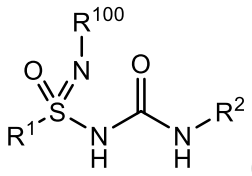
3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl,-OH, -O-C_1-C_6alkyl, -NH_2, -NH(C_1-C_6alkyl), -N(C_1-C_6alkyl)$_2$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6 membered heteroaryl.

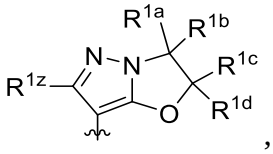
[0019a] In one aspect, the present disclosure provides a compound having the structure of Formula (I-5),


(I-5)

or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein:

R^{100} is selected from the group consisting of H, Cl, D, -CN, –NO_2, –OR^{3a},-$C(O)R^{3b}$, -$S(O)_2R^{3b}$, -$S(O)R^{3b}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, -OR^{3a},-$C(O)R^{3b}$, -$P(O)R^{3b}R^{4b}$, -$S(O)_2R^{3b}$,-$S(O)R^{3b}$, -$NR^{3a}R^{4a}$, –$NR^{3a}C(O)R^{4a}$, -$NR^{3a}C(O)OR^{4a}$, -$NR^{3a}C(O)NR^{4a}$, –$NR^{3a}S(O)_2R^{4a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl;

R^1 is selected from the group consisting of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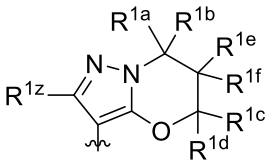
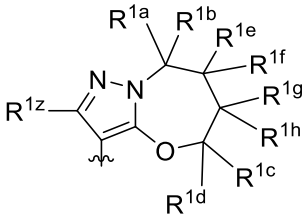

, and

;

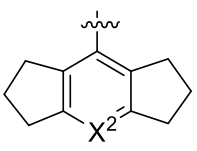
R^{1z} is H, D, halogen, -CN, –NO_2,–SR^{7a}, –OR^{7a}, -$C(O)R^{7b}$, -$P(O)R^{7b}R^{8b}$, -$S(O)_2R^{7b}$, -$S(O)R^{7b}$, –$NR^{7a}R^{8a}$, -$NR^{7a}C(O)R^{8a}$, -$NR^{7a}C(O)OR^{8a}$, -$NR^{7a}C(O)NR^{8a}$, –$NR^{7a}S(O)_2R^{8a}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and

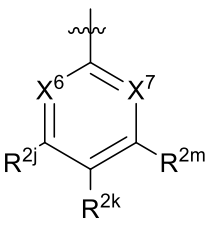
5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, -OR^{7a}, -$C(O)R^{7b}$, -$P(O)R^{7b}R^{8b}$, -$S(O)_2R^{7b}$, -$S(O)R^{7b}$, –$NR^{7a}R^{8a}$, –$NR^{7a}C(O)R^{8a}$, -$NR^{7a}C(O)OR^{8a}$, -$NR^{7a}C(O)NR^{8a}$, –$NR^{7a}S(O)_2R^{8a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl;

each R^{1a}, R^{1b}, R^{1c}, R^{1d}, R^{1e}, R^{1f}, R^{1g}, and R^{1h} is independently selected from the group consisting of H, D, halogen, -CN, –NO_2, –SR^{11a}, –OR^{11a}, -$C(O)R^{11b}$, -$P(O)R^{11b}R^{12b}$, -$S(O)_2R^{11b}$, -$S(O)R^{11b}$, –$NR^{11a}R^{12a}$, -$NR^{11a}C(O)R^{12a}$, -$NR^{11a}C(O)OR^{12a}$, -$NR^{11a}C(O)NR^{12a}$, –$NR^{11a}S(O)_2R^{12a}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, -OR^{11a}, -$C(O)R^{11b}$, -$P(O)R^{11b}R^{12b}$, -$S(O)_2R^{11b}$, -$S(O)R^{11b}$, –$NR^{11a}R^{12a}$, –$NR^{11a}C(O)R^{12a}$, -$NR^{11a}C(O)OR^{12a}$, -$NR^{11a}C(O)NR^{12a}$, –$NR^{11a}S(O)_2R^{12a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; or

two of the following groups, R^{1a}, R^{1b}, R^{1c}, R^{1d}, R^{1e}, R^{1f}, R^{1g}, and R^{1h}, when present, together with the atoms to which they are attached can form a C_3-C_{10}cycloalkyl or a 3-7-membered heterocyclyl; wherein the C_3-C_{10}cycloalkyl and 3-7-membered heterocyclyl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, -OR^{13a}, -$C(O)R^{13b}$, -$P(O)R^{13b}R^{14b}$, -$S(O)_2R^{13b}$, -$S(O)R^{13b}$, –$NR^{13a}R^{14a}$, –$NR^{13a}C(O)R^{14a}$, -$NR^{13a}C(O)OR^{14a}$, -$NR^{13a}C(O)NR^{14a}$, and –$NR^{13a}S(O)_2R^{14a}$; or

two geminal groups R^{1a} and R^{1b}; R^{1c} and R^{1d}; R^{1e} and R^{1f}; or R^{1g} and R^{1h}, when present, can form an oxo group;

R^2 is selected from the group consisting of C_1-C_6alkyl, C_3-C_{10}cycloalkyl, 3-7-membered heterocyclyl, 5-membered heteroaryl, -$NR^{2g}R^{2h}$, 

, 

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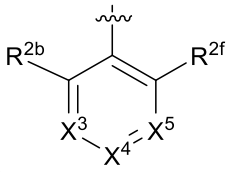
and  ; wherein the C_1-C_6alkyl, C_3-C_{10}cycloalkyl, 3-7-membered heterocyclyl, and 5-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, C_1-C_6haloalkyl, C_2-C_6alkenyl, oxo, -OR^{23a}, -$C(O)R^{23b}$, -$P(O)R^{23b}R^{24b}$, -$S(O)_2R^{23b}$, -$S(O)R^{23b}$, -$NR^{23a}R^{24a}$, –$NR^{23a}C(O)R^{24a}$, -$NR^{23a}C(O)OR^{24a}$, -$NR^{23a}C(O)NR^{24a}$, –$NR^{23a}S(O)_2R^{24a}$, -$(CH_2)_{1-4}C_3$-C_{10}cycloalkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl;

X^2 is N or CR^{2a};

X^3 is N or CR^{2c};

X^4 is N or CR^{2d};

X^5 is N or CR^{2e};

X^6 and X^7 are independently N or CR^{2n}, wherein at least one of X^6 and X^7 is N;

R^{2a} is H, D, halogen, -CN, –OR^{15a}, C_1-C_6alkyl, C_3-C_{10}cycloalkyl, -$C(O)NR^{15a}R^{16a}$, -$C(O)OR^{15a}$, –$NR^{15a}R^{16a}$, –$NR^{15a}C(O)R^{16a}$, -$NR^{15a}C(O)OR^{16a}$, -$NR^{15a}C(O)NR^{16a}$, or –$NR^{15a}S(O)_2R^{16a}$, wherein the C_1-C_6alkyl and C_3-C_{10}cycloalkyl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, halogen, -CN, -OR^{15a}, -$C(O)R^{15b}$, -$NR^{15a}R^{16a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl;

each R^{2b}, R^{2c}, R^{2d}, R^{2e}, and R^{2f} is independently H, D, halogen, -CN, –NO_2, –SR^{17a}, –OR^{17a}, -$C(O)R^{17b}$, -$P(O)R^{17b}R^{18b}$, -$S(O)_2R^{17b}$, -$S(O)R^{17b}$, –$NR^{17a}R^{18a}$, –$NR^{17a}C(O)R^{18a}$, -$NR^{17a}C(O)R^{18a}$, -$NR^{17a}C(O)OR^{18a}$, -$NR^{17a}C(O)NR^{18a}$, –$NR^{17a}S(O)_2R^{18a}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, -OR^{17a}, -$C(O)R^{17b}$, -$P(O)R^{17b}R^{18b}$, -$S(O)_2R^{17b}$, -$S(O)R^{17b}$, –$NR^{17a}R^{18a}$, –$NR^{17a}C(O)R^{18a}$, -$NR^{17a}C(O)OR^{18a}$, -$NR^{17a}C(O)NR^{18a}$, –$NR^{17a}S(O)_2R^{18a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; or

two adjacent R^{2b}, R^{2c}, R^{2d}, R^{2e}, and R^{2f} together with the atoms to which they are attached can form C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered

heteroaryl, wherein the C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of halogen, D, -CN, C_1-C_6alkyl, -OR^{19a}, and $NR^{19a}R^{20a}$;

each R^{2j}, R^{2k}, R^{2m}, and R^{2n} is independently H, D, halogen, -CN, $–NO_2$, $–SR^{17a}$, $–OR^{17a}$, $-C(O)R^{17b}$, $-P(O)R^{17b}R^{18b}$, $-S(O)_2R^{17b}$, $-S(O)R^{17b}$, $–NR^{17a}R^{18a}$, $–NR^{17a}C(O)R^{18a}$, $-NR^{17a}C(O)R^{18a}$, $-NR^{17a}C(O)OR^{18a}$, $-NR^{17a}C(O)NR^{18a}$, $–NR^{17a}S(O)_2R^{18a}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, $-OR^{17a}$, $-C(O)R^{17b}$, $-P(O)R^{17b}R^{18b}$, $-S(O)_2R^{17b}$, $-S(O)R^{17b}$, $–NR^{17a}R^{18a}$, $–NR^{17a}C(O)R^{18a}$, $-NR^{17a}C(O)OR^{18a}$, $-NR^{17a}C(O)NR^{18a}$, $–NR^{17a}S(O)_2R^{18a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; or

two adjacent R^{2j}, R^{2k}, R^{2m}, and R^{2n} together with the atoms to which they are attached can form C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl, wherein the C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of halogen, D, -CN, C_1-C_6alkyl, -OR^{19a}, and $NR^{19a}R^{20a}$;

