, haloalkoxy, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the amino, alkyl, deuteroalkyl, haloalkyl, hydroxyalkyl, alkoxy, deuteroalkoxy, haloalkoxy, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

or any two of R_{aa}, R_{bb}, and R_{cc} are connected to form cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

L_2 and L_3 are each independently selected from a bond, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, $-(CH_2)_{n2}-$, $-(CH_2)_{n2}C(O)(CR_{a1}R_{b1})_{n3}-$, $-(CH_2)_{n2}C(O)NR_{c1}(CH_2)_{n3}-$, $-(CH_2)_{n2}(CR_{a1}R_{b1})_{n3}-$, $-(CR_{a1}R_{b1})_{n2}O(CH_2)_{n3}-$, $-(CH_2)_{n2}O(CR_{a1}R_{b1})_{n3}-$, $-(CR_{a1}R_{b1})_{n2}S(CH_2)_{n3}-$, -

$(CH_2)_{n2}S(CR_{a1}R_{b1})_{n3}$-, -$(CR_{a1}R_{b1})_{n2}(CH_2)_{n3}NR_{c1}$-, -$(CH_2)_{n2}NR_{c1}(CR_{a1}R_{b1})_{n3}$-, -$(CH_2)_{n2}NR_{c1}C(O)$-, -$(CH_2)_{n2}P(O)_{p1}R_{a1}$-, -$(CH_2)_{n2}S(O)_{m1}$-, -$(CH_2)_{n2}S(O)_{m1}NR_{c1}$-, and -$(CH_2)_{n2}NR_{c1}S(O)_{m1}$-;

R_{a1}, R_{b1}, and R_{c1} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, alkyl, deuteroalkyl, haloalkyl, hydroxyalkyl, alkoxy, deuteroalkoxy, haloalkoxy, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the amino, alkyl, deuteroalkyl, haloalkyl, hydroxyalkyl, alkoxy, deuteroalkoxy, haloalkoxy, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

each R^a is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, alkyl, deuteroalkyl, haloalkyl, hydroxyalkyl, alkoxy, deuteroalkoxy, haloalkoxy, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the amino, alkyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

each R^b is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, alkyl, deuteroalkyl, haloalkyl, hydroxyalkyl, alkoxy, deuteroalkoxy, haloalkoxy, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the amino, alkyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

each R^c is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, alkyl, deuteroalkyl, haloalkyl, hydroxyalkyl, alkoxy, deuteroalkoxy, haloalkoxy, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the amino, alkyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

R^b and R^c are connected to form cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

each R^d is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, alkyl, bridged cycloalkyl, deuteroalkyl, haloalkyl, hydroxyalkyl, alkoxy, deuteroalkoxy, haloalkoxy, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, heteroaryl, -$(CR_{ee}R_{ff})_{n4}C(O)R_{gg}$, -$(CR_{ee}R_{ff})_{n4}NR_{hh}C(O)R_{gg}$, -$(CR_{ee}R_{ff})_{n4}S(O)_2R_{gg}$, -$(CR_{ee}R_{ff})_{n4}C(O)NR_{hh}R_{gg}$, or -$(CR_{ee}R_{ff})_{n4}S(O)_2NR_{hh}R_{gg}$, wherein the amino, alkyl, bridged cycloalkyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

R_{ee}, R_{ff}, R_{gg}, and R_{hh} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-8} alkyl, C_{1-8} deuteroalkyl, C_{1-8} haloalkyl, C_{1-8} hydroxyalkyl, C_{1-8} alkoxy, C_{1-8} deuteroalkoxy, C_{1-8} haloalkoxy, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl;

preferably, R_{ee}, R_{ff}, R_{gg}, and R_{hh} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, or 5- to 10-membered heteroaryl;

or R_{ee} and R_{ff} are connected to form cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

n4 is 0, 1, 2, 3, or 4;

preferably, each R^d is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, alkyl, deuteroalkyl, haloalkyl, hydroxyalkyl, alkoxy, deuteroalkoxy, haloalkoxy, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the amino, alkyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, alkenyl, alkynyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

or any two adjacent or non-adjacent R^d are connected to form cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

or L_3 and R^d are connected to form cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

or R^c and R^d are connected to form cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted;

x is an integer of 0-6;

y is an integer of 0-6;

z is an integer of 0-6;

e is an integer of 0-6;

n is 0, 1, 2, or 3;

n1 is 0, 1, 2, or 3;

n2 is 0, 1, 2, or 3;

n3 is 0, 1, 2, or 3;

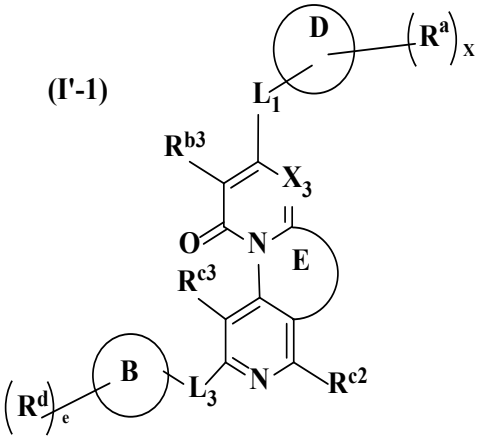
m is 0, 1, 2, or 3;

p is 0, 1, 2, or 3;

m1 is 0, 1, 2, or 3; and

p1 is 0, 1, 2, or 3.

2. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to claim 1, wherein the compound is further as represented by general formula (I'-1):



wherein:

ring D is selected from cycloalkyl, heterocyclyl, aryl, or heteroaryl;

ring E is heterocyclyl;

ring B is selected from cycloalkyl, heterocyclyl, aryl, or heteroaryl;

X_3 is selected from N or CR^{b1};

L_1 is selected from a bond, substituted or unsubstituted alkenylene, substituted or unsubstituted alkynylene, $-(CH_2)_n-$, $-(CH_2)_nC(O)(CR_{aa}R_{bb})_{n1}-$, $-(CH_2)_nC(O)NR_{cc}(CH_2)_{n1}-$, $-(CH_2)_n(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_nO(CH_2)_{n1}-$, $-(CH_2)_nO(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_nS(CH_2)_{n1}-$, $-(CH_2)_nS(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_n(CH_2)_{n1}NR_{cc}-$, $-(CH_2)_nNR_{cc}(CR_{aa}R_{bb})_{n1}-$, $-(CH_2)_nNR_{cc}C(O)-$, $-(CH_2)_nP(O)_pR_{aa}-$, $-(CH_2)_nS(O)_m-$, $-(CH_2)_nS(O)_mNR_{cc}-$, and $-(CH_2)_nNR_{cc}S(O)_m-$;

R_{aa}, R_{bb}, and R_{cc} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl,

and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

L_3 is selected from a bond, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, $-(CH_2)_{n2}-$, $-(CH_2)_{n2}C(O)(CR_{a1}R_{b1})_{n3}-$, $-(CH_2)_{n2}C(O)NR_{c1}(CH_2)_{n3}-$, $-(CH_2)_{n2}(CR_{a1}R_{b1})_{n3}-$, $-(CR_{a1}R_{b1})_{n2}O(CH_2)_{n3}-$, $-(CH_2)_{n2}O(CR_{a1}R_{b1})_{n3}-$, $-(CR_{a1}R_{b1})_{n2}S(CH_2)_{n3}-$, $-(CH_2)_{n2}S(CR_{a1}R_{b1})_{n3}-$, $-(CR_{a1}R_{b1})_{n2}(CH_2)_{n3}NR_{c1}-$, $-(CH_2)_{n2}NR_{c1}(CR_{a1}R_{b1})_{n3}-$, $-(CH_2)_{n2}NR_{c1}C(O)-$, $-(CH_2)_{n2}P(O)_{p1}R_{a1}-$, $-(CH_2)_{n2}S(O)_{m1}-$, $-(CH_2)_{n2}S(O)_{m1}NR_{c1}-$, and $-(CH_2)_{n2}NR_{c1}S(O)_{m1}-$;

R_{a1}, R_{b1}, and R_{c1} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^a is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or any two adjacent or non-adjacent R^a are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;
or L_1 and R^a are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;
each R^{b1} or R^{b3} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;
each R^{c2} or R^{c3} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more

substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^d is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} bridged cycloalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, 5- to 14-membered heteroaryl, -$(CR_{ee}R_{ff})_{n4}C(O)R_{gg}$, -$(CR_{ee}R_{ff})_{n4}NR_{hh}C(O)R_{gg}$, -$(CR_{ee}R_{ff})_{n4}NR_{hh}OR_{gg}$, -$(CR_{ee}R_{ff})_{n4}S(O)_2R_{gg}$, -$(CR_{ee}R_{ff})_{n4}S(O)R_{gg}$, -$(CR_{ee}R_{ff})_{n4}SR_{gg}$, -$(CR_{ee}R_{ff})_{n4}C(O)NR_{hh}R_{gg}$, -$(CR_{ee}R_{ff})_{n4}S(O)NR_{hh}R_{gg}$, -$(CR_{ee}R_{ff})_{n4}SNR_{hh}R_{gg}$, or -$(CR_{ee}R_{ff})_{n4}S(O)_2NR_{hh}R_{gg}$, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} bridged cycloalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

R_{ee}, R_{ff}, R_{gg}, and R_{hh} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl;

or R_{ee} and R_{ff} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

x is an integer of 0-6;

e is an integer of 0-6;

n is 0, 1, 2, or 3;

n1 is 0, 1, 2, or 3;

n2 is 0, 1, 2, or 3;

n3 is 0, 1, 2, or 3;

n4 is 0, 1, 2, 3, or 4;

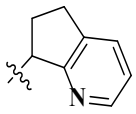
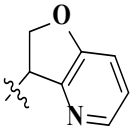
n6 is 0, 1, 2, 3, or 4;

m is 0, 1, 2, or 3;

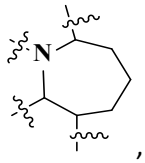
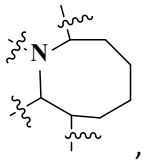
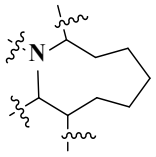
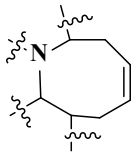
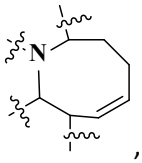
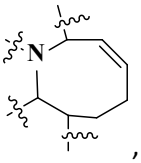
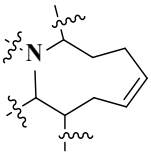
p is 0, 1, 2, or 3;

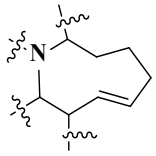
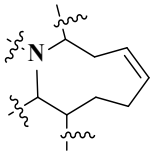
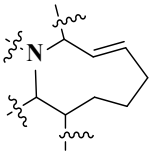
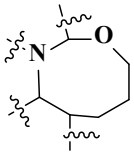
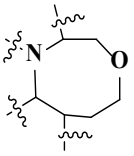
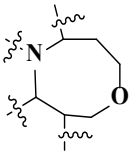
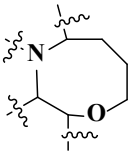
m1 is 0, 1, 2, or 3; and

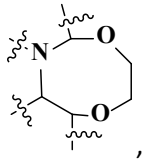
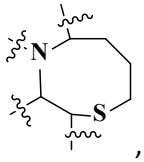
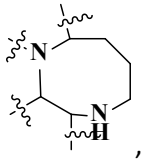
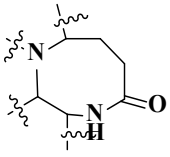
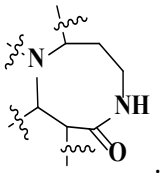
p1 is 0, 1, 2, or 3.

3. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to claim 2, wherein ring D is selected from C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl; preferably, ring D is selected from C_{6-10} aryl, 5- to 6-membered monocyclic heteroaryl, or 7- to 10-membered bicyclic heteroaryl; and more preferably, ring D is selected from pyrazolyl, thienyl, thiazolyl, oxazolyl, pyrimidinyl, pyridinyl, phenyl, , or ;

and/or, ring E is 6- to 12-membered heterocyclyl; and preferably, ring E is selected from

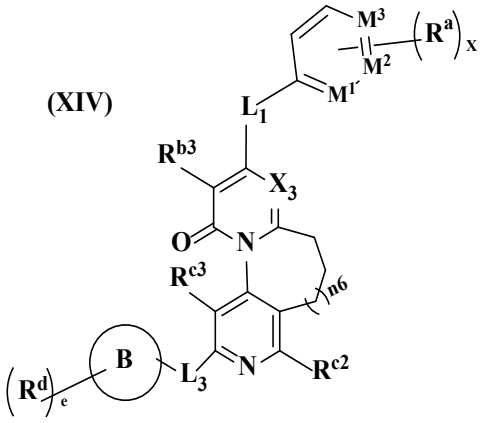
, , , , , , ,

, , , , , , ,

, , , , or .

4. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 1-3, wherein the compound is further as represented by general formula (XIV):

(XIV)



wherein:

M^1 is selected from C, CH, or N, or is absent;

M^2 is selected from C, CH, or N, or is absent;

M^3 is selected from C, CH, or N, or is absent;

X_3 is selected from N or CR^{b1};

ring B is selected from cycloalkyl, heterocyclyl, aryl, or heteroaryl;

L_1 is selected from a bond, substituted or unsubstituted alkenylene, substituted or unsubstituted alkynylene, $-(CH_2)_n-$, $-(CH_2)_nC(O)(CR_{aa}R_{bb})_{n1}-$, $-(CH_2)_nC(O)NR_{cc}(CH_2)_{n1}-$, $-(CH_2)_n(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_nO(CH_2)_{n1}-$, $-(CH_2)_nO(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_nS(CH_2)_{n1}-$, $-(CH_2)_nS(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_n(CH_2)_{n1}NR_{cc}-$, $-(CH_2)_nNR_{cc}(CR_{aa}R_{bb})_{n1}-$, $-(CH_2)_nNR_{cc}C(O)-$, $-(CH_2)_nP(O)_pR_{aa}-$, $-(CH_2)_nS(O)_m-$, $-(CH_2)_nS(O)_mNR_{cc}-$, and $-(CH_2)_nNR_{cc}S(O)_m-$;

R_{aa}, R_{bb}, and R_{cc} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

L_3 is selected from a bond, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, $-(CH_2)_{n2}-$, $-(CH_2)_{n2}C(O)(CR_{a1}R_{b1})_{n3}-$, $-(CH_2)_{n2}C(O)NR_{c1}(CH_2)_{n3}-$, $-(CH_2)_{n2}(CR_{a1}R_{b1})_{n3}-$, -

$(CR_{a1}R_{b1})_{n2}O(CH_2)_{n3}$-, -$(CH_2)_{n2}O(CR_{a1}R_{b1})_{n3}$-, -$(CR_{a1}R_{b1})_{n2}S(CH_2)_{n3}$-, -$(CH_2)_{n2}S(CR_{a1}R_{b1})_{n3}$-, -$(CR_{a1}R_{b1})_{n2}(CH_2)_{n3}NR_{c1}$-, -$(CH_2)_{n2}NR_{c1}(CR_{a1}R_{b1})_{n3}$-, -$(CH_2)_{n2}NR_{c1}C(O)$-, -$(CH_2)_{n2}P(O)_{p1}R_{a1}$-, -$(CH_2)_{n2}S(O)_{m1}$-, -$(CH_2)_{n2}S(O)_{m1}NR_{c1}$-, and -$(CH_2)_{n2}NR_{c1}S(O)_{m1}$-;

R_{a1}, R_{b1}, and R_{c1} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^a is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or any two adjacent or non-adjacent R^a are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or L_1 and R^a are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^{b1} or R^{b3} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^{c2} or R^{c3} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^d is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} bridged cycloalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12}

cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, 5- to 14-membered heteroaryl, -$(CR_{ee}R_{ff})_{n4}C(O)R_{gg}$, -$(CR_{ee}R_{ff})_{n4}NR_{hh}C(O)R_{gg}$, -$(CR_{ee}R_{ff})_{n4}NR_{hh}OR_{gg}$, -$(CR_{ee}R_{ff})_{n4}S(O)_2R_{gg}$, -$(CR_{ee}R_{ff})_{n4}S(O)R_{gg}$, -$(CR_{ee}R_{ff})_{n4}SR_{gg}$, -$(CR_{ee}R_{ff})_{n4}C(O)NR_{hh}R_{gg}$, -$(CR_{ee}R_{ff})_{n4}S(O)NR_{hh}R_{gg}$, -$(CR_{ee}R_{ff})_{n4}SNR_{hh}R_{gg}$, or -$(CR_{ee}R_{ff})_{n4}S(O)_2NR_{hh}R_{gg}$, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} bridged cycloalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

R_{ee}, R_{ff}, R_{gg}, and R_{hh} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl;

or R_{ee} and R_{ff} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

x is an integer of 0-6;

e is an integer of 0-6;

n is 0, 1, 2, or 3;

n1 is 0, 1, 2, or 3;

n2 is 0, 1, 2, or 3;

n3 is 0, 1, 2, or 3;

n4 is 0, 1, 2, 3, or 4;

n6 is 0, 1, 2, 3, or 4;

m is 0, 1, 2, or 3;

p is 0, 1, 2, or 3;

m1 is 0, 1, 2, or 3; and

p1 is 0, 1, 2, or 3.

5. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to claim 1, wherein ring A is selected from C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl;

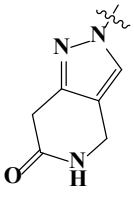
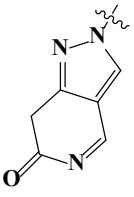
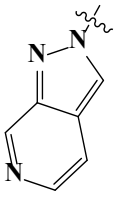
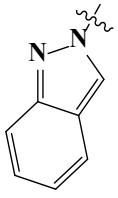
   preferably, ring A is selected from 6- to 12-membered bicyclic heterocyclyl, 5- to 6-membered monocyclic heteroaryl, or 7- to 10-membered bicyclic heteroaryl; and

   more preferably, ring A is selected from pyrazolyl, thienyl, thiazolyl, oxazolyl, pyrimidinyl, pyridinyl, phenyl, tetrahydroquinolinyl, benzocyclopentyl, pyrrolopyrimidinyl, pyrrolopyridinyl, pyrazolopyridine, or imidazopyridine.

6. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 1-5, wherein ring B is selected from C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl;

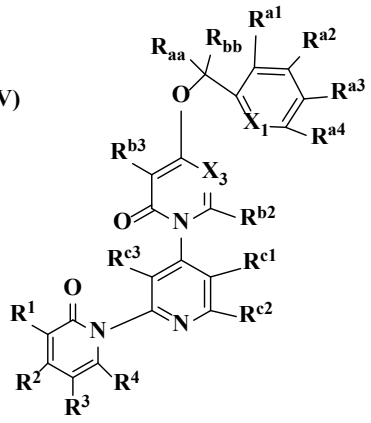
   preferably, ring B is selected from 3-7-membered monocyclic heterocyclyl, 6- to 12-membered bicyclic heterocyclyl, 5-membered monocyclic heteroaryl, 6-membered monocyclic heteroaryl, or 7- to 14-membered heteroaryl fused ring;

   more preferably, ring B is selected from 5-membered monocyclic nitrogen-containing heteroaryl, 6-membered monocyclic nitrogen-containing heteroaryl, 5- to 6-membered heteroaryl fused to 5- to 6-membered cycloalkyl, 5-to 6-membered heteroaryl fused to 5- to 6-membered heteroaryl, or 5- to 6-membered heteroaryl fused to phenyl;

   further preferably, ring B is selected from pyrimidine, pyridocyclohexyl, pyridocyclopentyl, pyrrolotriazinyl, pyrrolopyrimidinyl, pyridocyclopentenyl, pyridine, thiazole, pyrazole, pyridopyrrolidone, pyridofuranone, pyridosulfolane, , , , or ; and

further more preferably, ring B is selected from pyrimidine, pyridocyclohexyl, pyridocyclopentyl, pyrrolotriazinyl, pyrrolopyrimidinyl, pyridocyclopentenyl, pyridine, thiazole, pyrazole, pyridopyrrolidone, pyridofuranone, or pyridosulfolane.

7. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to claim 1, wherein the compound is further as represented by general formula (XV):

(XV) 

wherein:

X_1 is selected from N or CR^{a5};

X_3 is selected from N or CR^{b1};

each R^{a1}, R^{a2}, R^{a3}, R^{a4}, or R^{a5} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or any two adjacent or non-adjacent R^{a1}, R^{a2}, R^{a3}, R^{a4}, and R^{a5} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium,

halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered each heteroaryl;

each R_{aa} or R_{bb} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or R_{aa} and R_{bb} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^{b1}, R^{b2}, or R^{b3} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6}

haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or the substituents R^{b1} and R^{b2} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^{c1}, R^{c2}, or R^{c3} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or the substituents R^{c1} and R^{c2} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or the substituents R^{c1} and R^{b2} are connected to form 3- to 12-membered heterocyclyl or 5- to 14-membered heteroaryl, wherein the 3- to 12-membered heterocyclyl and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6}

alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

R^1 is selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} bridged cycloalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, 5- to 14-membered heteroaryl, $-(CR_{ee}R_{ff})_{n4}C(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}NR_{hh}C(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}NR_{hh}OR_{gg}$, $-(CR_{ee}R_{ff})_{n4}S(O)_2R_{gg}$, $-(CR_{ee}R_{ff})_{n4}S(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}SR_{gg}$, $-(CR_{ee}R_{ff})_{n4}C(O)NR_{hh}R_{gg}$, $-(CR_{ee}R_{ff})_{n4}S(O)NR_{hh}R_{gg}$, $-(CR_{ee}R_{ff})_{n4}SNR_{hh}R_{gg}$, or $-(CR_{ee}R_{ff})_{n4}S(O)_2NR_{hh}R_{gg}$, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} bridged cycloalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

R_{ee}, R_{ff}, R_{gg}, and R_{hh} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl;

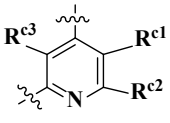
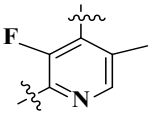
or R_{ee} and R_{ff} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^2, R^3, or R^4 is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl,

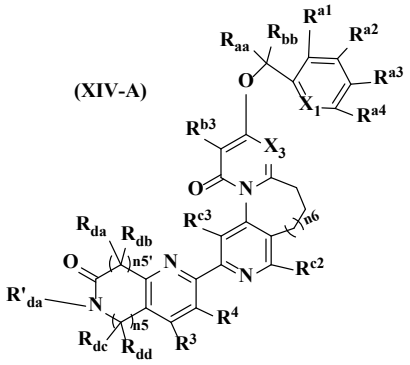
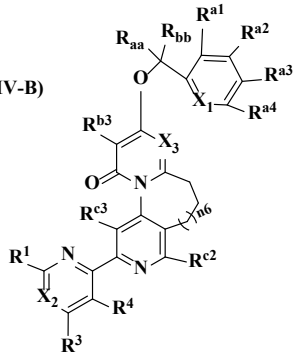
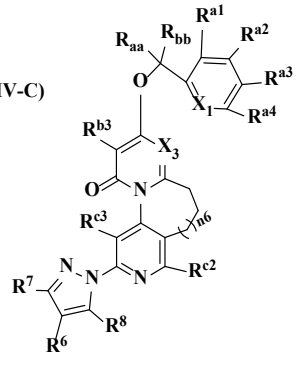
and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or any two adjacent or non-adjacent R^1, R^2, R^3, and R^4 are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

n4 is 0, 1, 2, 3, or 4; and

the  is not .

8. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 1-7, wherein the compound is further as represented by general formula (XIV-A), (XIV-B), or (XIV-C):

(XIV-A)  (XIV-B)  (XIV-C)  or

wherein:

X_1 is selected from N or CR^{a5};

X_2 is selected from N or CR^2;

X_3 is selected from N or CR^{b1};

each R^{a1}, R^{a2}, R^{a3}, R^{a4}, or R^{a5} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or any two adjacent or non-adjacent R^{a1}, R^{a2}, R^{a3}, R^{a4}, and R^{a5} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered each heteroaryl;

each R_{aa} or R_{bb} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or R_{aa} and R_{bb} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl,

C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^{b1} or R^{b3} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^{c2} or R^{c3} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R_{da}, R_{db}, or R'_{da} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6}

hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or R_{da} and R_{db} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R_{dc} or R_{dd} is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or R_{dc} and R_{dd} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

R^1 is selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} bridged cycloalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, 5- to 14-membered heteroaryl, $-(CR_{ee}R_{ff})_{n4}C(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}NR_{hh}C(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}NR_{hh}OR_{gg}$, $-(CR_{ee}R_{ff})_{n4}S(O)_2R_{gg}$, $-(CR_{ee}R_{ff})_{n4}S(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}SR_{gg}$, $-(CR_{ee}R_{ff})_{n4}C(O)NR_{hh}R_{gg}$, $-(CR_{ee}R_{ff})_{n4}S(O)NR_{hh}R_{gg}$, $-(CR_{ee}R_{ff})_{n4}SNR_{hh}R_{gg}$, or $-(CR_{ee}R_{ff})_{n4}S(O)_2NR_{hh}R_{gg}$, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} bridged cycloalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

R_{ee}, R_{ff}, R_{gg}, and R_{hh} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl;

or R_{ee} and R_{ff} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^2, R^3, or R^4 is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl,

C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or any two adjacent or non-adjacent R^1, R^2, R^3, and R^4 are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

R^7 is selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} bridged cycloalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, 5- to 14-membered heteroaryl, $-(CR_{ee}R_{ff})_{n4}C(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}NR_{hh}C(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}NR_{hh}OR_{gg}$, $-(CR_{ee}R_{ff})_{n4}S(O)_2R_{gg}$, $-(CR_{ee}R_{ff})_{n4}S(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}SR_{gg}$, $-(CR_{ee}R_{ff})_{n4}C(O)NR_{hh}R_{gg}$, $-(CR_{ee}R_{ff})_{n4}S(O)NR_{hh}R_{gg}$, $-(CR_{ee}R_{ff})_{n4}SNR_{hh}R_{gg}$, or $-(CR_{ee}R_{ff})_{n4}S(O)_2NR_{hh}R_{gg}$, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} bridged cycloalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

R_{ee}, R_{ff}, R_{gg}, and R_{hh} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl;

or R_{ee} and R_{ff} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6}

deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

each R^6 or R^8 is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

or any two adjacent or non-adjacent R^6, R^7, and R^8 are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

n4 is 0, 1, 2, 3, or 4;

n5 is 0, 1, or 2;

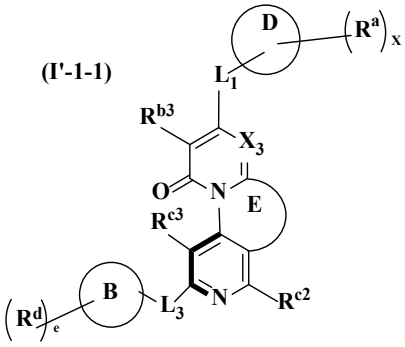
n5’ is 0, 1, or 2;

n5 and n5’ are not both 0; and

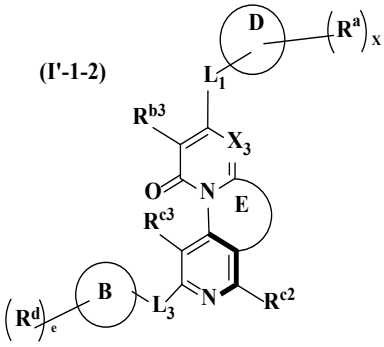
n6 is 0, 1, 2, 3, or 4.

9. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 1-8, wherein the compound is further as represented by general formula (I’-1-1), (I’-1-2), (XIV-1), (XIV-2), (XIV-A-1), (XIV-A-2), (XIV-B-1), (XIV-B-2), (XIV-C-1), (XIV-C-2), (XV-1), or (XV-2):

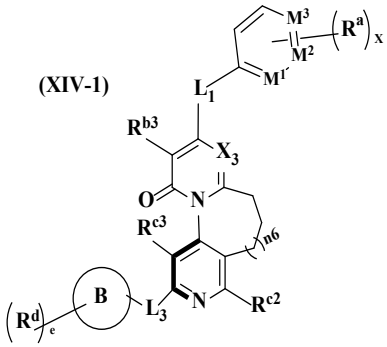
(I'-1-1)



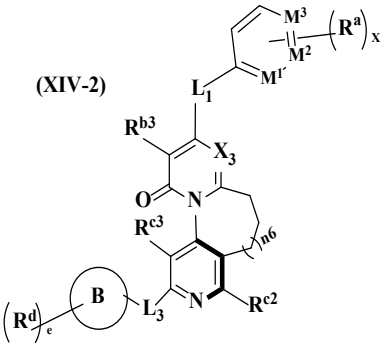
(I'-1-2)



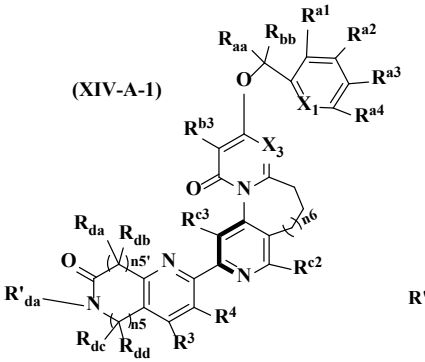
(XIV-1)



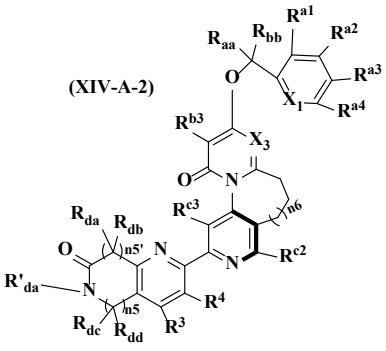
(XIV-2)



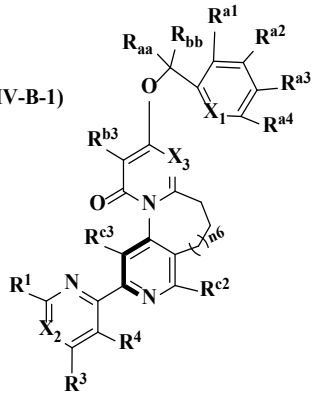
(XIV-A-1)



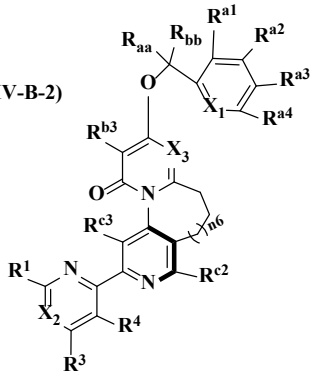
(XIV-A-2)

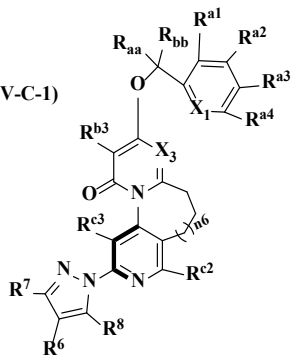
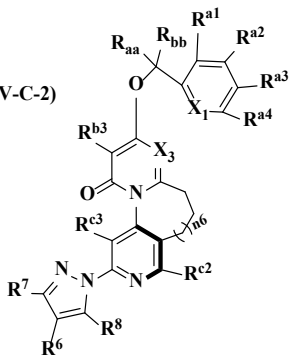


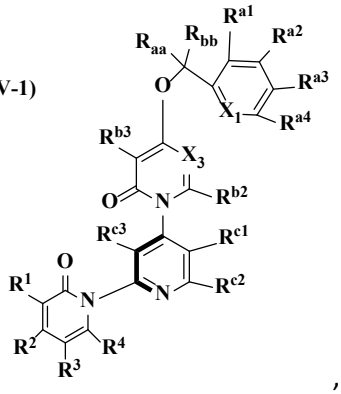
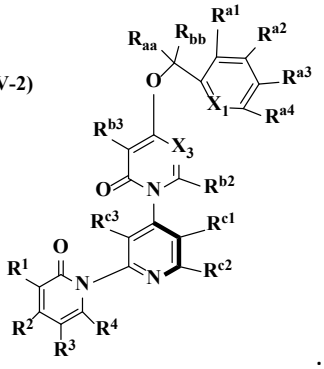
(XIV-B-1)



(XIV-B-2)



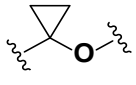
(XIV-C-1)  (XIV-C-2) 

(XV-1)  (XV-2) 

, or .

10. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 1-6 or 9, wherein L_1 is selected from a bond, substituted or unsubstituted alkenylene, substituted or unsubstituted alkynylene, $-(CH_2)_n-$, $-(CH_2)_nC(O)(CR_{aa}R_{bb})_{n1}-$, $-(CH_2)_nC(O)NR_{cc}(CH_2)_{n1}-$, $-(CH_2)_n(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_nO(CH_2)_{n1}-$, $-(CH_2)_nO(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_nS(CH_2)_{n1}-$, $-(CH_2)_nS(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_n(CH_2)_{n1}NR_{cc}-$, $-(CH_2)_nNR_{cc}(CR_{aa}R_{bb})_{n1}-$, $-(CH_2)_nNR_{cc}C(O)-$, $-(CH_2)_nP(O)_pR_{aa}-$, $-(CH_2)_nS(O)_m-$, $-(CH_2)_nS(O)_mNR_{cc}-$, and $-(CH_2)_nNR_{cc}S(O)_m-$;

preferably, L_1 is selected from a bond, substituted or unsubstituted alkenylene, substituted or unsubstituted alkynylene, $-(CH_2)_n-$, $-(CH_2)_nC(O)-$, $-(CR_{aa}R_{bb})_nO-$, $-O(CR_{aa}R_{bb})_{n1}-$, $-(CR_{aa}R_{bb})_nS-$, $-S(CR_{aa}R_{bb})_{n1}-$, $-(CH_2)_{n1}NR_{cc}-$, $-NR_{cc}(CR_{aa}R_{bb})_{n1}-$, or $-NR_{cc}C(O)-$;

more preferably, L_1 is selected from a bond, $-CH_2-$, $-OCH_2-$, $-OCD_2-$, -NH-, -C(O)NH-, $-OCH(CH_3)-$, $-OC(CH_3)_2-$, $-NH-CH_2-$, or ;

R_{aa}, R_{bb}, and R_{cc} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6}

hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

preferably, R_{aa}, R_{bb}, and R_{cc} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, C_{1-3} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, or 5- to 10-membered heteroaryl, wherein the amino, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, C_{1-3} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl;

or any two of R_{aa}, R_{bb}, and R_{cc} are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, and C_{1-6} haloalkoxy; and

preferably, any two of R_{aa}, R_{bb}, and R_{cc} are connected to form C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, or 5- to 10-membered heteroaryl, wherein the C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, and C_{1-3} haloalkoxy;

and/or, each R^a is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12}

cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl; and

preferably, each R^a is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, C_{1-3} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, or 5- to 10-membered heteroaryl, wherein the amino, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, C_{1-3} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl;

and/or, each R^b is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl; and

preferably, each R^b is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl,

C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, C_{1-3} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, or 5- to 10-membered heteroaryl, wherein the amino, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, C_{1-3} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl;

and/or, each R^c is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

preferably, each R^c is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, C_{1-3} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, or 5- to 10-membered heteroaryl, wherein the amino, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, C_{1-3} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl;

or R^b and R^c are connected to form C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

and/or, each R^d is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, 5- to 10-membered bridged cycloalkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, 5- to 14-membered heteroaryl, $-(CR_{ee}R_{ff})_{n4}C(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}NR_{hh}C(O)R_{gg}$, $-(CR_{ee}R_{ff})_{n4}S(O)_2R_{gg}$, $-(CR_{ee}R_{ff})_{n4}C(O)NR_{hh}R_{gg}$, or $-(CR_{ee}R_{ff})_{n4}S(O)_2NR_{hh}R_{gg}$, wherein the amino, C_{1-6} alkyl, 5- to 10-membered bridged cycloalkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

R_{ee}, R_{ff}, R_{gg}, and R_{hh} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-8} alkyl, C_{1-8} deuteroalkyl, C_{1-8} haloalkyl, C_{1-8} hydroxyalkyl, C_{1-8} alkoxy, C_{1-8} deuteroalkoxy, C_{1-8} haloalkoxy, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl;

preferably, R_{ee}, R_{ff}, R_{gg}, and R_{hh} are each independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, or 5- to 10-membered heteroaryl;

or R_{ee} and R_{ff} are connected to form cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the cycloalkyl, heterocyclyl, aryl, and heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio,

carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl; and

n4 is 0, 1, 2, 3, or 4;

preferably,

each R^d is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl; and

preferably, each R^d is independently selected from hydrogen, deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, C_{1-3} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, or 5- to 10-membered heteroaryl, wherein the amino, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} hydroxyalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy, C_{1-3} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{3-8} cycloalkyl, 3- to 8-membered heterocyclyl, C_{6-10} aryl, and 5- to 10-membered heteroaryl.

11. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 7-9, wherein R^2 is selected from halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6}

alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

preferably, R^2 is selected from halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, or C_{2-6} alkynyl; and

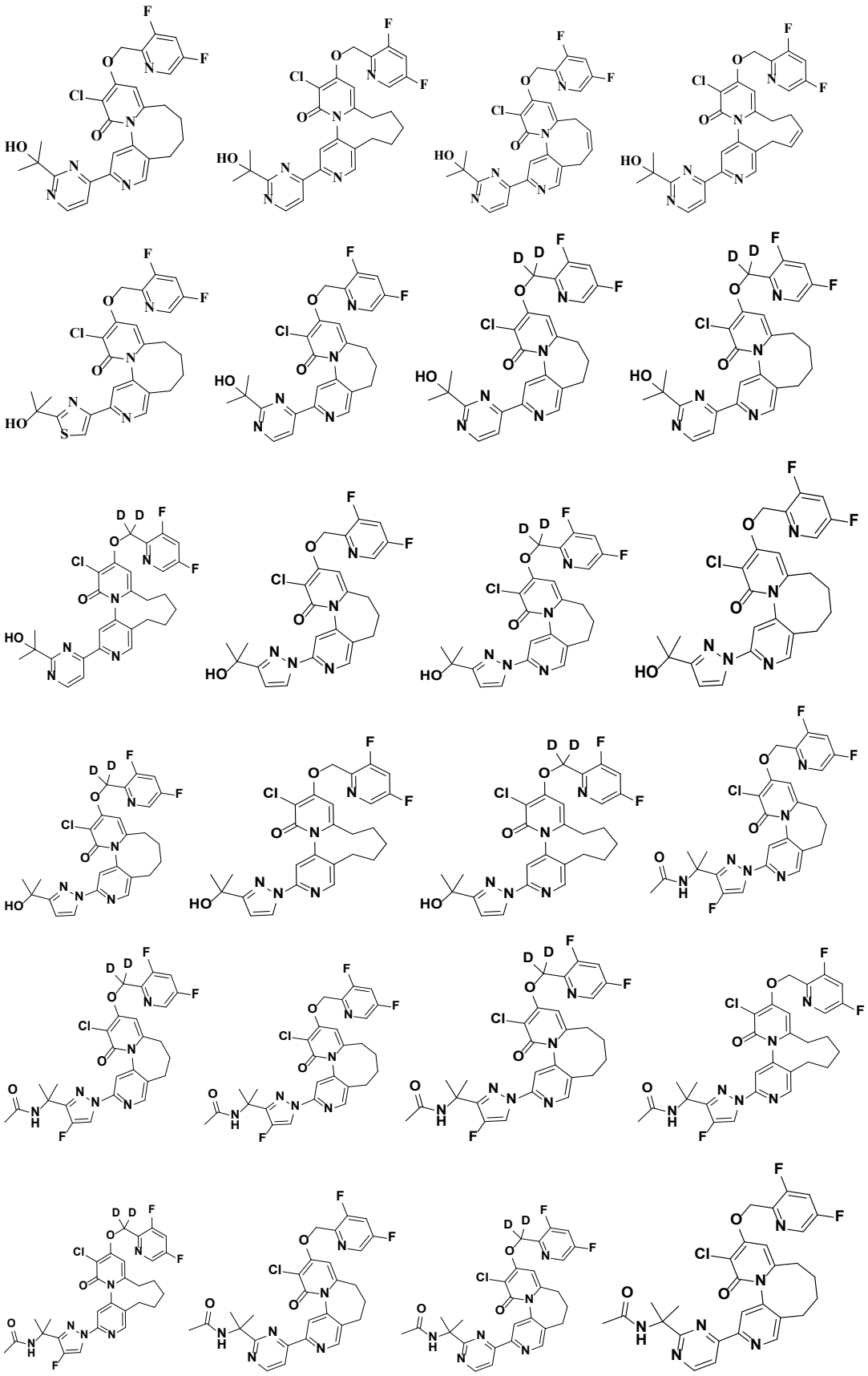
more preferably, R^2 is fluorine.

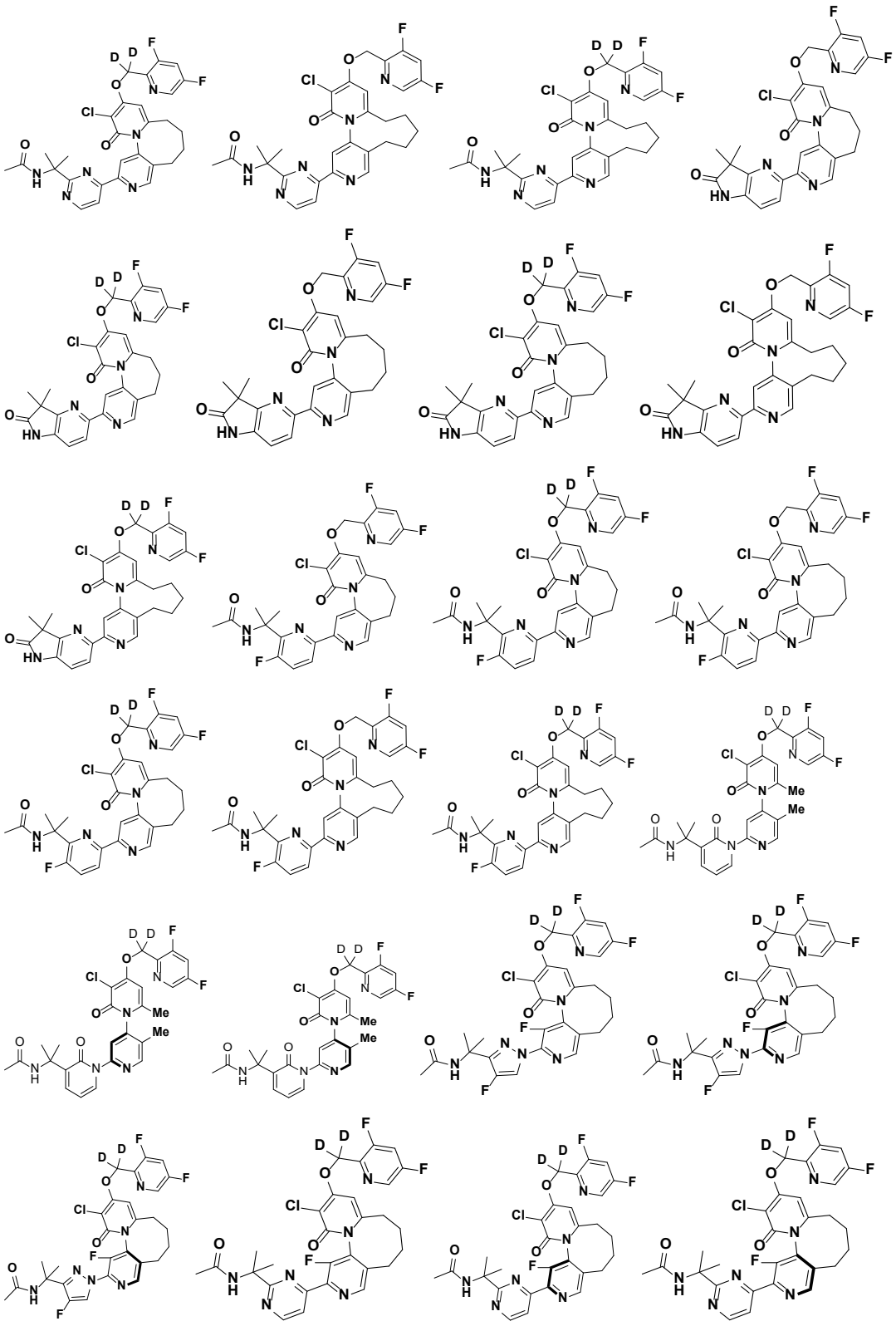
12. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 7-9, wherein R^6 is selected from halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, or 5- to 14-membered heteroaryl, wherein the amino, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl may be optionally further substituted with one or more substituents of deuterium, halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-12} cycloalkyl, 3- to 12-membered heterocyclyl, C_{6-14} aryl, and 5- to 14-membered heteroaryl;

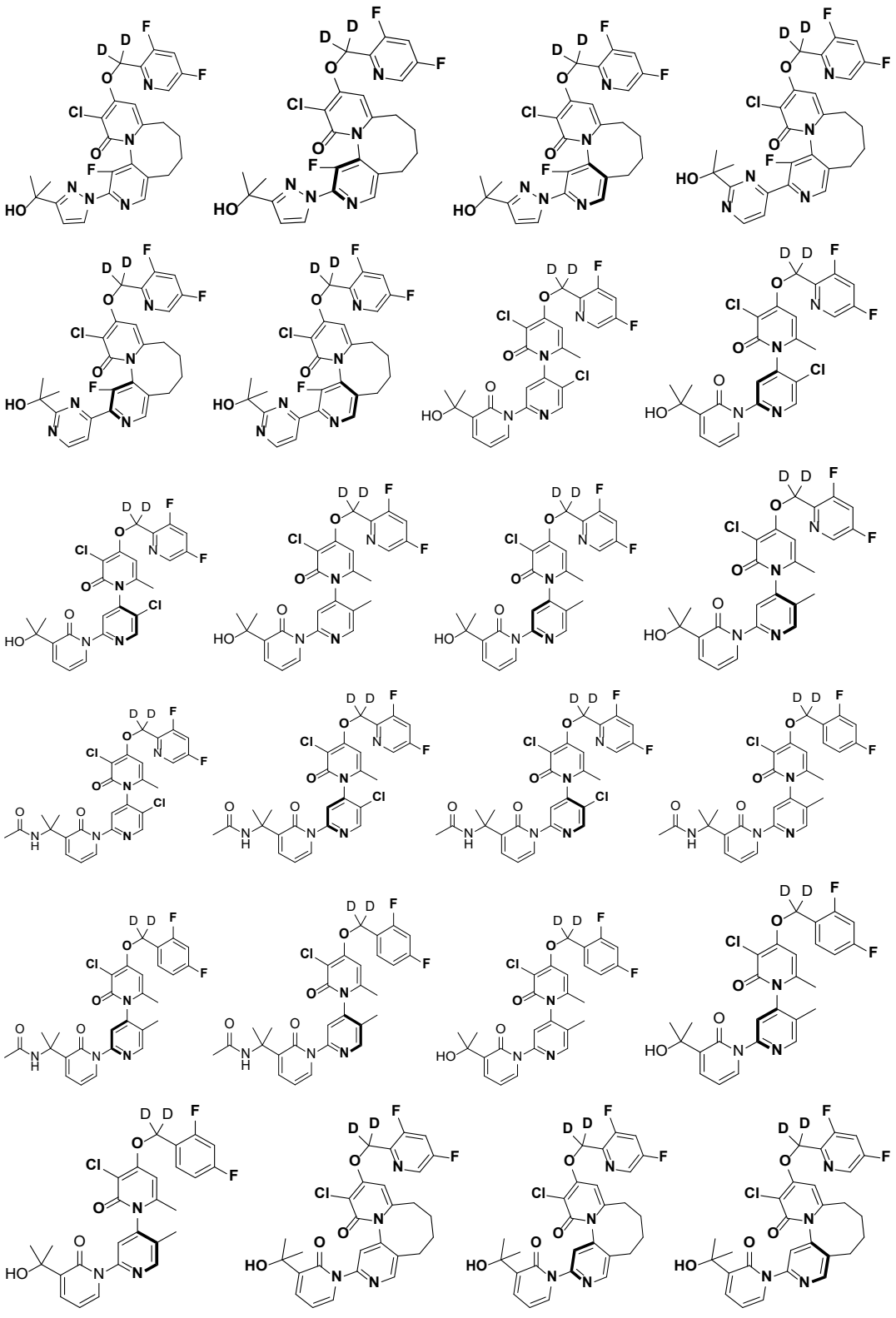
preferably, R^6 is selected from halogen, nitro, hydroxy, mercapto, cyano, amino, oxo, thio, carboxyl, C_{1-6} alkyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} deuteroalkoxy, C_{1-6} haloalkoxy, C_{2-6} alkenyl, or C_{2-6} alkynyl; and

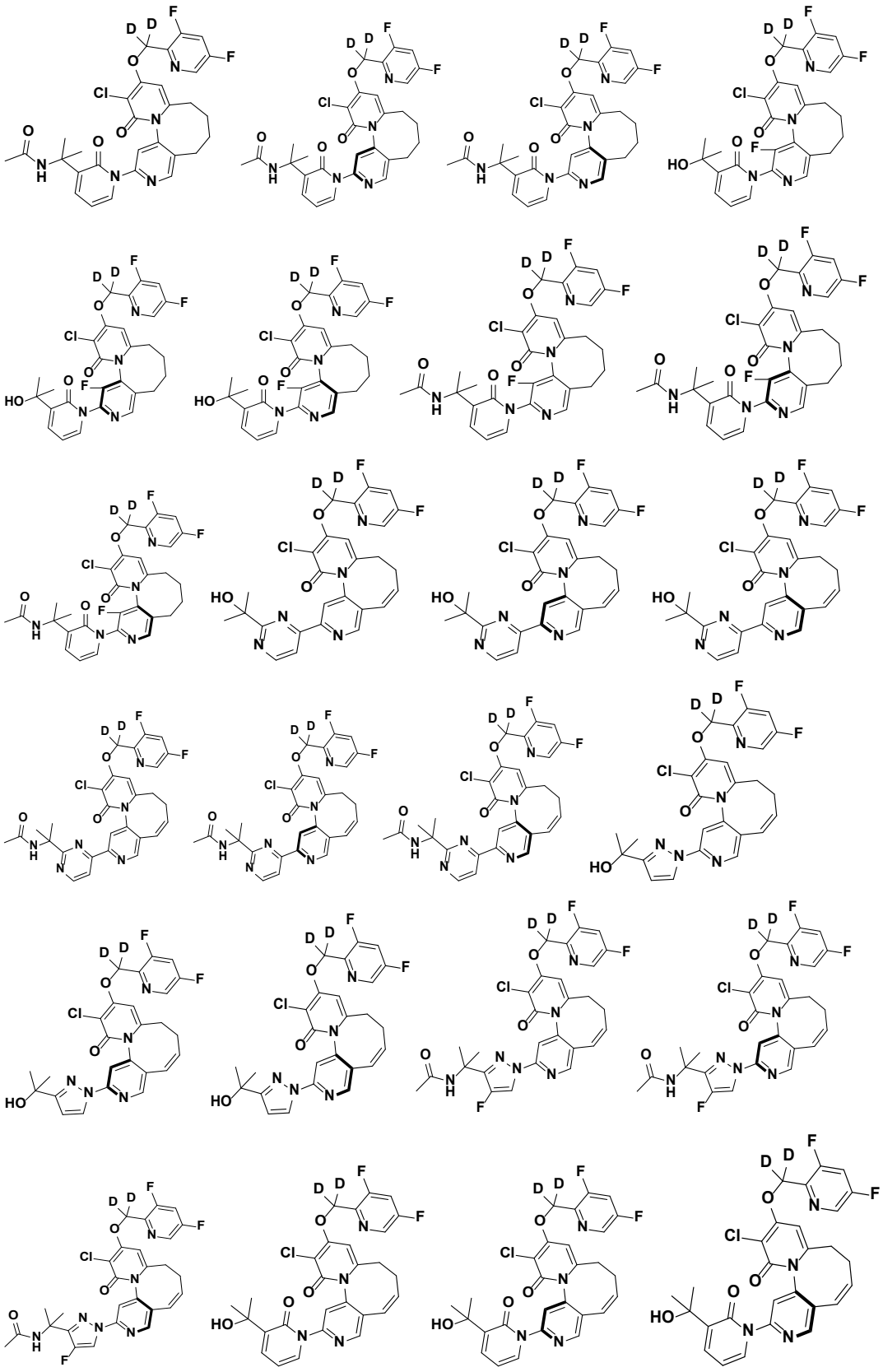
more preferably, R^6 is fluorine.