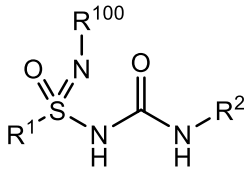
each R^{2g} and R^{2h} is independently H, D, C_1-C_6alkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl, wherein the C_1-C_6alkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, C_1-C_6haloalkyl, C_2-C_6alkenyl, oxo, $-OR^{21a}$, $-C(O)R^{21b}$, $-P(O)R^{21b}R^{22b}$, $-S(O)_2R^{21b}$, $-S(O)R^{21b}$, $-NR^{21a}R^{22a}$, $–NR^{21a}C(O)R^{22a}$, $-NR^{21a}C(O)OR^{22a}$, $-NR^{21a}C(O)NR^{22a}$, $–NR^{21a}S(O)_2R^{22a}$, $-(CH_2)_{1\text{-}4}C_3$-C_{10}cycloalkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl;

R^{3a}, R^{4a}, R^{7a}, R^{8a}, R^{11a}, R^{12a}, R^{13a}, R^{14a}, R^{15a}, R^{16a}, R^{17a}, R^{18a}, R^{19a}, R^{20a}, R^{21a}, R^{22a}, R^{23a}, and R^{24a} are independently, at each occurrence, H, D, C_1-C_8alkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_{10}cycloalkyl, C_4-C_8cycloalkenyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_8alkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_{10}cycloalkyl, C_4-C_8cycloalkenyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are

independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, -OH, -O-C_1-C_6alkyl, -NH_2, -NH(C_1-C_6alkyl), -N(C_1-C_6alkyl)$_2$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; and

R^{3b}, R^{4b}, R^{7b}, R^{8b}, R^{11b}, R^{12b}, R^{13b}, R^{14b}, R^{15b}, R^{17b}, R^{18b} R^{21b}, R^{22b}, R^{23b}, and R^{24b} are independently, at each occurrence, H, D, -OH, -O(C_1-C_6alkyl), -NH_2, -NH(C_1-C_6alkyl), -N(C_1-C_6alkyl)$_2$, -NHS(O)$_2$$CH_3$, C_1-C_8alkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_{10}cycloalkyl, C_4-C_8cycloalkenyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_8alkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_{10}cycloalkyl, C_4-C_8cycloalkenyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, -OH, -O-C_1-C_6alkyl, -NH_2, -NH(C_1-C_6alkyl), -N(C_1-C_6alkyl)$_2$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl.

[0020] The present disclosure provides a compound having the structure of Formula (I-6),

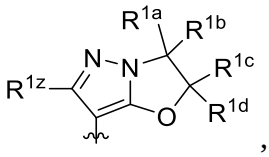


(I-6)

and pharmaceutically acceptable salts, solvates, isomers, prodrugs, and tautomers thereof, wherein:

R^{100} is selected from the group consisting of H, Cl, D, -CN, –NO_2, –OR^{3a},-C(O)R^{3b}, -S(O)$_2$$R^{3b}$, -S(O)$R^{3b}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6 membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, -OR^{3a},-C(O)R^{3b}, -P(O)$R^{3b}$$R^{4b}$, -S(O)$_2$$R^{3b}$,-S(O)$R^{3b}$, -$NR^{3a}$$R^{4a}$, –$NR^{3a}$C(O)$R^{4a}$, -$NR^{3a}$C(O)O$R^{4a}$, -$NR^{3a}$C(O)N$R^{4a}$, –$NR^{3a}$S(O)$_2$$R^{4a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6 membered heteroaryl;

R^1 is selected from the group consisting of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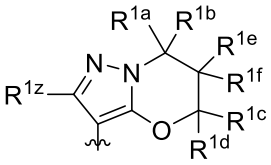
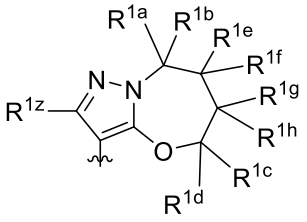
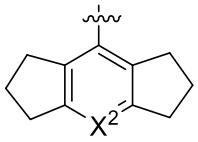
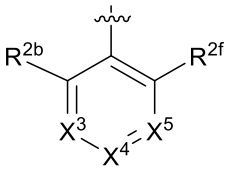

, and

;

R^2 is  or  ;

X^2 is N or CR^{2a};

X^3 is N or CR^{2c};

X^4 is N or CR^{2d};

X^5 is N or CR^{2e};

heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl,-OH, -O-C_1-C_6alkyl, -NH_2, -NH(C_1-C_6alkyl), -N(C_1-C_6alkyl)$_2$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6 membered heteroaryl.

[0021] The present disclosure provides pharmaceutical compositions comprising one or more compounds of the present disclosure, e.g., compounds of Formula (I), any variations thereof detailed herein, one or more of Compound Nos. 1-210 in Table 1, and pharmaceutically acceptable salts, solvates (e.g., hydrates), isomers, prodrugs, and tautomers thereof, and a pharmaceutically acceptable carrier.

[0021a] In another aspect, the present disclosure provides a pharmaceutical composition comprising a compound of the disclosure, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, and a pharmaceutically acceptable carrier.

[0022] The present disclosure provides methods of treating disorders including the step of administering an effective amount of one or more compounds of the present disclosure, e.g., compounds of Formula (I), any variations thereof detailed herein, one or more of Compound Nos. 1-210 in Table 1, and pharmaceutically acceptable salts, solvates (e.g., hydrates), isomers, prodrugs, and tautomers thereof, to thereby treat the disorder in a subject in need thereof.

[0023] The present disclosure provides a method of treating disorders including the step of administering an effective amount of one or more pharmaceutical compositions of the present disclosure to thereby treat the disorder in a subject in need thereof.

[0024] The present disclosure provides one or more compounds of the present disclosure, e.g., compounds of Formula (I), any variations thereof detailed herein, one or more of Compound Nos. 1-210 in Table 1, and pharmaceutically acceptable salts, solvates (e.g., hydrates), isomers, prodrugs, and tautomers thereof, or one or more pharmaceutical compositions of the present disclosure for use in the treatment of a disorder in a subject in need thereof.

[0024a] In another aspect, the present disclosure provides a compound of the disclosure, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, or a pharmaceutical composition of the disclosure, for use as a medicament.

[0025] The present disclosure provides for the use of one or more compounds of the present disclosure, e.g., compounds of Formula (I), any variations thereof detailed herein, one or more of Compound Nos. 1-210 in Table 1, and pharmaceutically acceptable salts, solvates (e.g.,

hydrates), isomers, prodrugs, and tautomers thereof, for the treatment of a disorder in a subject in need thereof.

[0026] The present disclosure provides for the use of one or more pharmaceutical compositions of the present disclosure for the treatment of a disorder in a subject in need thereof.

[0027] The present disclosure provides for the use of one or more compounds of the present disclosure, e.g., compounds of Formula (I), any variations thereof detailed herein, one or more of Compound Nos. 1-210 in Table 1, and pharmaceutically acceptable salts, solvates (e.g., hydrates), isomers, prodrugs, and tautomers thereof, in the manufacture of a medicament for the treatment of a disorder.

[0027a] In another aspect, the present disclosure provides for the use of a compound of the disclosure, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, or a pharmaceutical composition of the disclosure, in the manufacture of a medicament for the treatment of a disorder.

[0028] The present disclosure provides for the use of one or more pharmaceutical compositions of the present disclosure in the manufacture of a medicament for the treatment of a disorder.

[0029] In some examples, the disorder is responsive to inflammasome inhibition.

[0030] In some examples, the disorder is responsive to inhibition of activation of the NLRP3 inflammasome.

[0031] In some examples, the disorder is a disorder of the immune system, the liver, the lung, the skin, the cardiovascular system, the renal system, the gastrointestinal tract, the respiratory system, the endocrine system, the central nervous system, or is a cancer or other malignancy, or is caused by or associated with a pathogen.

[0032] The present disclosure provides methods of modulating the activity of a biological target comprising the step of exposing the biological target to one or more compounds of the present disclosure, e.g., compounds of Formula (I), any variations thereof detailed herein, one or more of Compound Nos. 1-210 in Table 1, and pharmaceutically acceptable salts, solvates (e.g., hydrates), isomers, prodrugs, and tautomers thereof.

[0033] The present disclosure provides methods of modulating the activity of a biological target comprising the step of exposing the biological target to one or more pharmaceutical compositions of the present disclosure.

[0034] The biological target may be selected from a group consisting of the NLRP3 inflammasome, IL-6, IL-1β, IL-17, IL-18, IL-1α, IL-37, IL-22, IL-33 and Th17 cells.

DETAILED DESCRIPTION

Definitions

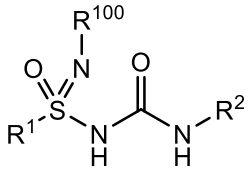
[0035] As used throughout this disclosure, the following terms, unless otherwise indicated, shall be understood to have the following meanings. If a term is missing, the conventional term as known to one skilled in the art controls.

[0036] It should also be noted that any carbon as well as any heteroatom with unsatisfied valences in the text, schemes, examples and Tables herein is assumed to have the sufficient number of hydrogen atom(s) to satisfy the valences.

[0037] As described herein, compounds of the present disclosure may optionally be substituted with one or more substituents, such as those illustrated generally herein, or as

CLAIMS

1. A compound having the structure of Formula (I-5),

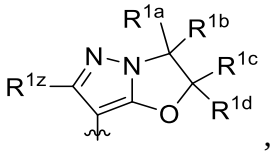


(I-5)

or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein:

R^{100} is selected from the group consisting of H, Cl, D, -CN, $–NO_2$, $–OR^{3a}$,$-C(O)R^{3b}$, $-S(O)_2R^{3b}$, $-S(O)R^{3b}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, $-OR^{3a}$,$-C(O)R^{3b}$, $-P(O)R^{3b}R^{4b}$, $-S(O)_2R^{3b}$,$-S(O)R^{3b}$, $-NR^{3a}R^{4a}$, $–NR^{3a}C(O)R^{4a}$, $-NR^{3a}C(O)OR^{4a}$, $-NR^{3a}C(O)NR^{4a}$, $–NR^{3a}S(O)_2R^{4a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl;

R^1 is selected from the group consisting of



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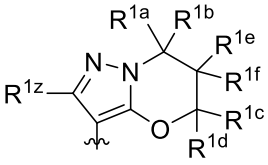
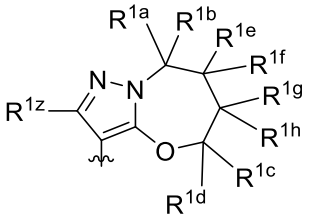


, and



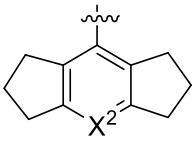
;

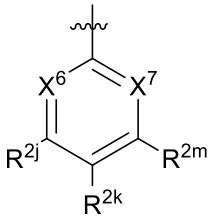
R^{1z} is H, D, halogen, -CN, $–NO_2$,$–SR^{7a}$, $–OR^{7a}$, $-C(O)R^{7b}$, $-P(O)R^{7b}R^{8b}$, $-S(O)_2R^{7b}$, $-S(O)R^{7b}$, $–NR^{7a}R^{8a}$, $-NR^{7a}C(O)R^{8a}$, $-NR^{7a}C(O)OR^{8a}$, $-NR^{7a}C(O)NR^{8a}$, $–NR^{7a}S(O)_2R^{8a}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, $-OR^{7a}$, $-C(O)R^{7b}$, $-P(O)R^{7b}R^{8b}$, $-S(O)_2R^{7b}$, $-S(O)R^{7b}$, $–NR^{7a}R^{8a}$, $–NR^{7a}C(O)R^{8a}$, $-NR^{7a}C(O)OR^{8a}$, $-NR^{7a}C(O)NR^{8a}$, $–NR^{7a}S(O)_2R^{8a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl;

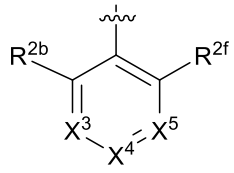
each R^{1a}, R^{1b}, R^{1c}, R^{1d}, R^{1e}, R^{1f}, R^{1g}, and R^{1h} is independently selected from the group consisting of H, D, halogen, -CN, $–NO_2$, $–SR^{11a}$, $–OR^{11a}$, $-C(O)R^{11b}$, $-P(O)R^{11b}R^{12b}$, $-S(O)_2R^{11b}$, $-S(O)R^{11b}$, $–NR^{11a}R^{12a}$, $-NR^{11a}C(O)R^{12a}$, $-NR^{11a}C(O)OR^{12a}$, $-NR^{11a}C(O)NR^{12a}$, $–NR^{11a}S(O)_2R^{12a}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, $-OR^{11a}$, $-C(O)R^{11b}$, $-P(O)R^{11b}R^{12b}$, $-S(O)_2R^{11b}$, $-S(O)R^{11b}$, $–NR^{11a}R^{12a}$, $–NR^{11a}C(O)R^{12a}$, $-NR^{11a}C(O)OR^{12a}$, $-NR^{11a}C(O)NR^{12a}$, $–NR^{11a}S(O)_2R^{12a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; or

two of the following groups, R^{1a}, R^{1b}, R^{1c}, R^{1d}, R^{1e}, R^{1f}, R^{1g}, and R^{1h}, when present, together with the atoms to which they are attached can form a C_3-C_{10}cycloalkyl or a 3-7-membered heterocyclyl; wherein the C_3-C_{10}cycloalkyl and 3-7-membered heterocyclyl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, $-OR^{13a}$, $-C(O)R^{13b}$, $-P(O)R^{13b}R^{14b}$, $-S(O)_2R^{13b}$, $-S(O)R^{13b}$, $–NR^{13a}R^{14a}$, $–NR^{13a}C(O)R^{14a}$, $-NR^{13a}C(O)OR^{14a}$, $-NR^{13a}C(O)NR^{14a}$, and $–NR^{13a}S(O)_2R^{14a}$; or

two geminal groups R^{1a} and R^{1b}; R^{1c} and R^{1d}; R^{1e} and R^{1f}; or R^{1g} and R^{1h}, when present, can form an oxo group;

R^2 is selected from the group consisting of C_1-C_6alkyl, C_3-C_{10}cycloalkyl, 3-7-membered heterocyclyl, 5-membered heteroaryl, $-NR^{2g}R^{2h}$, 

, 

, and 

; wherein the C_1-C_6alkyl, C_3-C_{10}cycloalkyl, 3-7-membered heterocyclyl, and 5-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, C_1-C_6haloalkyl, C_2-C_6alkenyl, oxo, $-OR^{23a}$, $-C(O)R^{23b}$, $-P(O)R^{23b}R^{24b}$, $-S(O)_2R^{23b}$, $-S(O)R^{23b}$, $-NR^{23a}R^{24a}$, $–NR^{23a}C(O)R^{24a}$, $-NR^{23a}C(O)OR^{24a}$, $-NR^{23a}C(O)NR^{24a}$, $–NR^{23a}S(O)_2R^{24a}$, $-(CH_2)_{1-4}C_3$-

C_{10}cycloalkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl;

X^2 is N or CR^{2a};

X^3 is N or CR^{2c};

X^4 is N or CR^{2d};

X^5 is N or CR^{2e};

X^6 and X^7 are independently N or $CR^{2n,}$, wherein at least one of X^6 and X^7 is N;

R^{2a} is H, D, halogen, -CN, $–OR^{15a}$, C_1-C_6alkyl, C_3-C_{10}cycloalkyl, $-C(O)NR^{15a}R^{16a}$, $-C(O)OR^{15a}$, $–NR^{15a}R^{16a}$, $–NR^{15a}C(O)R^{16a}$, $-NR^{15a}C(O)OR^{16a}$, $-NR^{15a}C(O)NR^{16a}$, or $–NR^{15a}S(O)_2R^{16a}$, wherein the C_1-C_6alkyl and C_3-C_{10}cycloalkyl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, halogen, -CN, $-OR^{15a}$, $-C(O)R^{15b}$, $-NR^{15a}R^{16a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl;

each R^{2b}, R^{2c}, R^{2d}, R^{2e}, and R^{2f} is independently H, D, halogen, -CN, $–NO_2$, $–SR^{17a}$, $–OR^{17a}$, $-C(O)R^{17b}$, $-P(O)R^{17b}R^{18b}$, $-S(O)_2R^{17b}$, $-S(O)R^{17b}$, $–NR^{17a}R^{18a}$, $–NR^{17a}C(O)R^{18a}$, $-NR^{17a}C(O)R^{18a}$, $-NR^{17a}C(O)OR^{18a}$, $-NR^{17a}C(O)NR^{18a}$, $–NR^{17a}S(O)_2R^{18a}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, $-OR^{17a}$, $-C(O)R^{17b}$, $-P(O)R^{17b}R^{18b}$, $-S(O)_2R^{17b}$, $-S(O)R^{17b}$, $–NR^{17a}R^{18a}$, $–NR^{17a}C(O)R^{18a}$, $-NR^{17a}C(O)OR^{18a}$, $-NR^{17a}C(O)NR^{18a}$, $–NR^{17a}S(O)_2R^{18a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; or

two adjacent R^{2b}, R^{2c}, R^{2d}, R^{2e}, and R^{2f} together with the atoms to which they are attached can form C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl, wherein the C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of halogen, D, -CN, C_1-C_6alkyl, $-OR^{19a}$, and $NR^{19a}R^{20a}$;

each R^{2j}, R^{2k}, R^{2m}, and R^{2n} is independently H, D, halogen, -CN, $–NO_2$, $–SR^{17a}$, $–OR^{17a}$, $-C(O)R^{17b}$, $-P(O)R^{17b}R^{18b}$, $-S(O)_2R^{17b}$, $-S(O)R^{17b}$, $–NR^{17a}R^{18a}$, $–NR^{17a}C(O)R^{18a}$, $-NR^{17a}C(O)R^{18a}$, $-NR^{17a}C(O)OR^{18a}$, $-NR^{17a}C(O)NR^{18a}$, $–NR^{17a}S(O)_2R^{18a}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-

C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, $-OR^{17a}$, $-C(O)R^{17b}$, $-P(O)R^{17b}R^{18b}$, $-S(O)_2R^{17b}$, $-S(O)R^{17b}$, $–NR^{17a}R^{18a}$, $–NR^{17a}C(O)R^{18a}$, $-NR^{17a}C(O)OR^{18a}$, $-NR^{17a}C(O)NR^{18a}$, $–NR^{17a}S(O)_2R^{18a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; or

two adjacent R^{2j}, R^{2k}, R^{2m}, and R^{2n} together with the atoms to which they are attached can form C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl, wherein the C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of halogen, D, -CN, C_1-C_6alkyl, $-OR^{19a}$, and $NR^{19a}R^{20a}$;

each R^{2g} and R^{2h} is independently H, D, C_1-C_6alkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl, wherein the C_1-C_6alkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, C_1-C_6haloalkyl, C_2-C_6alkenyl, oxo, $-OR^{21a}$, $-C(O)R^{21b}$, $-P(O)R^{21b}R^{22b}$, $-S(O)_2R^{21b}$, $-S(O)R^{21b}$, $-NR^{21a}R^{22a}$, $–NR^{21a}C(O)R^{22a}$, $-NR^{21a}C(O)OR^{22a}$, $-NR^{21a}C(O)NR^{22a}$, $–NR^{21a}S(O)_2R^{22a}$, $-(CH_2)_{1\text{-}4}C_3$-C_{10}cycloalkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl;