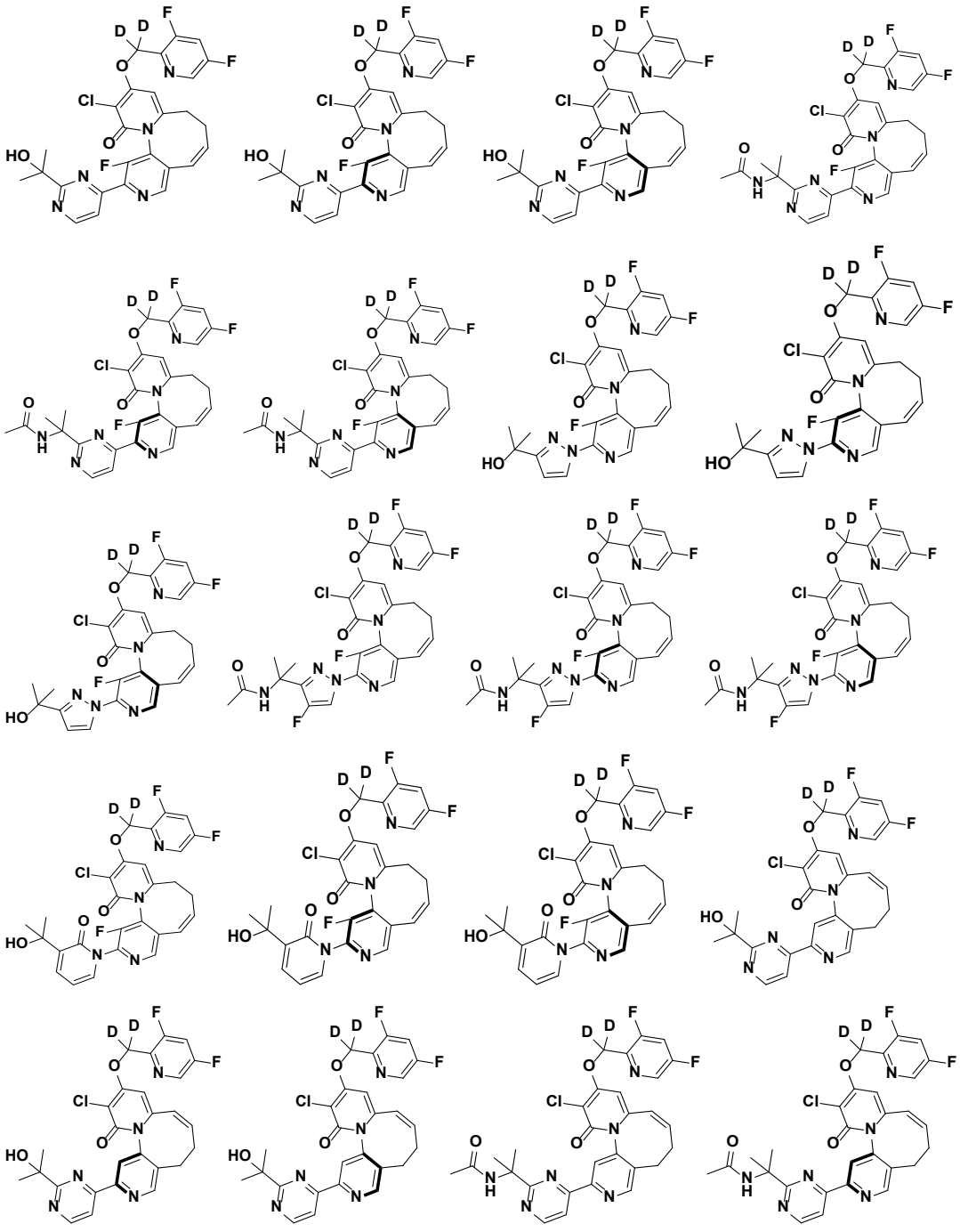
13. The compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 1-12, wherein the structure of the compound is as shown below:

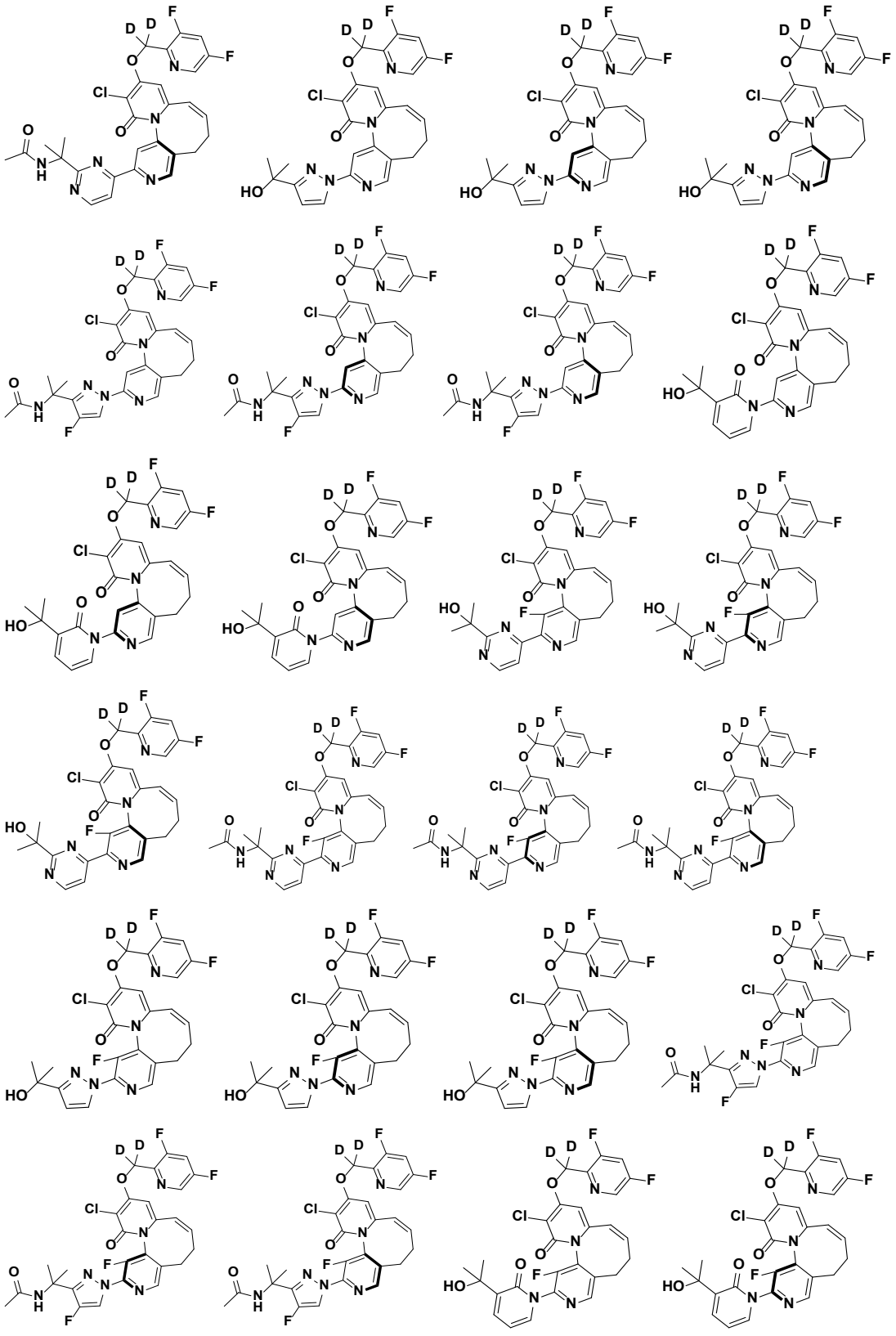


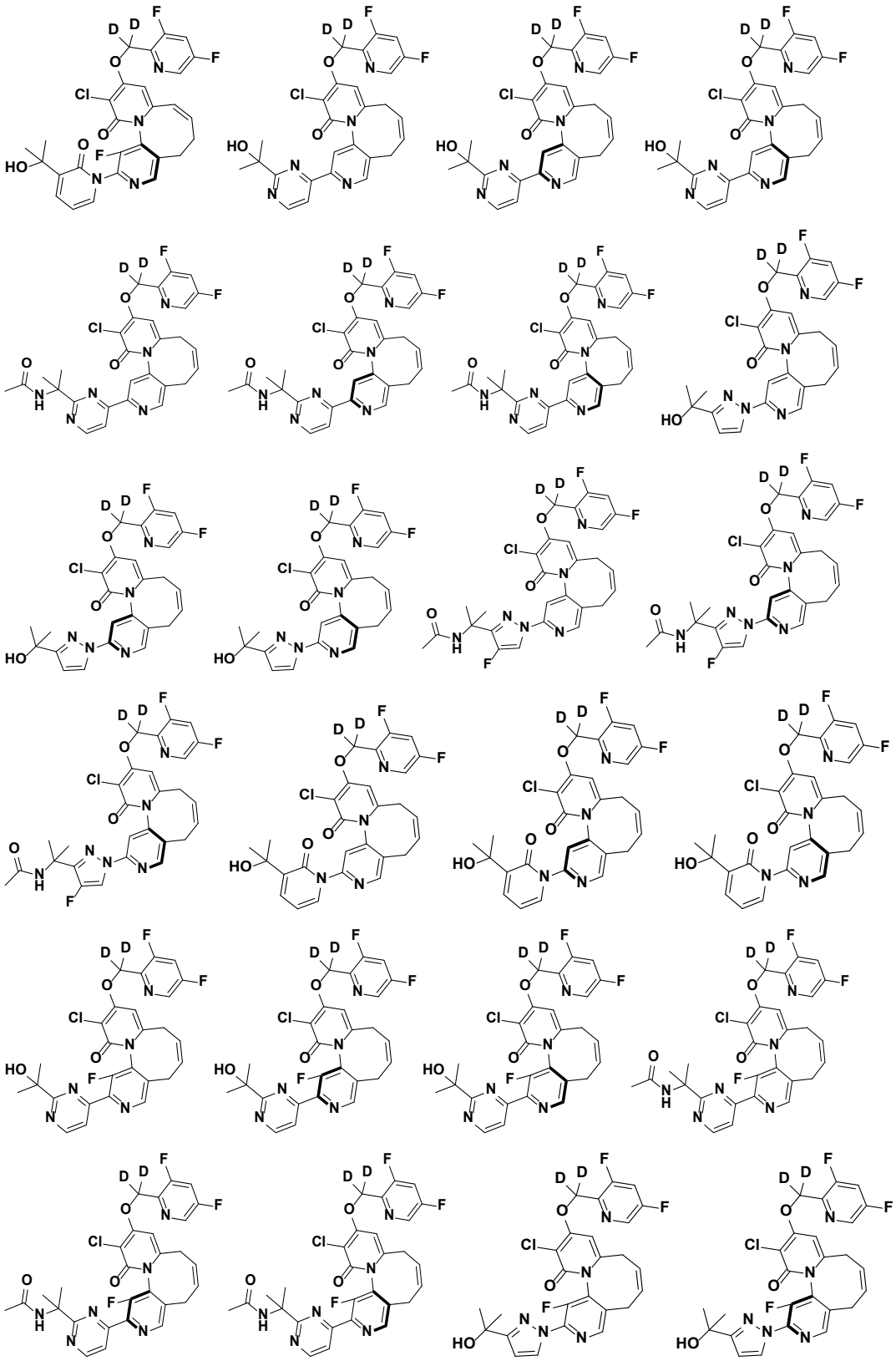


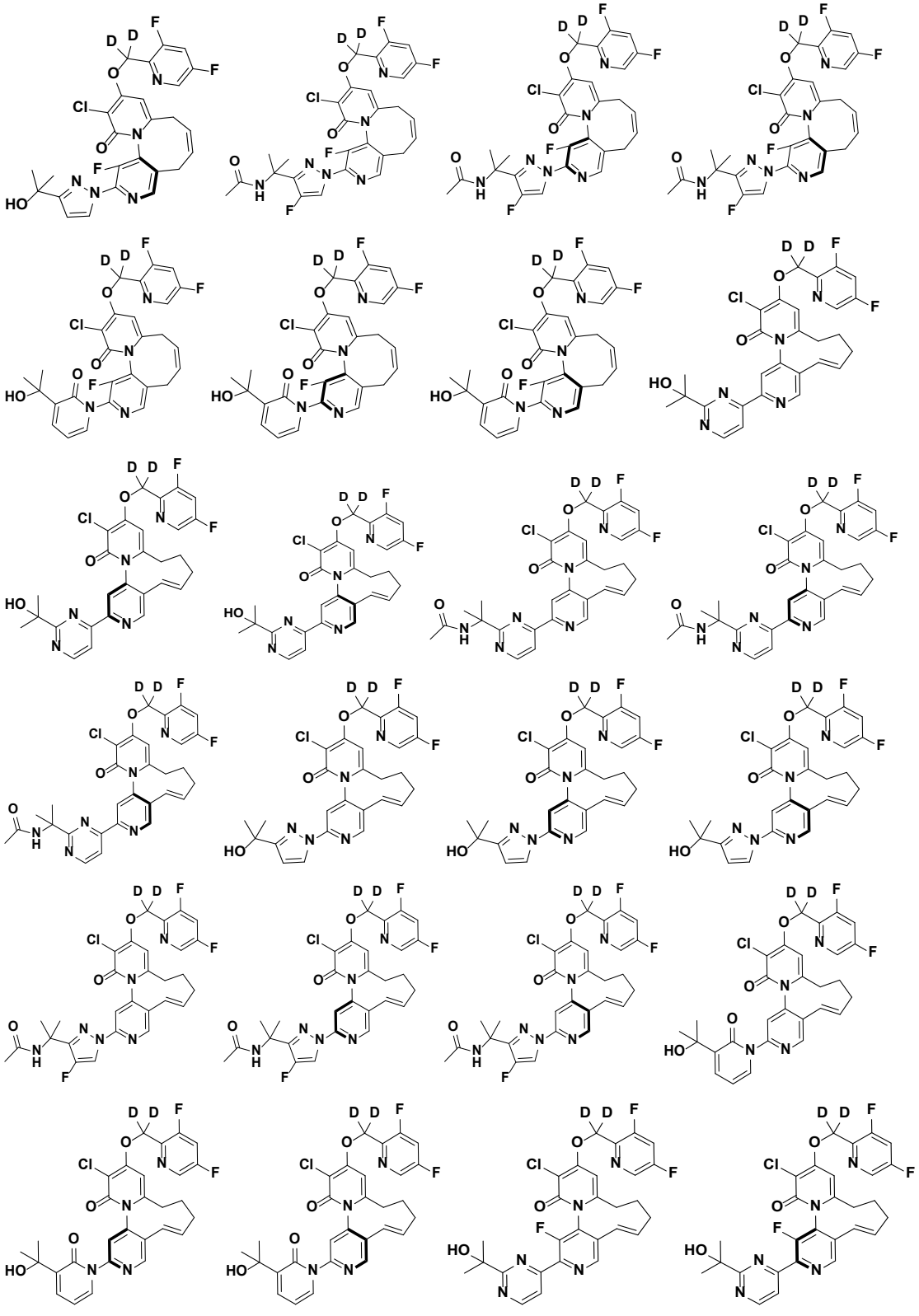


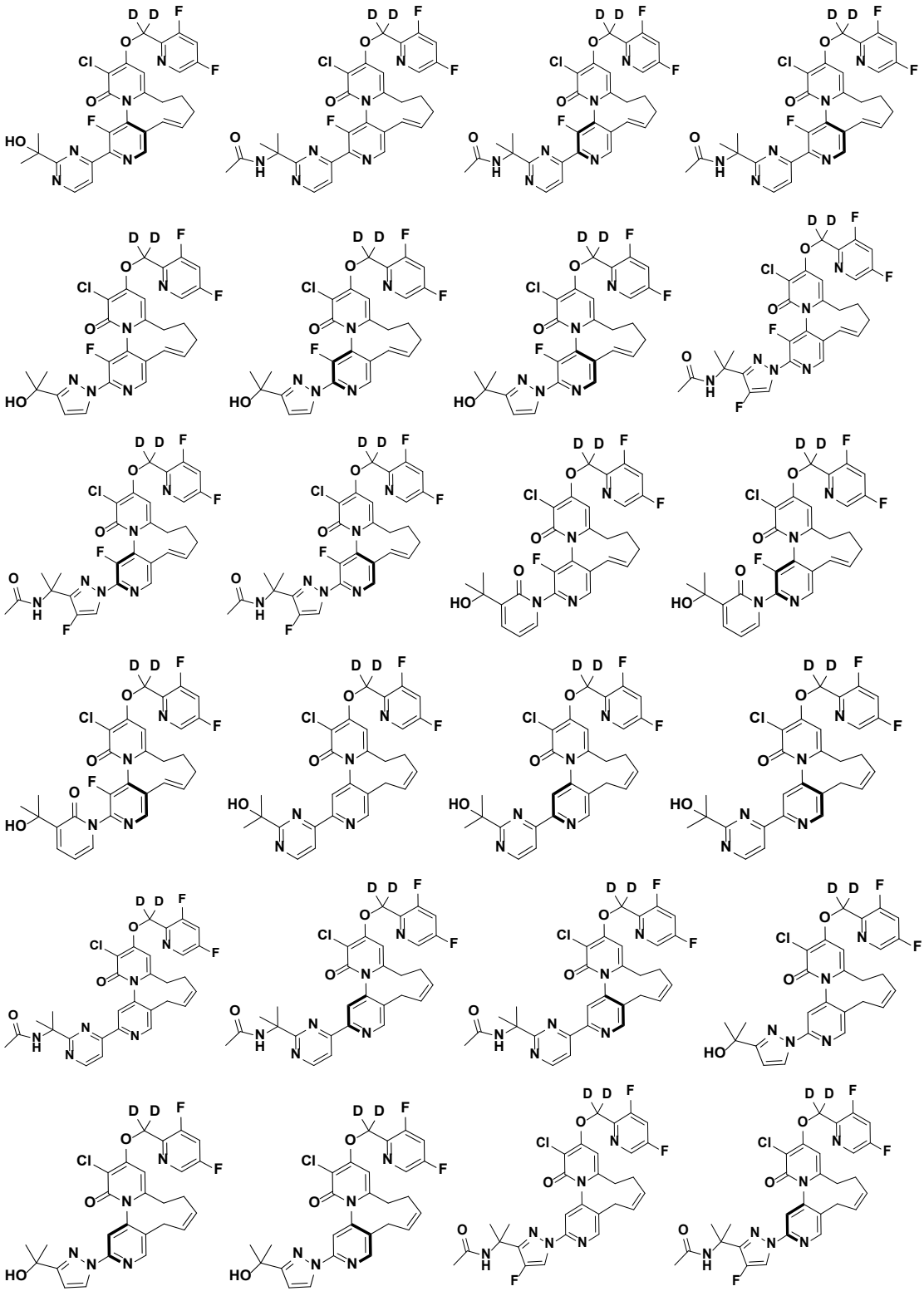


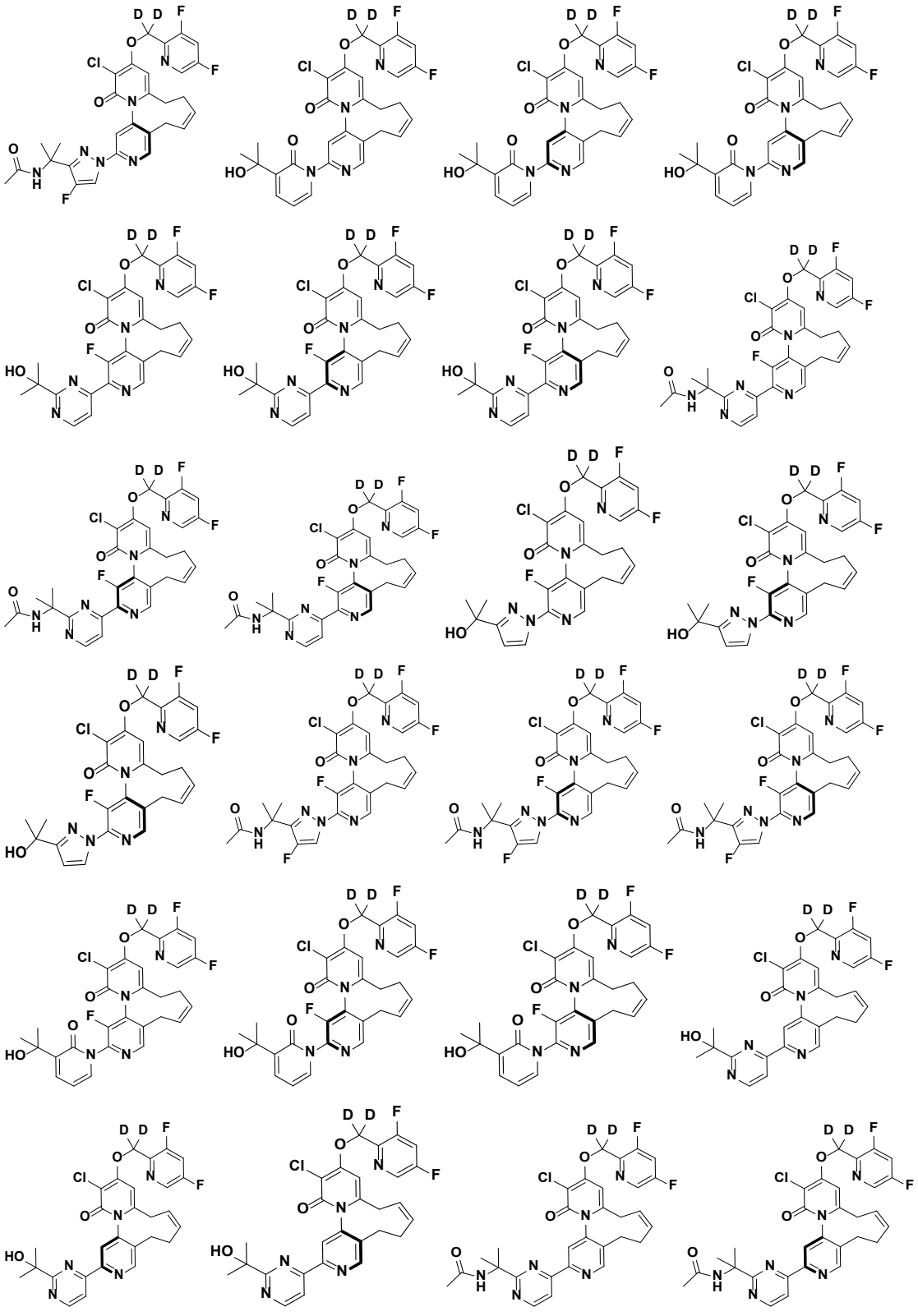


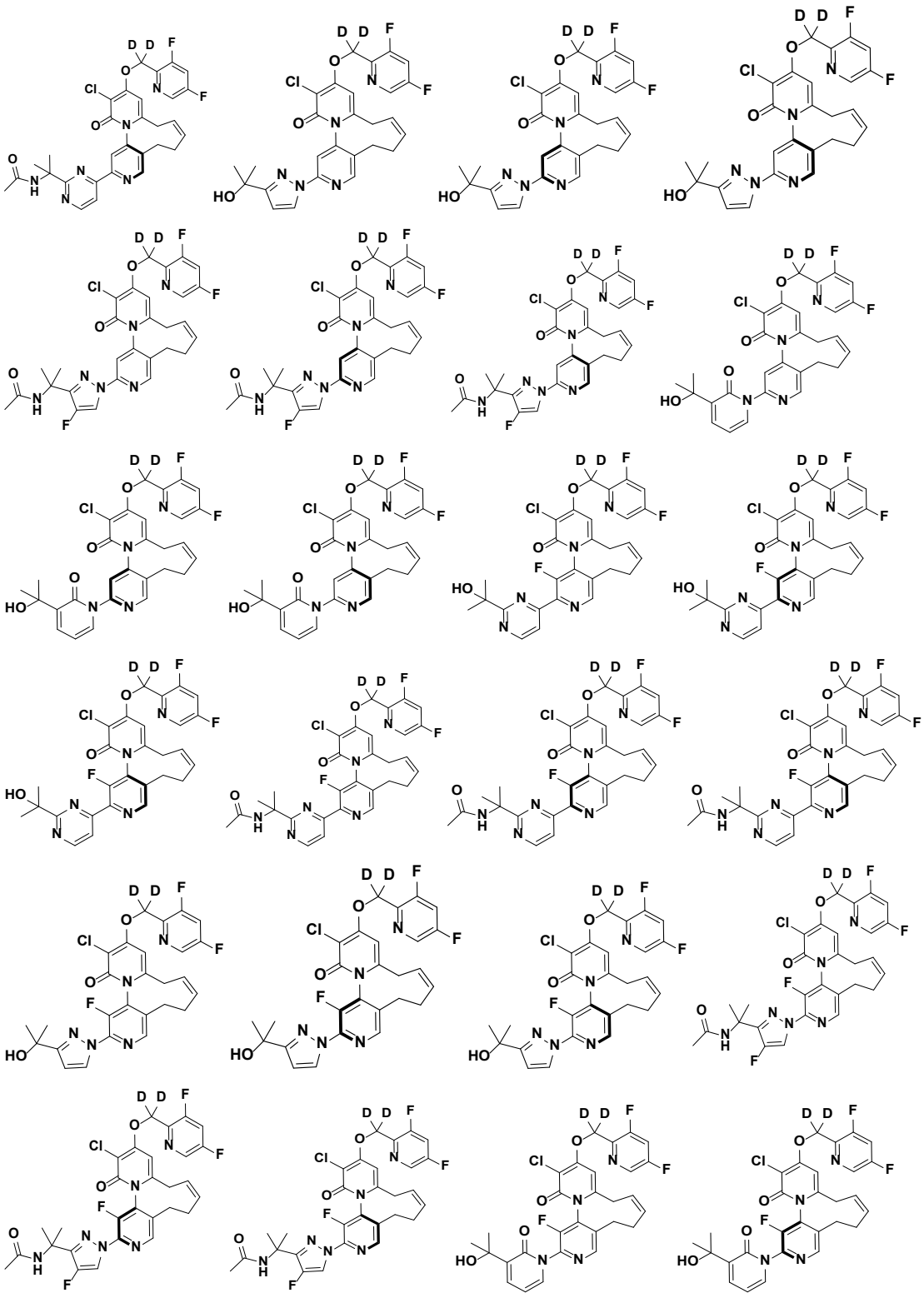


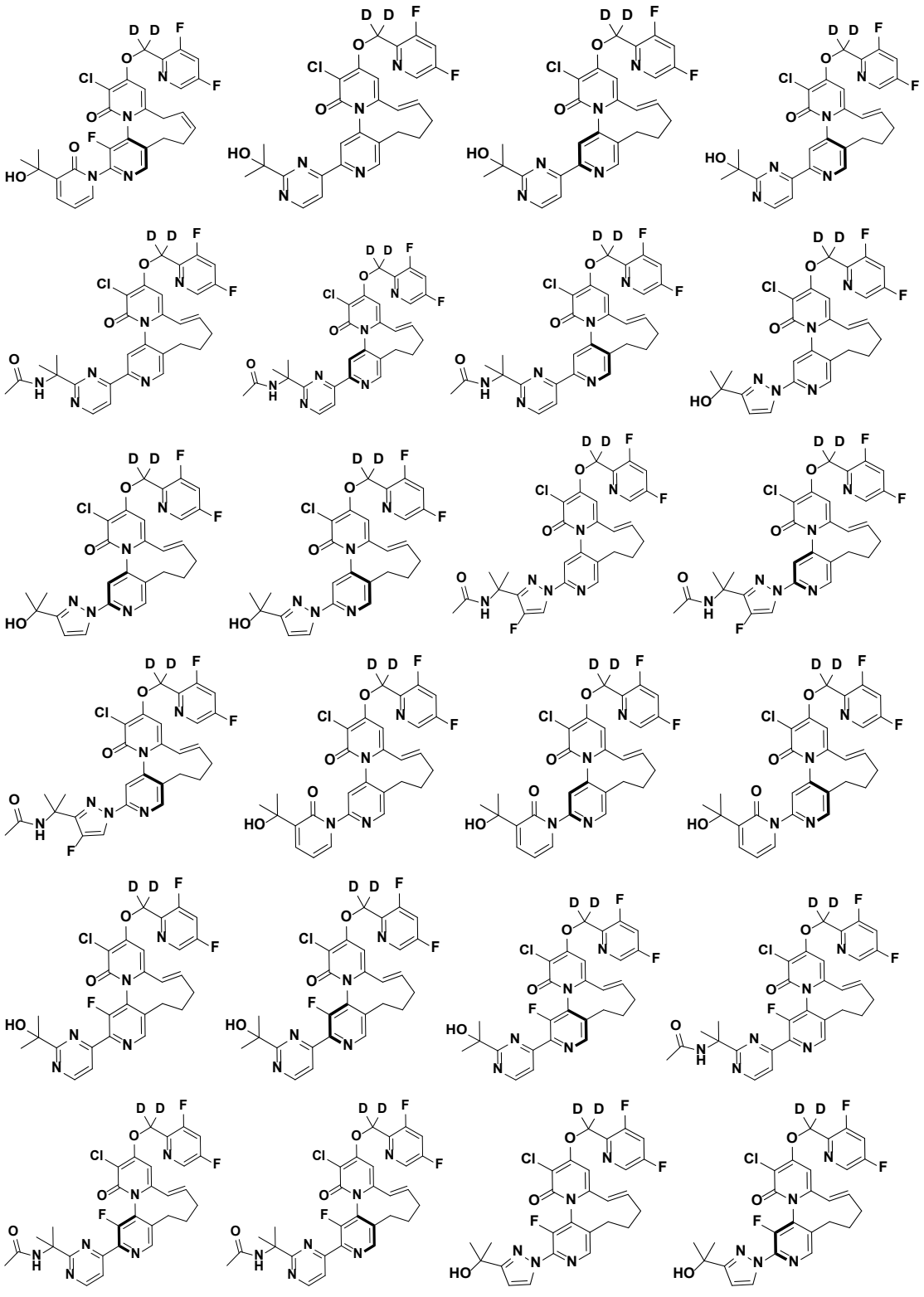


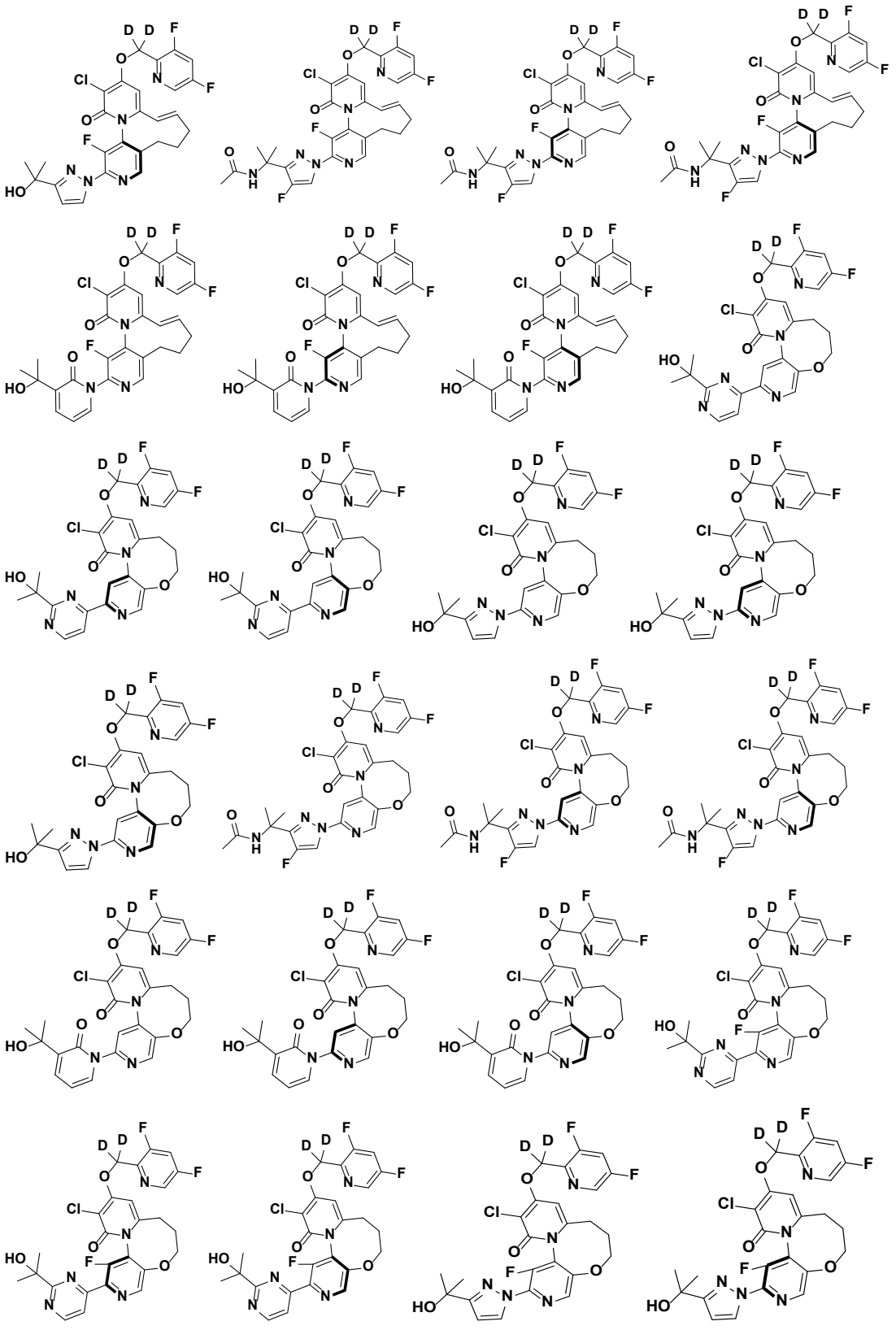


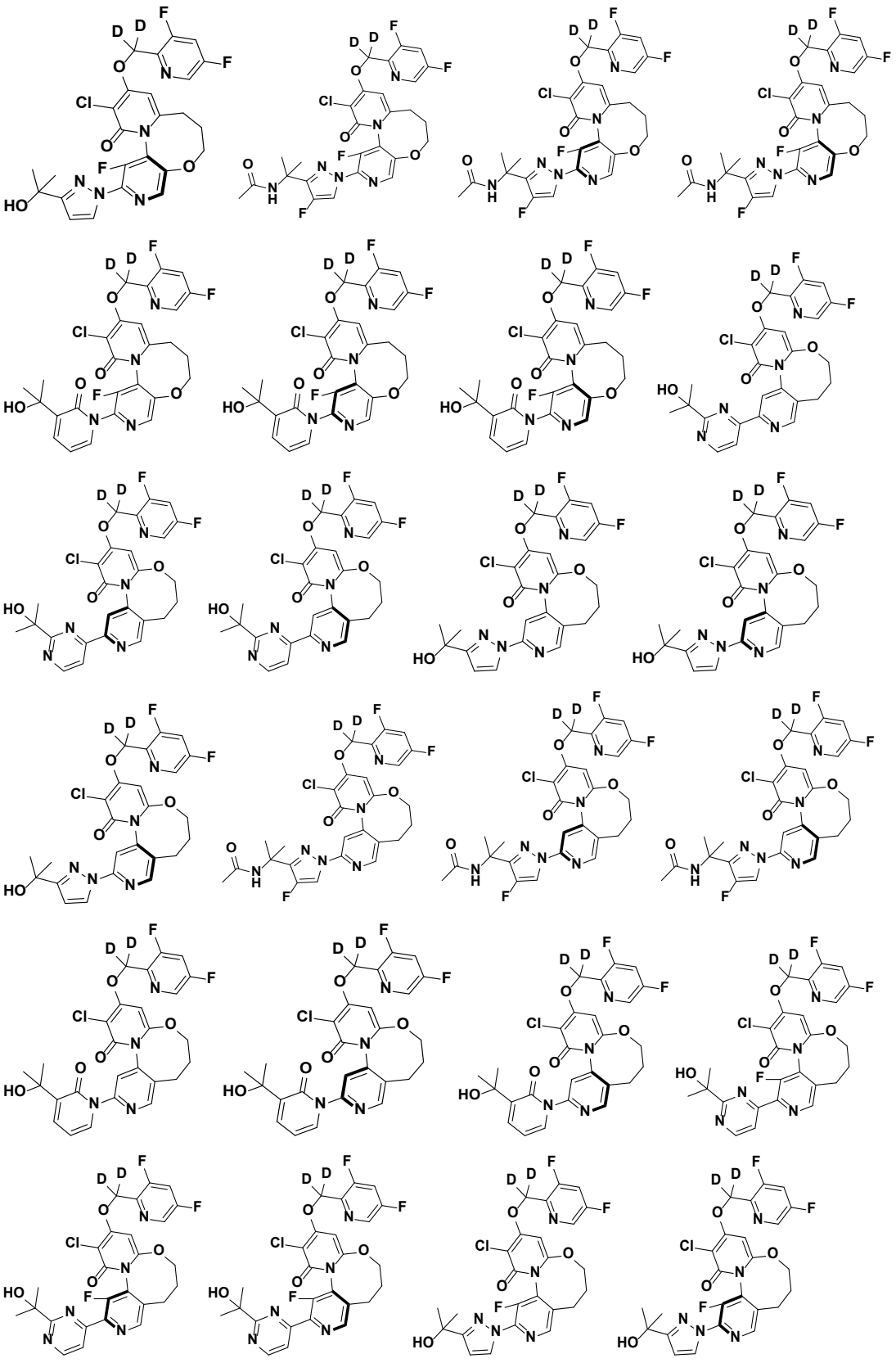


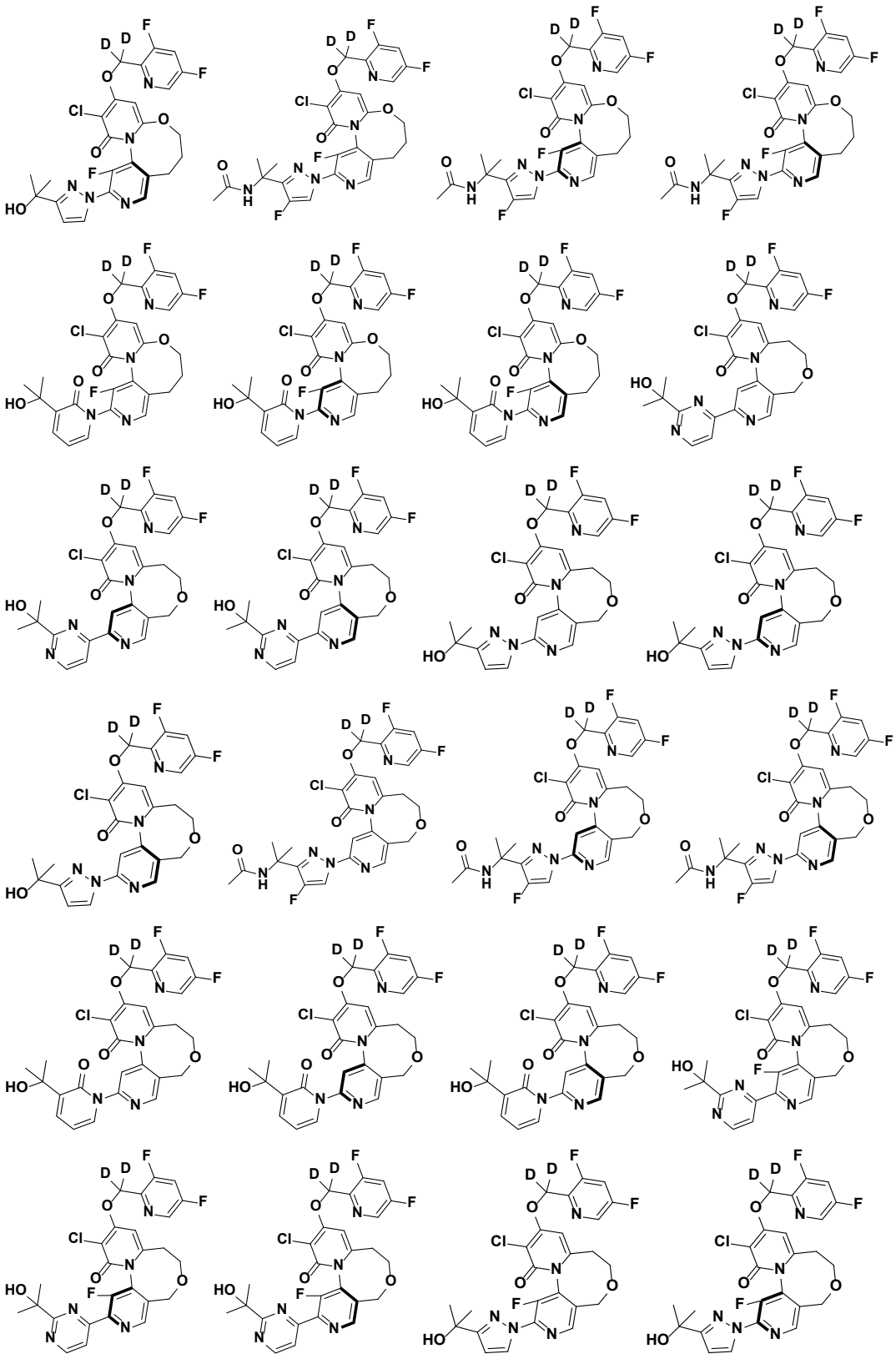


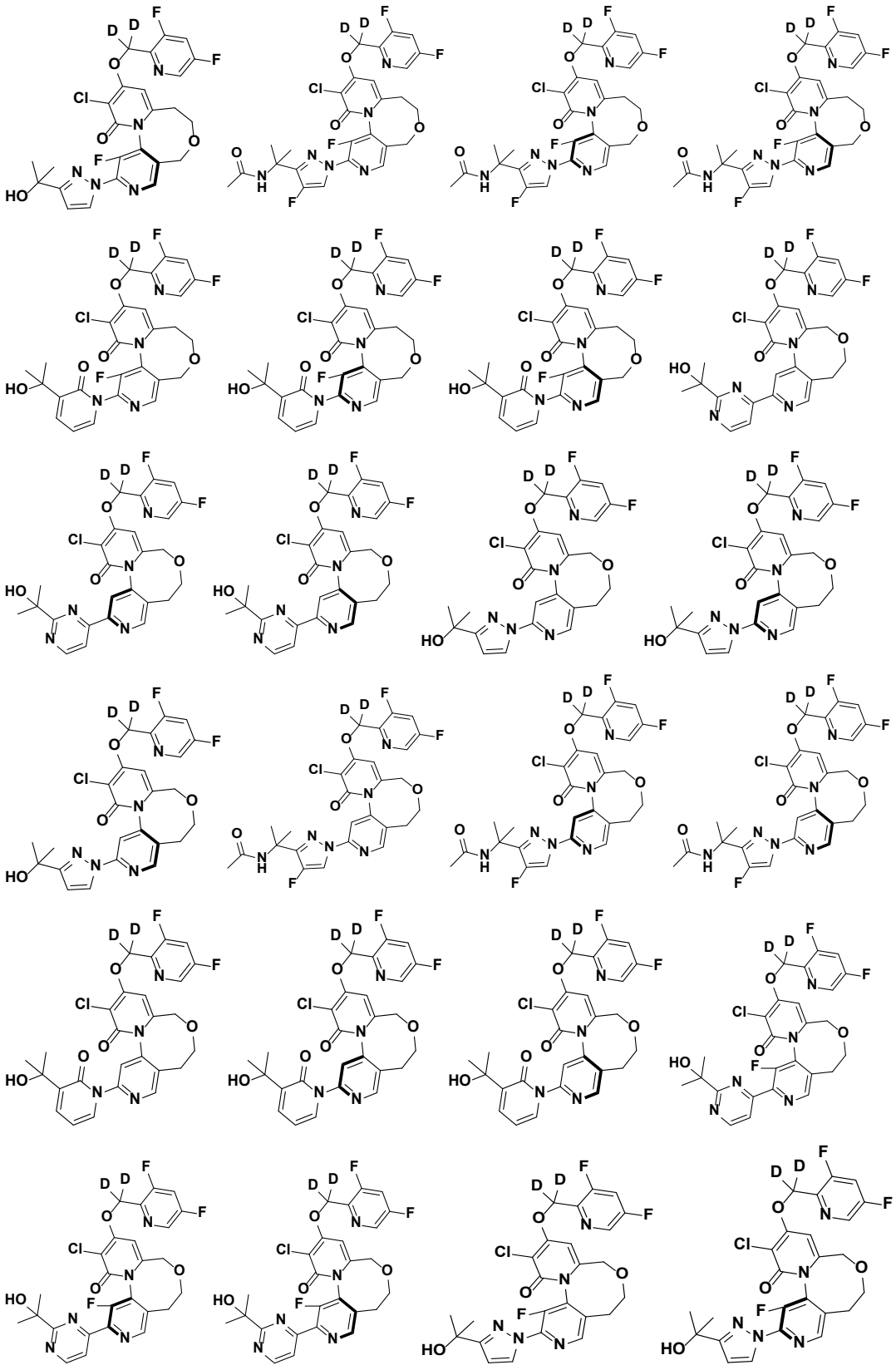


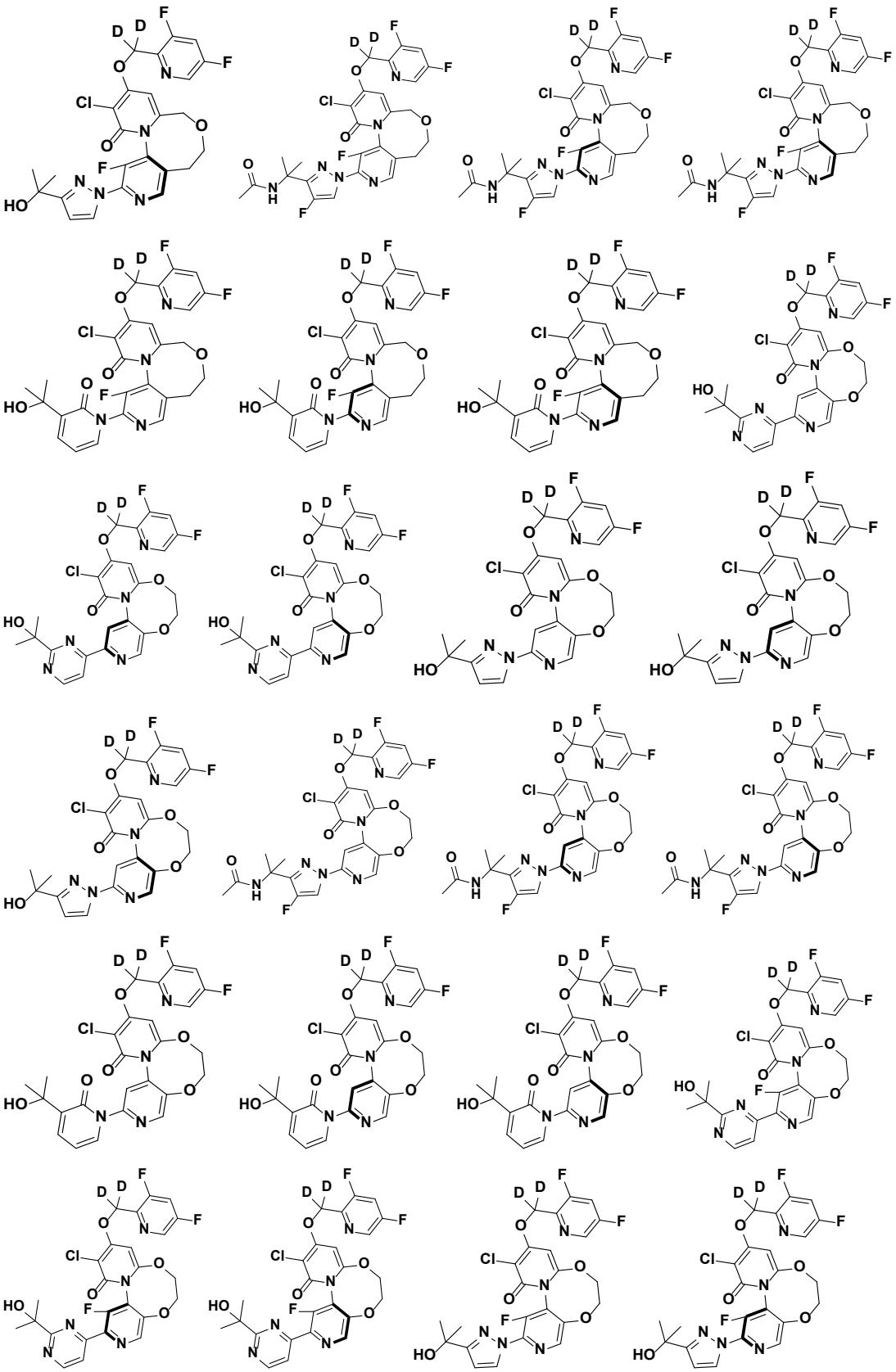


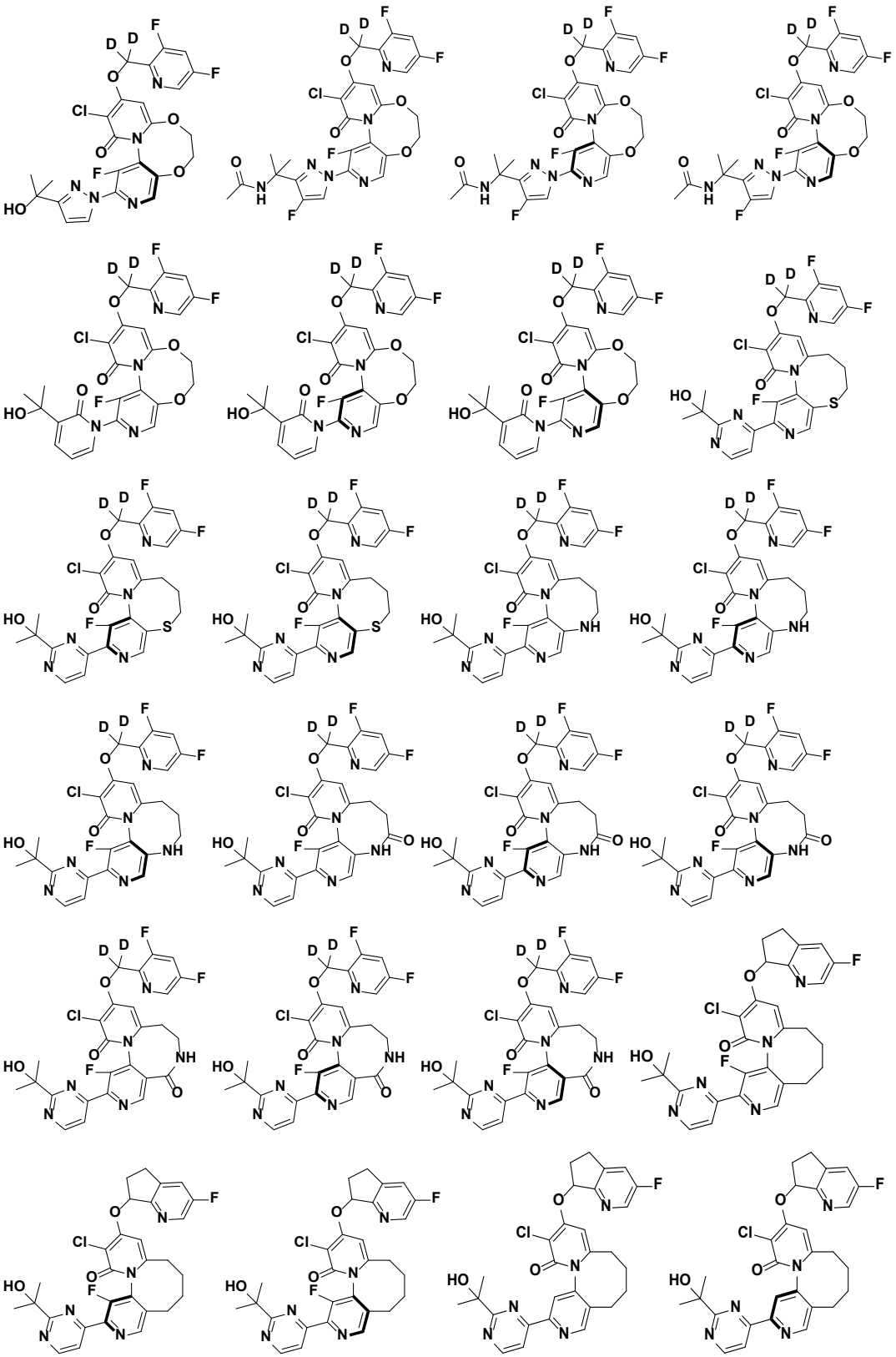


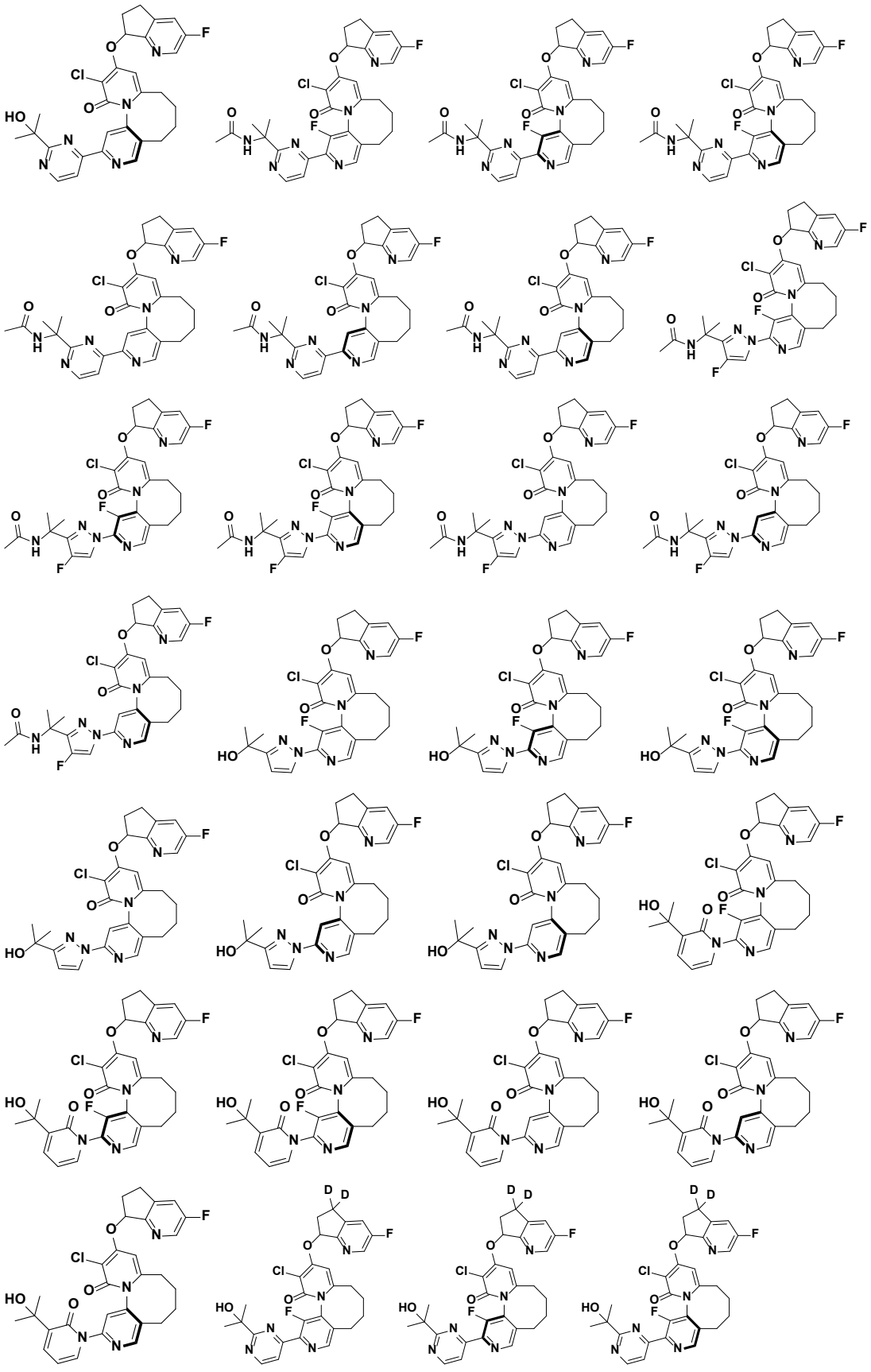


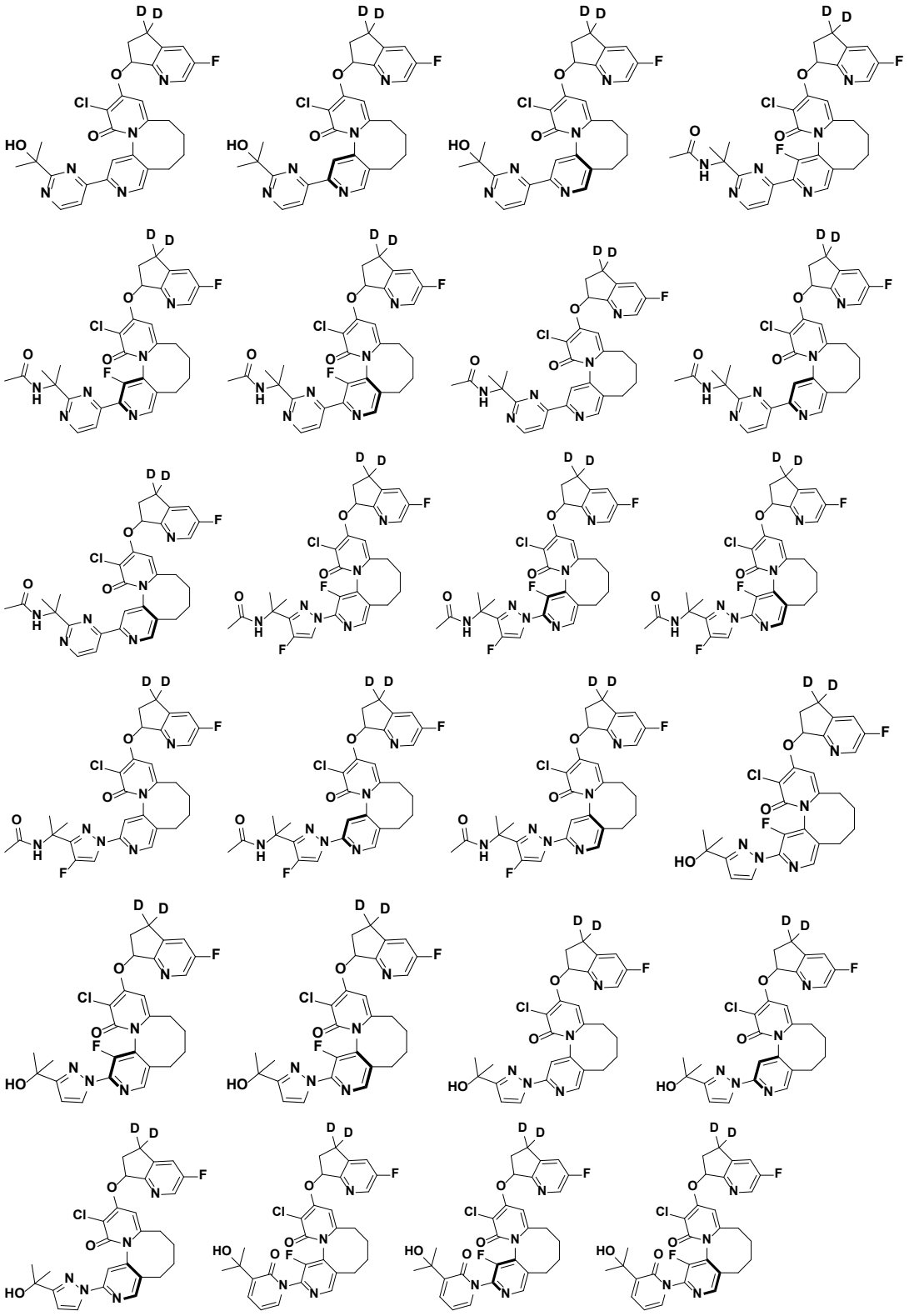


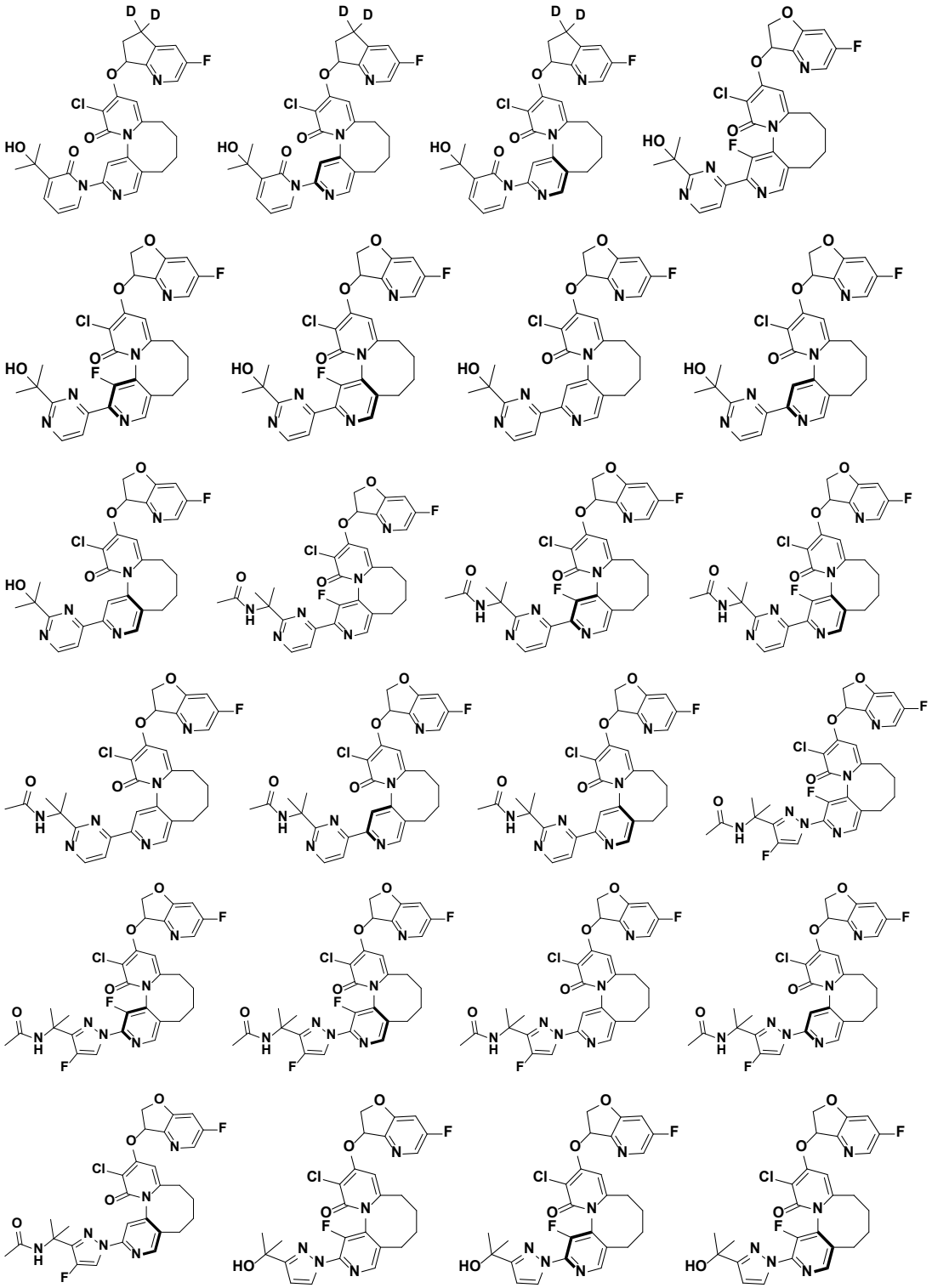


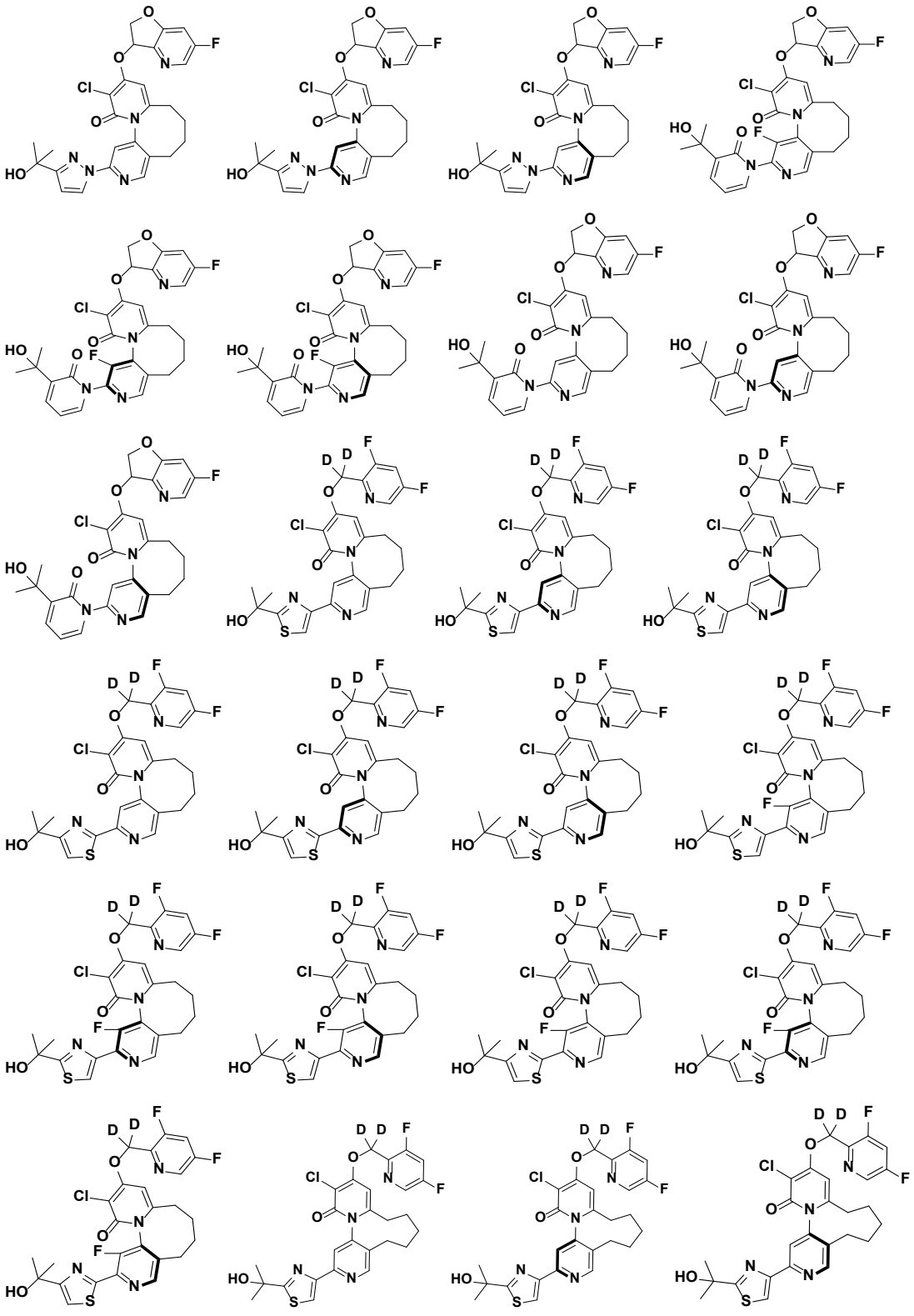


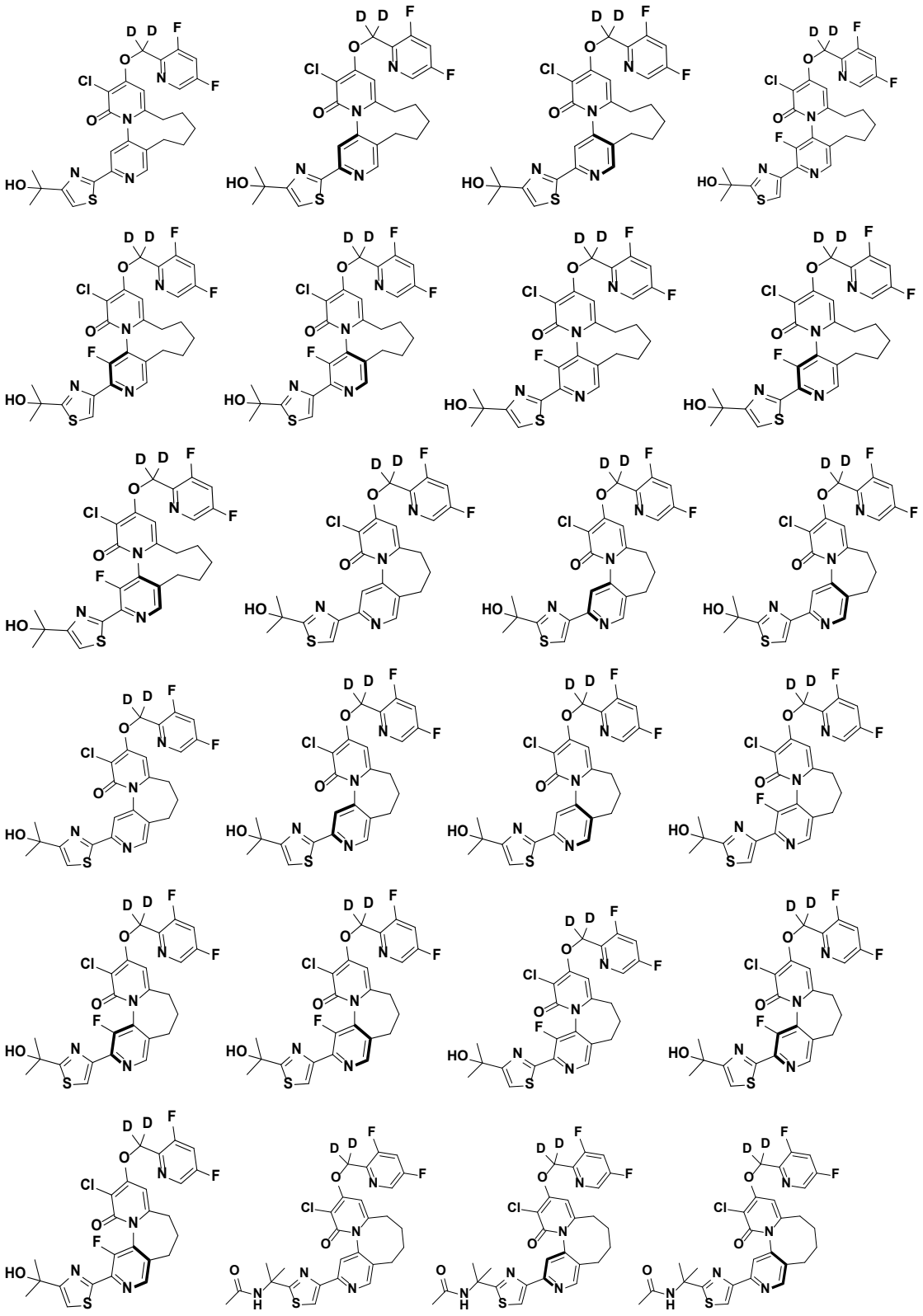


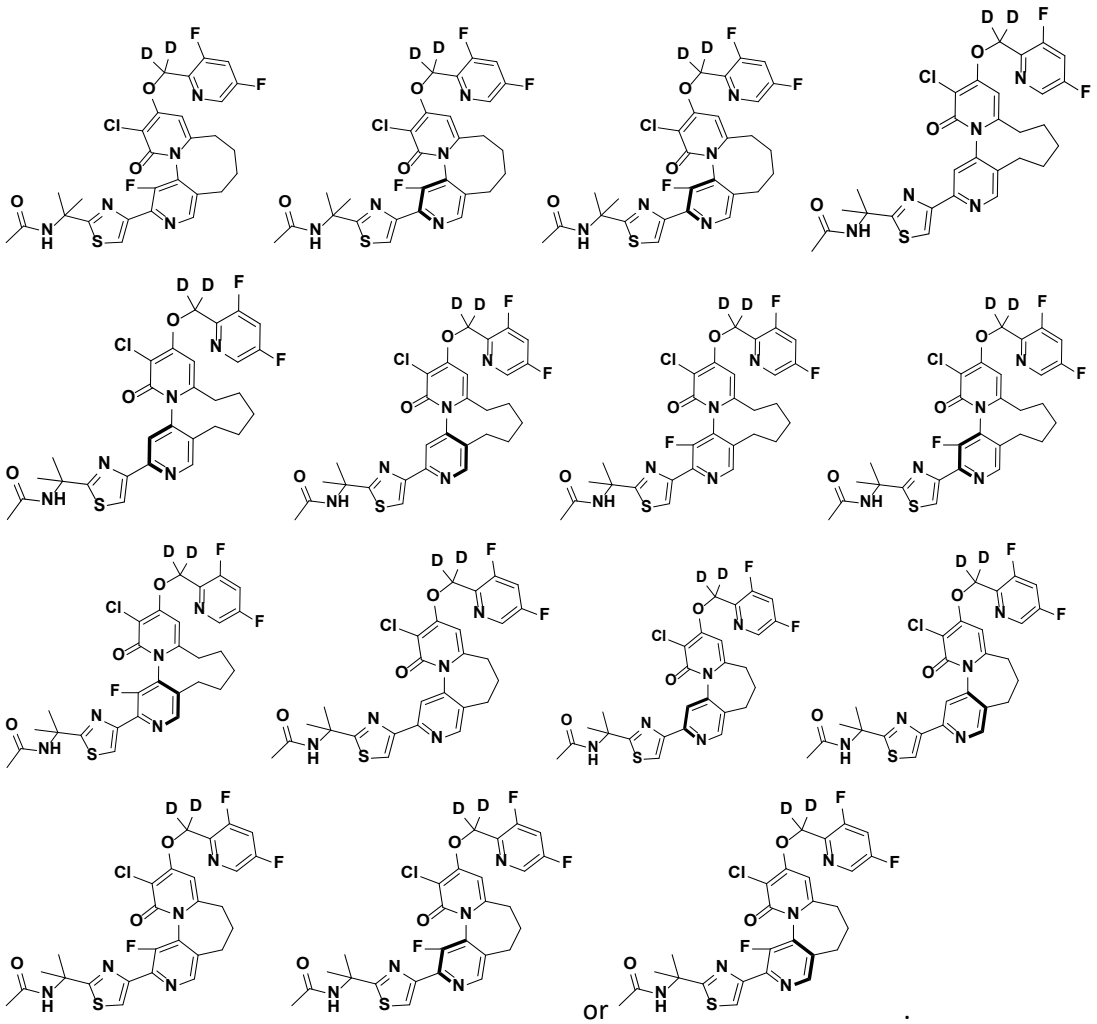






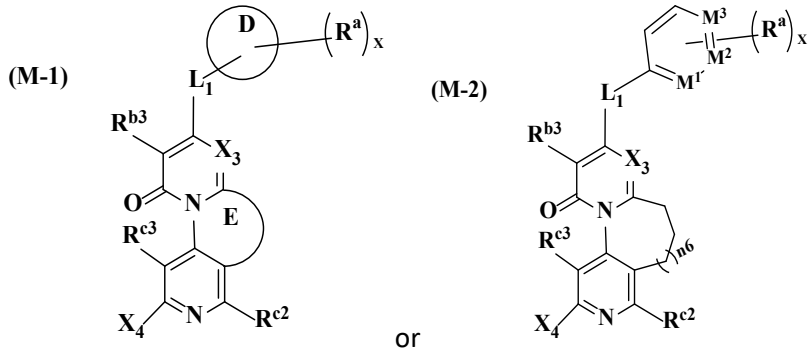






or .

14. A compound represented by general formula (M-1) or (M-2), or a stereoisomer or pharmaceutically acceptable salt thereof:



wherein:

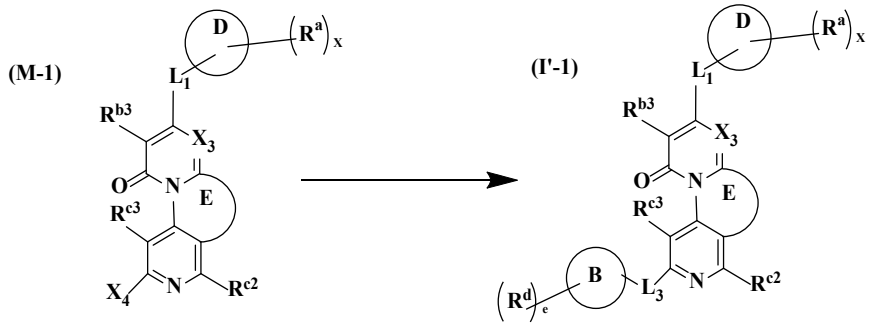
X_4 is selected from halogen, preferably chlorine or bromine;

ring D and ring E are as defined in claim 2;

M^1, M^2, M^3, and n6 are as defined in claim 4; and

L_1, R^a, R^{b3}, R^{c2}, R^{c3}, X_3, and x are as defined in claim 2 or 4.

15. A method for preparing the compound of general formula (I'-1), or the stereoisomer and pharmaceutically acceptable salt thereof according to claim 2, wherein the method comprises the following steps:



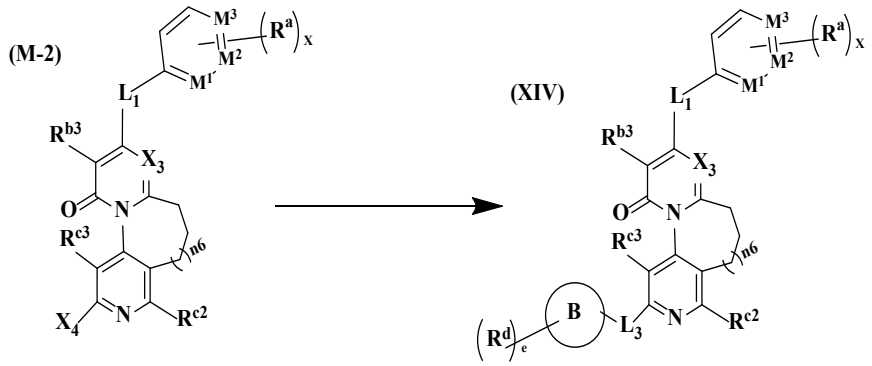
reacting a compound represented by general formula (M-1) to obtain a target compound represented by general formula (I'-1);

wherein

X_4 is selected from halogen, preferably chlorine or bromine; and

ring D, ring E, ring B, L_1, L_3, R^a, R^{b3}, R^{c2}, R^{c3}, X_3, R^d, x, and e are as defined in claim 2.