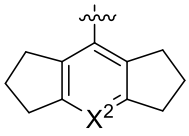
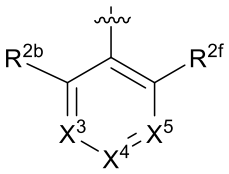
R^{3a}, R^{4a}, R^{7a}, R^{8a}, R^{11a}, R^{12a}, R^{13a}, R^{14a}, R^{15a}, R^{16a}, R^{17a}, R^{18a}, R^{19a}, R^{20a}, R^{21a}, R^{22a}, R^{23a}, and R^{24a} are independently, at each occurrence, H, D, C_1-C_8alkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_{10}cycloalkyl, C_4-C_8cycloalkenyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_8alkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_{10}cycloalkyl, C_4-C_8cycloalkenyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, -OH, -O-C_1-C_6alkyl, $-NH_2$, -NH(C_1-C_6alkyl), -N(C_1-C_6alkyl)$_2$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl; and

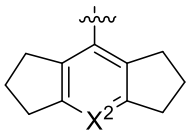
R^{3b}, R^{4b}, R^{7b}, R^{8b}, R^{11b}, R^{12b}, R^{13b}, R^{14b}, R^{15b}, R^{17b}, R^{18b} R^{21b}, R^{22b}, R^{23b}, and R^{24b} are independently, at each occurrence, H, D, -OH, -O(C_1-C_6alkyl), $-NH_2$, -NH(C_1-C_6alkyl), -N(C_1-C_6alkyl)$_2$, $-NHS(O)_2CH_3$, C_1-C_8alkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_{10}cycloalkyl, C_4-C_8cycloalkenyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the

C_1-C_8alkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_{10}cycloalkyl, C_4-C_8cycloalkenyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, C_1-C_6alkyl, -OH, -O-C_1-C_6alkyl, -NH_2, -NH(C_1-C_6alkyl), -N(C_1-C_6alkyl)$_2$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl.

2. The compound of claim 1, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^{100} is H, -CN, -C(O)R^{3b}, or C_1-C_6alkyl; wherein the C_1-C_6alkyl is unsubstituted or substituted with C_6aryl.

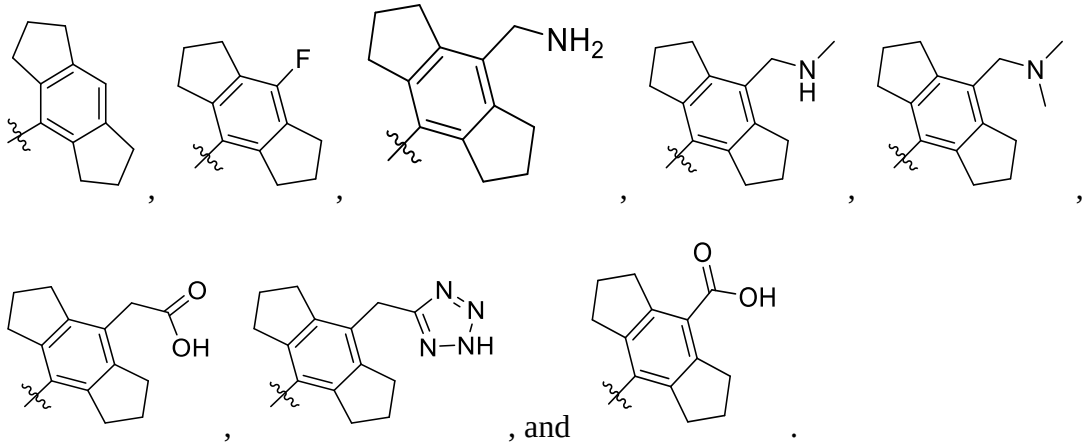
3. The compound of claim 1, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^{100} is H.

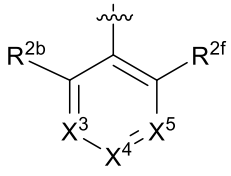
4. The compound of any one of claims 1 to 3, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^2 is  or  .

5. The compound of any one of claims 1 to 3, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^2 is  .

6. The compound of claim 4 or 5, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein X^2 is CR^{2a} and R^{2a} is H, halogen, -CN,–OR^{15a}, -C(O)OR^{15a}, or C_1-C_6alkyl; wherein the C_1-C_6alkyl is unsubstituted or substituted with one or more substituents selected from the group consisting of D, halogen, -CN, -OR^{15a}, -C(O)R^{15b}, -$NR^{15a}R^{16a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl.

7. The compound of any one of claims 1 to 6, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^2 is selected from the group consisting of



8. The compound of any one of claims 1 to 3, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^2 is  .

9. The compound of claim 8, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein X^3 is CR^{2c}; X^4 is CR^{2d}; and X^5 is CR^{2e}.

10. The compound of claim 9, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein each R^{2b}, R^{2c}, R^{2d}, R^{2e}, and R^{2f} is independently selected from the group consisting of H, D, halogen, C_1-C_6alkyl, C_3-C_{10}cycloalkyl, and -CN.

11. The compound of claim 9, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein:

R^{2b} and R^{2c} together with the atoms to which they are attached form C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of halogen, D, -CN, C_1-C_6alkyl, -OR^{19a}, and $NR^{19a}R^{20a}$; and

each R^{2d}, R^{2e}, and R^{2f} is independently H, D, halogen, -CN, $–NO_2$, $–SR^{17a}$, $–OR^{17a}$, -$C(O)R^{17b}$, -$P(O)R^{17b}R^{18b}$, -$S(O)_2R^{17b}$, -$S(O)R^{17b}$, $–NR^{17a}R^{18a}$, $–NR^{17a}C(O)R^{18a}$, -$NR^{17a}C(O)R^{18a}$, -$NR^{17a}C(O)OR^{18a}$, -$NR^{17a}C(O)NR^{18a}$, $–NR^{17a}S(O)_2R^{18a}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered

heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, -OR^{17a}, -$C(O)R^{17b}$, -$P(O)R^{17b}R^{18b}$, -$S(O)_2R^{17b}$, -$S(O)R^{17b}$, –$NR^{17a}R^{18a}$, –$NR^{17a}C(O)R^{18a}$, -$NR^{17a}C(O)OR^{18a}$, -$NR^{17a}C(O)NR^{18a}$, –$NR^{17a}S(O)_2R^{18a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl.

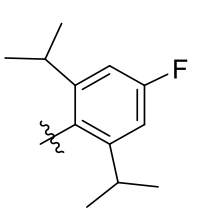
12. The compound of claim 9, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein:

R^{2b} and R^{2c} together with the atoms to which they are attached form C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, 5-6-membered heteroaryl; wherein the C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of halogen, D, -CN, C_1-C_6alkyl, -OR^{19a}, and -$NR^{19a}R^{20a}$;

R^{2e} and R^{2f} together with the atoms to which they are attached form C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, 5-6-membered heteroaryl; wherein the C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of halogen, D, -CN, C_1-C_6alkyl, -OR^{19a}, and -$NR^{19a}R^{20a}$; and

R^{2d} is H, D, halogen, -CN, –NO_2, –SR^{17a}, –OR^{17a}, -$C(O)R^{17b}$, -$P(O)R^{17b}R^{18b}$, -$S(O)_2R^{17b}$, -$S(O)R^{17b}$, –$NR^{17a}R^{18a}$, –$NR^{17a}C(O)R^{18a}$, -$NR^{17a}C(O)OR^{18a}$, -$NR^{17a}C(O)NR^{18a}$, –$NR^{17a}S(O)_2R^{18a}$, C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl; wherein the C_1-C_6alkyl, C_2-C_6alkenyl, C_4-C_8cycloalkenyl, C_2-C_6alkynyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl are independently unsubstituted or substituted with one or more substituents selected from the group consisting of D, -CN, halogen, -OR^{17a}, -$C(O)R^{17b}$, -$P(O)R^{17b}R^{18b}$, -$S(O)_2R^{17b}$, -$S(O)R^{17b}$, –$NR^{17a}R^{18a}$, –$NR^{17a}C(O)R^{18a}$, -$NR^{17a}C(O)OR^{18a}$, -$NR^{17a}C(O)NR^{18a}$, –$NR^{17a}S(O)_2R^{18a}$, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, and 5-6-membered heteroaryl.

13. The compound of claim 9, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^2 is selected from the group consisting of



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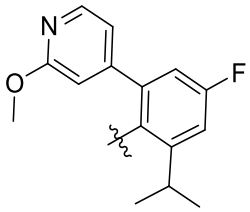

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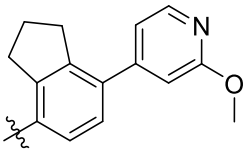

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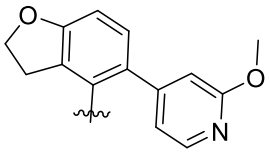

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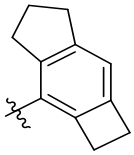
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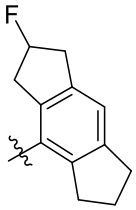

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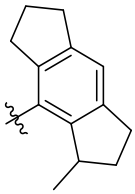
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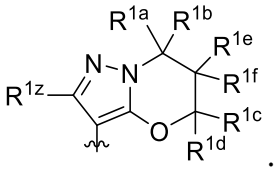
14. The compound of any one of claims 1, 4 or 8, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein X^3 is N and X^4 is CR^{2d}.

15. The compound of claim 14, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein X^5 is CR^{2e}.

16. The compound of any one of claims 1 to 15, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^1 is 

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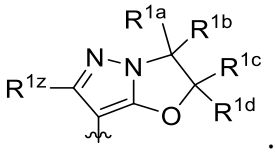
17. The compound of any one of claims 1 to 15, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^1 is 

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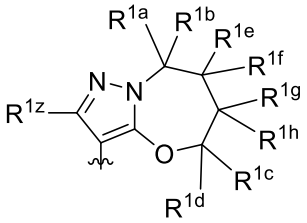
18. The compound of any one of claims 1 to 15, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^1 is 

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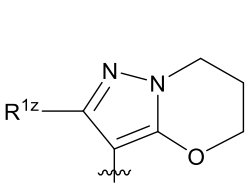
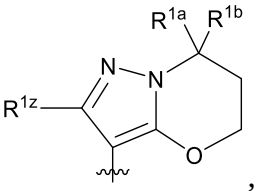
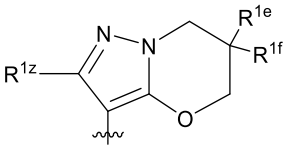
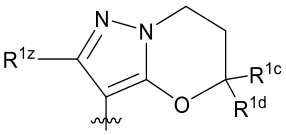
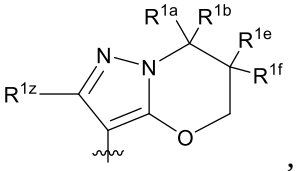
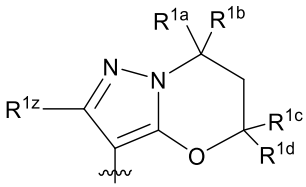
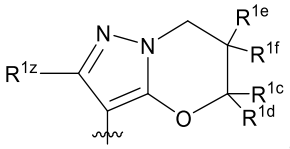
19. The compound of any one of claims 1 to 15, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^1 is selected from the group consisting of

 ,  ,  and  .

20. The compound of any one of claims 1 to 15, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^1 is selected from the group consisting of

 ,  and  .

21. The compound of any one of claims 1 to 20, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^{1z} is H.

22. The compound of any one of claims 1 to 21, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^{1a} and R^{1b} are independently H, halogen, $–OR^{11a}$, $-C(O)R^{11b}$, $-P(O)R^{11b}R^{12b}$, $-S(O)_2R^{11b}$, $-S(O)R^{11b}$, $–NR^{11a}R^{12a}$, $-NR^{11a}C(O)R^{12a}$, $-NR^{11a}C(O)OR^{12a}$, $-NR^{11a}C(O)NR^{12a}$, $–NR^{11a}S(O)_2R^{12a}$, C_1-C_6alkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl.

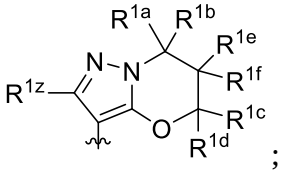
23. The compound of any one of claims 1 to 21, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^{1c} and R^{1d} are independently H, halogen, $–OR^{11a}$, $-C(O)R^{11b}$, $-P(O)R^{11b}R^{12b}$, $-S(O)_2R^{11b}$, $-S(O)R^{11b}$, $–NR^{11a}R^{12a}$, $-NR^{11a}C(O)R^{12a}$, $-NR^{11a}C(O)OR^{12a}$, $-NR^{11a}C(O)NR^{12a}$, $–NR^{11a}S(O)_2R^{12a}$, C_1-C_6alkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl.

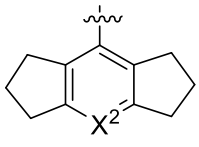
24. The compound of any one of claims 1 to 16 or 18 to 23, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^{1e} and R^{1f} are independently H, halogen, $–OR^{11a}$, $-C(O)R^{11b}$, $-P(O)R^{11b}R^{12b}$, $-S(O)_2R^{11b}$, $-S(O)R^{11b}$, $–NR^{11a}R^{12a}$, $-NR^{11a}C(O)R^{12a}$, $-NR^{11a}C(O)OR^{12a}$, $-NR^{11a}C(O)NR^{12a}$, $–NR^{11a}S(O)_2R^{12a}$, C_1-C_6alkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl.

25. The compound of any one of claims 1 to 15, 18, or 21 to 24, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^{1g} and R^{1h} are independently H, halogen, $–OR^{11a}$, $-C(O)R^{11b}$, $-P(O)R^{11b}R^{12b}$, $-S(O)_2R^{11b}$, $-S(O)R^{11b}$, $–NR^{11a}R^{12a}$, $-NR^{11a}C(O)R^{12a}$, $-NR^{11a}C(O)OR^{12a}$, $-NR^{11a}C(O)NR^{12a}$, $–NR^{11a}S(O)_2R^{12a}$, C_1-C_6alkyl, C_3-C_{10}cycloalkyl, C_6aryl, 3-7-membered heterocyclyl, or 5-6-membered heteroaryl.

26. The compound of any one of claims 1 or 22 to 25, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein:

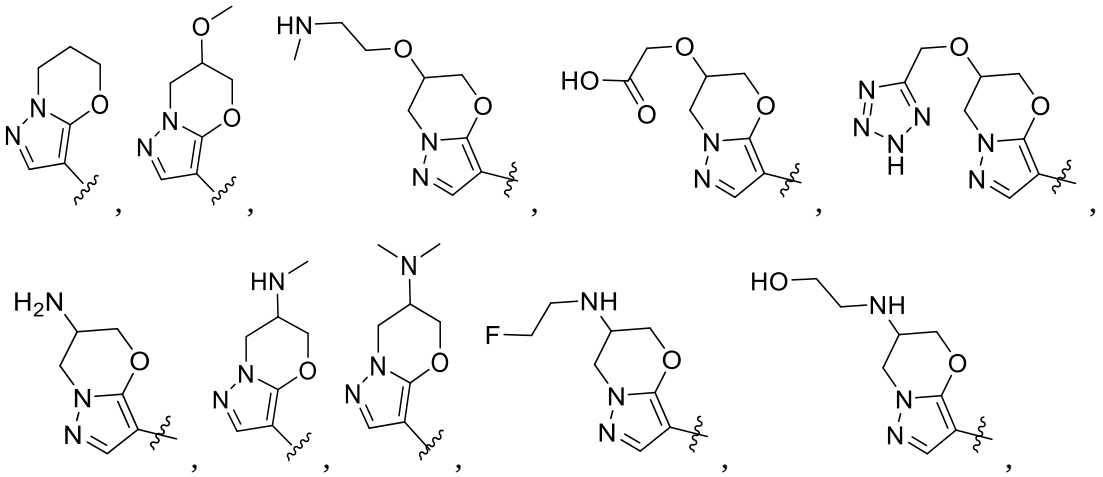
R^{100} is H;

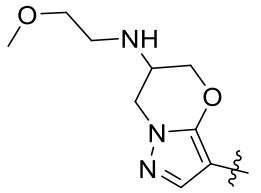
R^1 is  ;

R^2 is  ; and

X^2 is CH or CF.

27. The compound of any one of claims 1 to 26, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^1 is selected from the group consisting of

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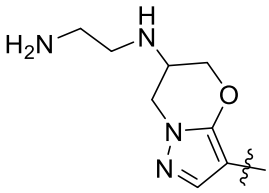
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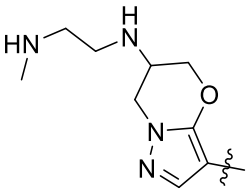
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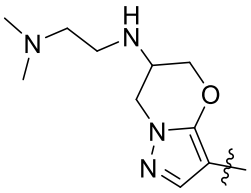
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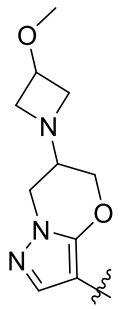
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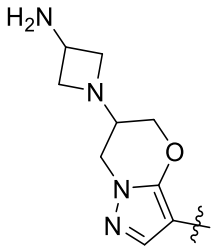
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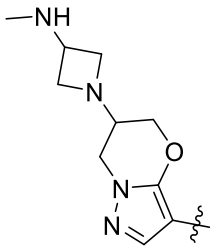
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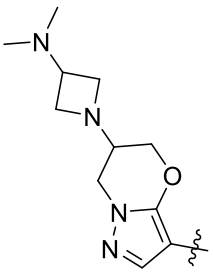
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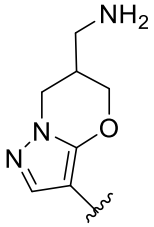
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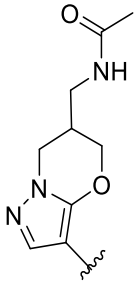
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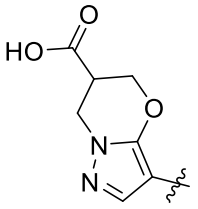
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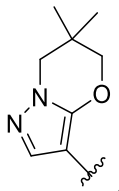
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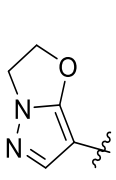
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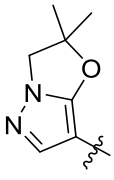
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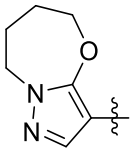
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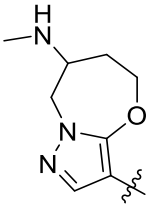
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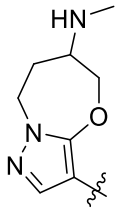
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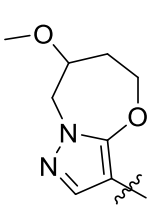
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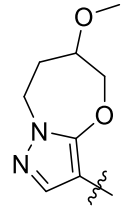
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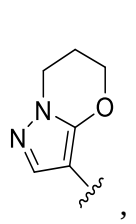
28. The compound of any one of claims 1 to 15, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^1 is selected from the group consisting of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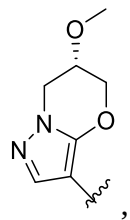
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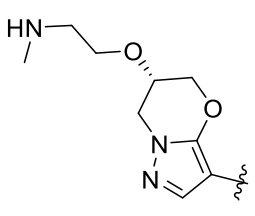
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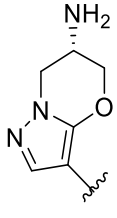
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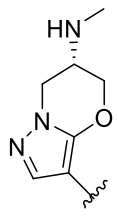
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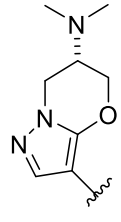
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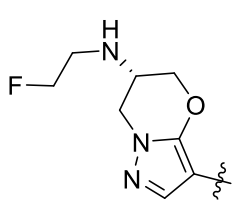
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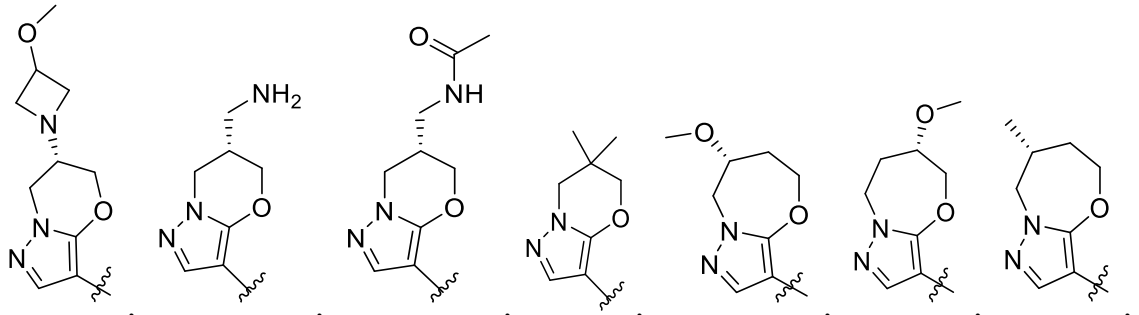
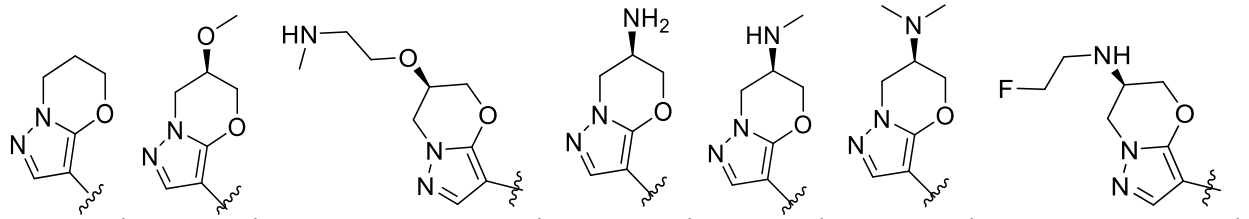
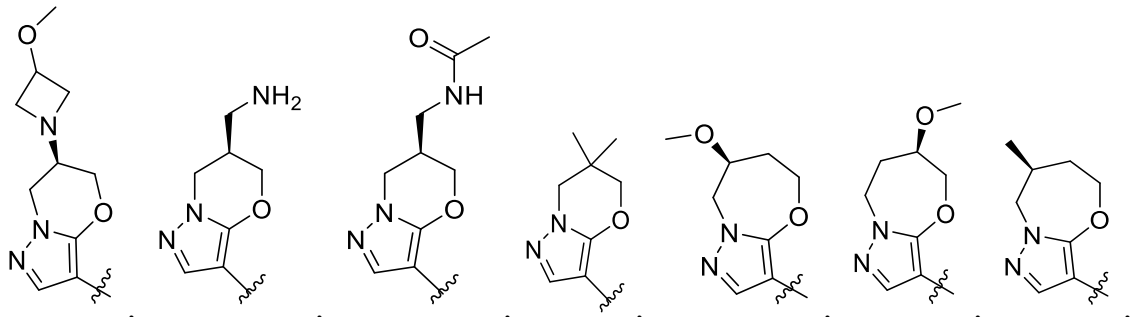