16. A method for preparing the compound of general formula (XIV), or the stereoisomer and pharmaceutically acceptable salt thereof according to claim 4, wherein the method comprises the following steps:



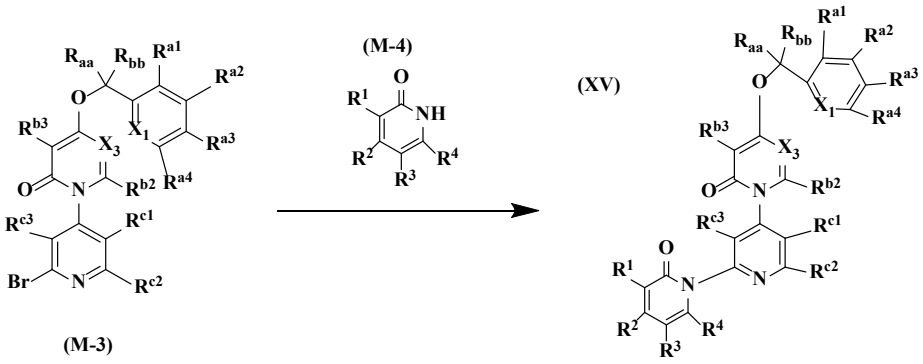
reacting a compound represented by general formula (M-2) to obtain a target compound represented by general formula (XIV);

wherein

X_4 is selected from halogen, preferably chlorine or bromine; and

M^1, M^2, M^3, L_1, L_3, R^a, R^{b3}, R^{c2}, R^{c3}, X_3, R^d, x, e, and n6 are as defined in claim 4.

17. A method for preparing the compound of general formula (XV), or the stereoisomer and pharmaceutically acceptable salt thereof according to claim 7, wherein the method comprises the following steps:



reacting general formula (M-3) with general formula (M-4) to obtain a target compound represented by general formula (XV);

wherein

X_1, X_3, R^{a1}, R^{a2}, R^{a3}, R^{a4}, R_{aa}, R_{bb}, R^{b2}, R^{b3}, R^{c1}, R^{c2}, R^{c3}, R^1, R^2, R^3, and R^4 are as defined in claim 7.

18. A pharmaceutical composition comprising a therapeutically effective dose of the compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 1-12, and one or more pharmaceutically acceptable carriers, diluents, or excipients.
19. Use of the compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 1-13, or the pharmaceutical composition according to claim 18 in the preparation of a medicament for the treatment of a p38 kinase-mediated disease.
20. Use of the compound, or the stereoisomer or pharmaceutically acceptable salt thereof according to any one of claims 1-13, or the pharmaceutical composition according to claim 18 in the preparation of a medicament for the treatment of autoimmune diseases, chronic inflammatory diseases, acute inflammatory conditions, autoinflammatory diseases, atherosclerosis, diabetes, fibrotic diseases, metabolic diseases, cancers, tumors, leukemia, and lymphoma.