, and .

29. The compound of any one of claims 1 to 15, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein R^1 is selected from the group consisting of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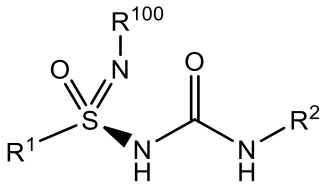
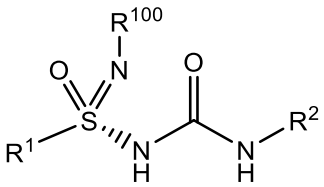
30. The compound of any one of claims 1 to 29, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein the compound is of formula:



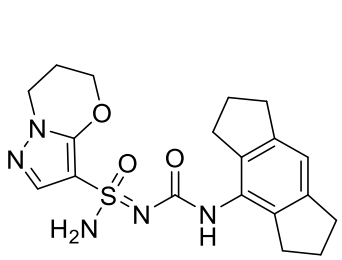
(Ia).

31. The compound of any one of claims 1 to 29, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, wherein the compound is of formula:



(Ib).

32. The compound of claim 1, wherein the compound is: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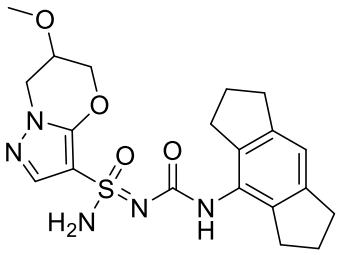
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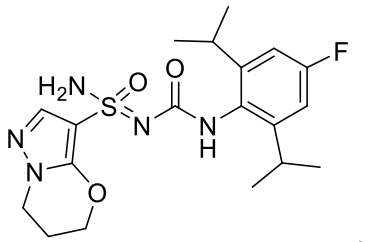
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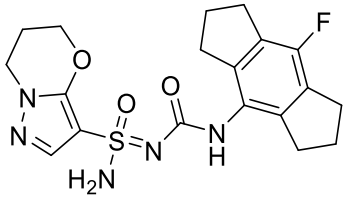
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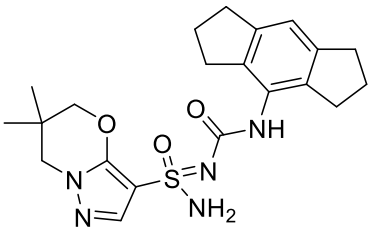
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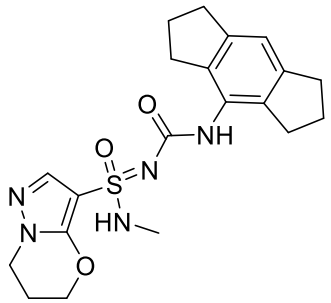
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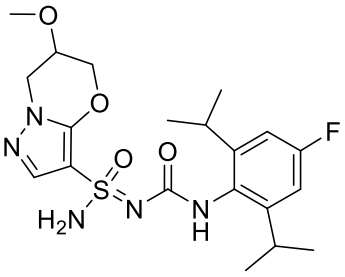
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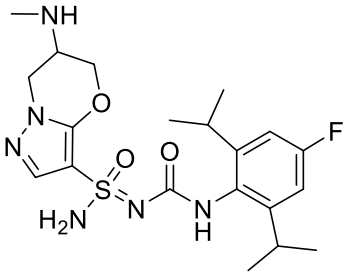
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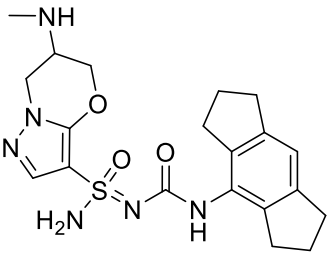
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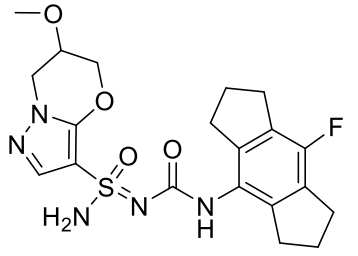
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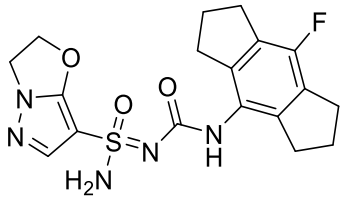
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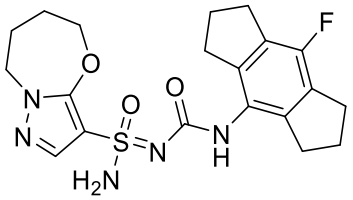
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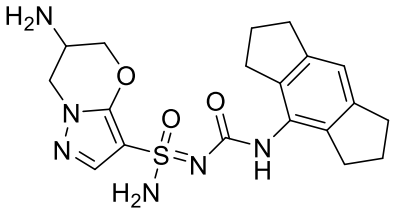
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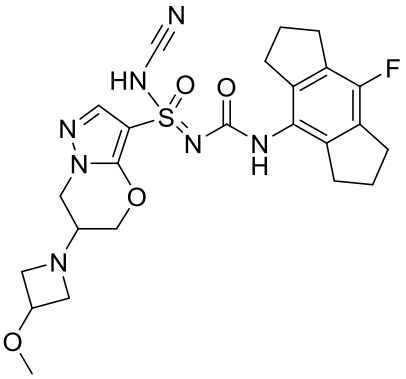
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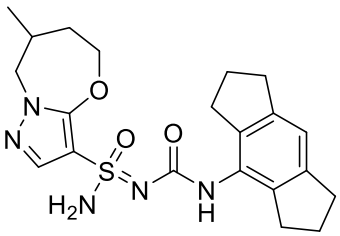
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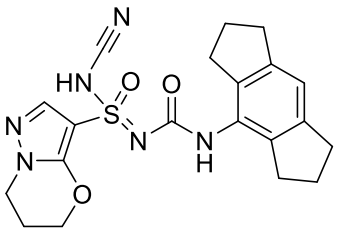
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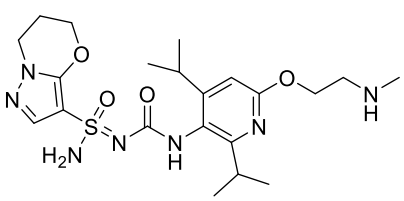
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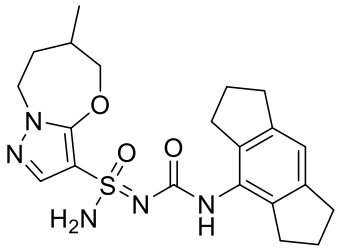
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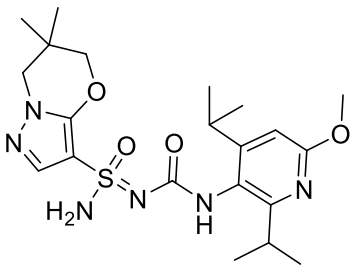
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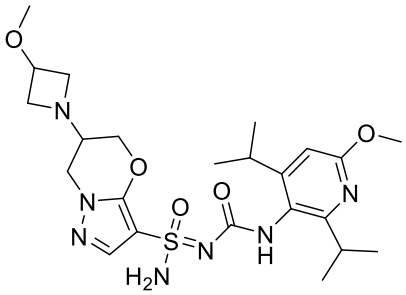
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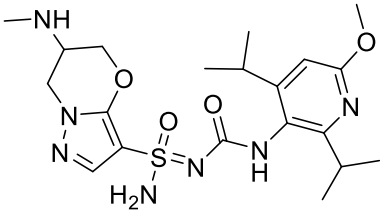
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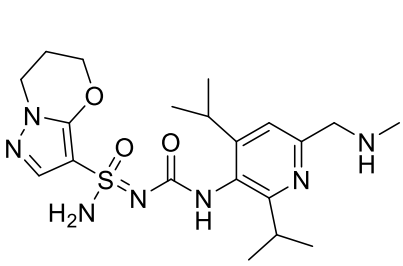
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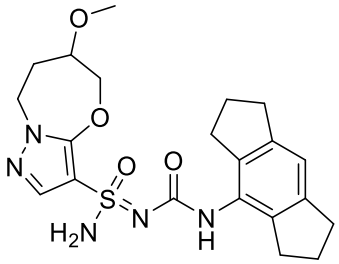
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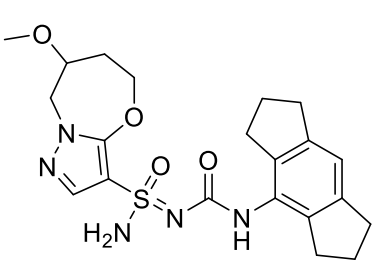
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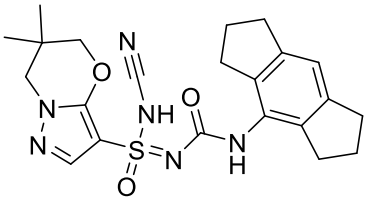
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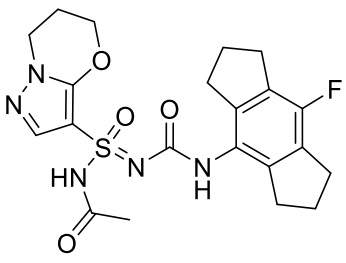
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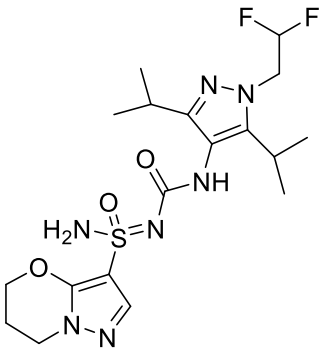
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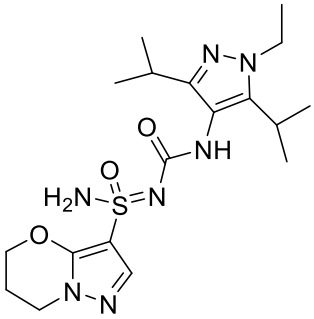
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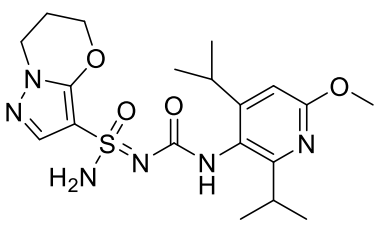
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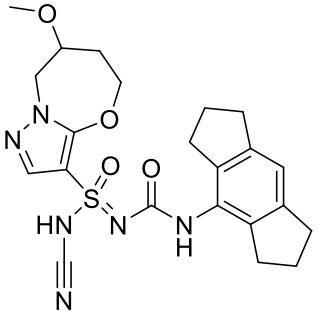
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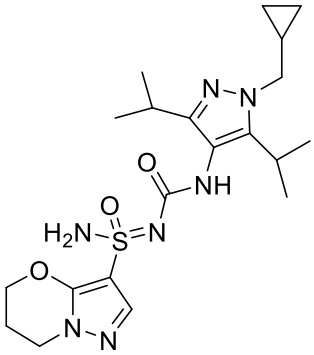
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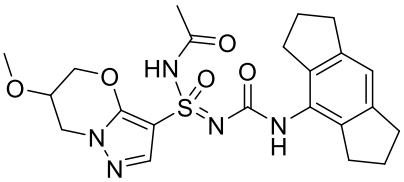
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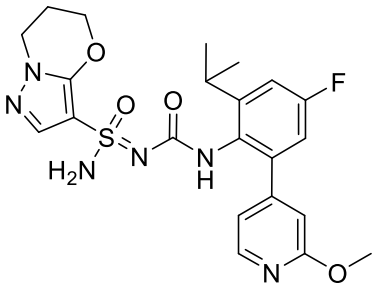
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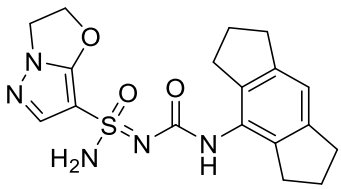
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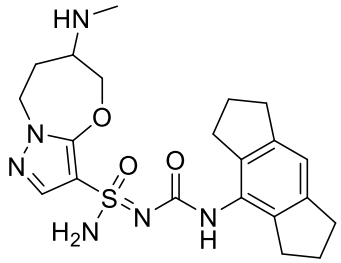
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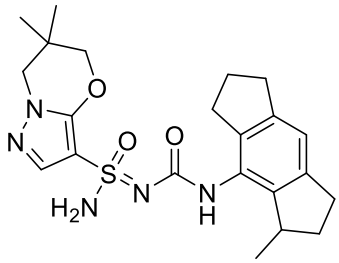
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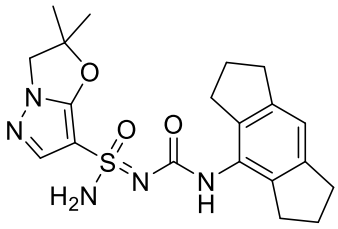
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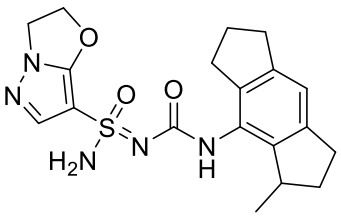
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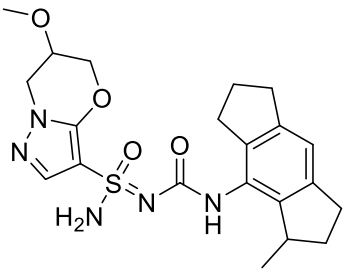
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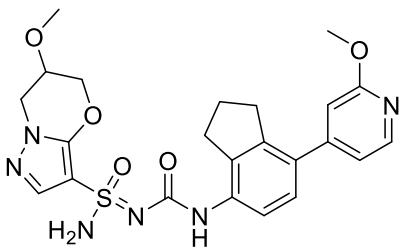
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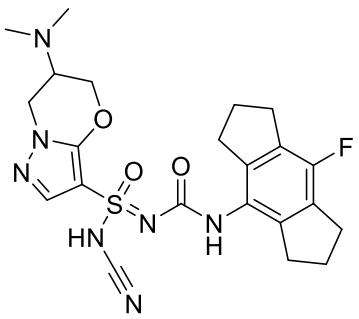
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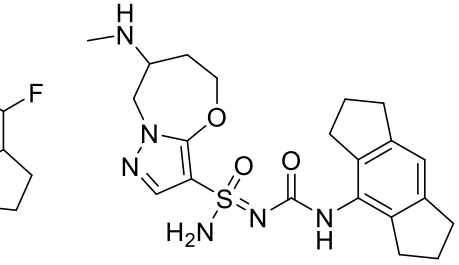
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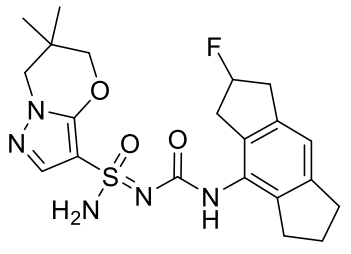
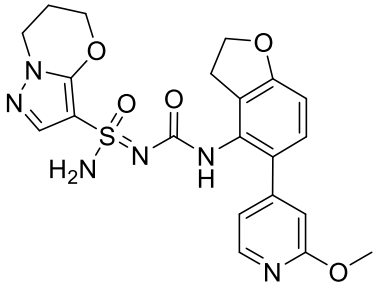
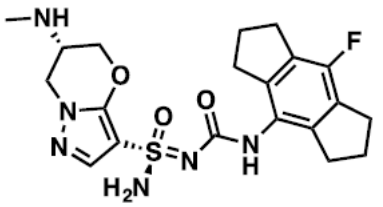
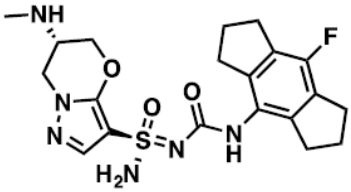
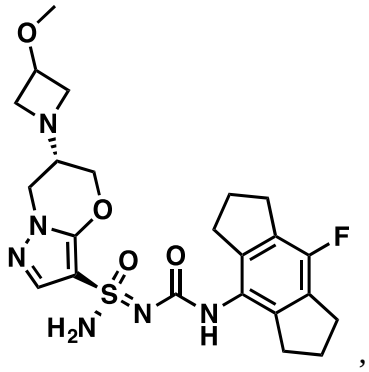
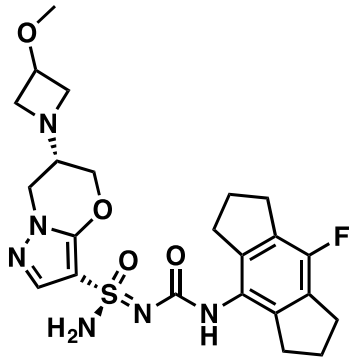
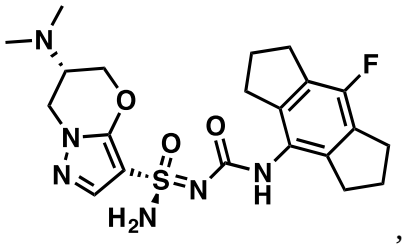
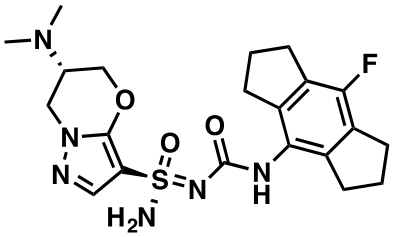
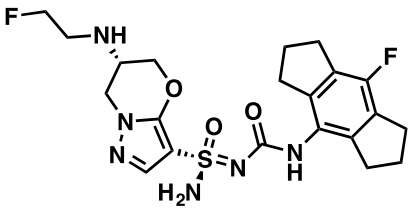
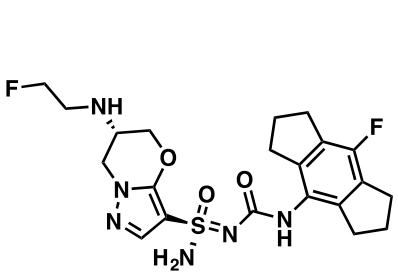
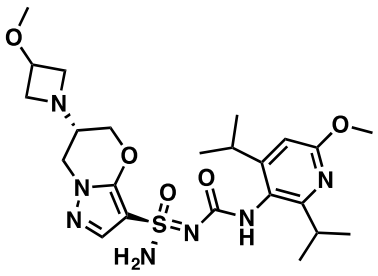
 , or  , or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof.

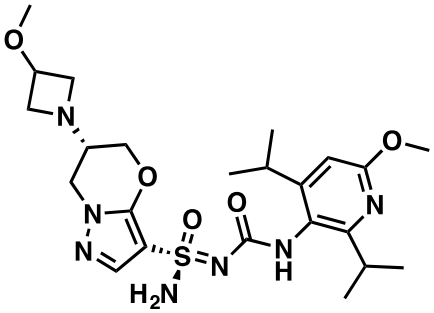
33. The compound of claim 1, wherein the compound is:

 ,  ,

 ,  ,  ,

 ,  ,

 ,  ,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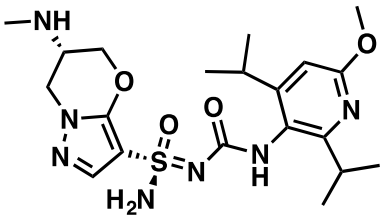
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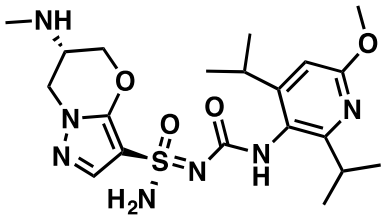
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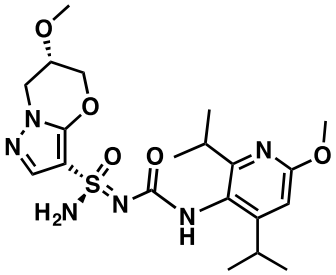
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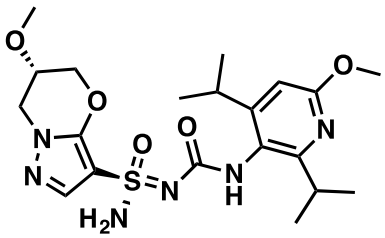
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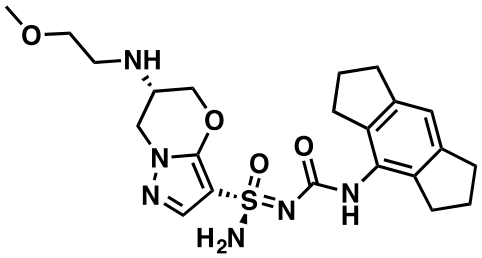
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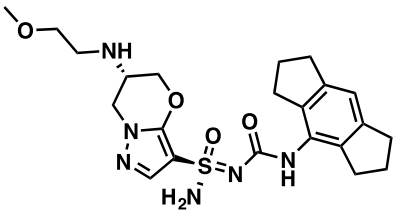
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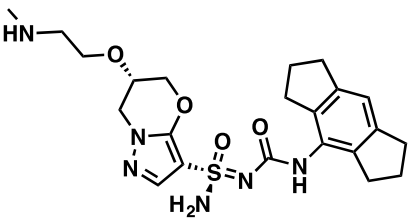
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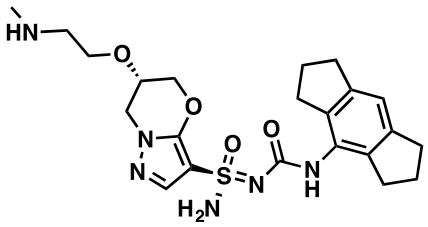
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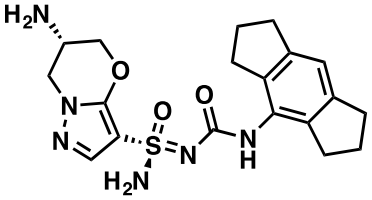
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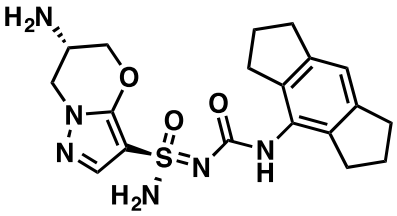
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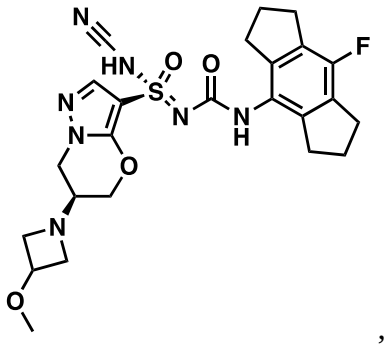
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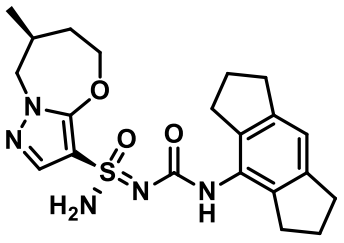
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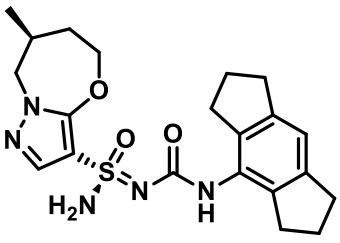
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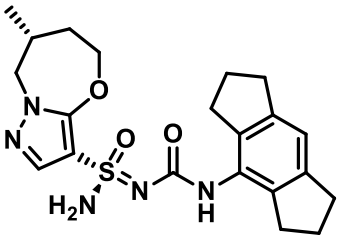
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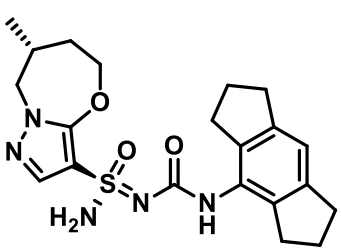
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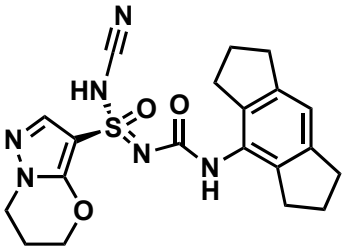
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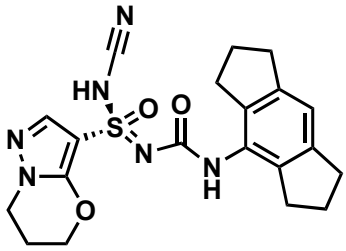
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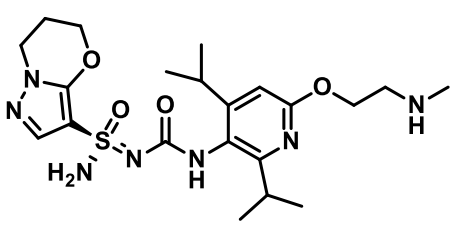
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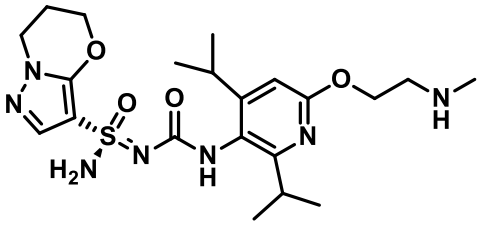
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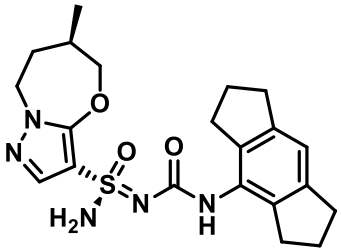
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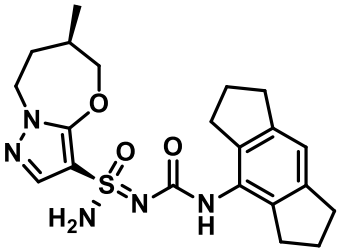
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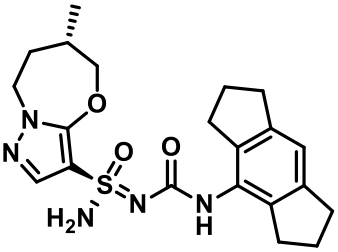
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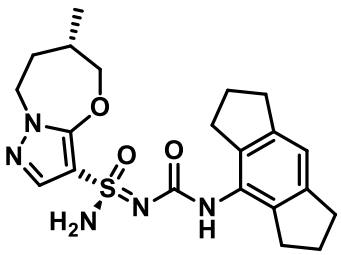
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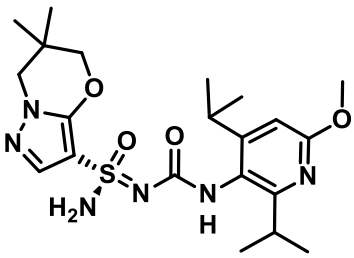
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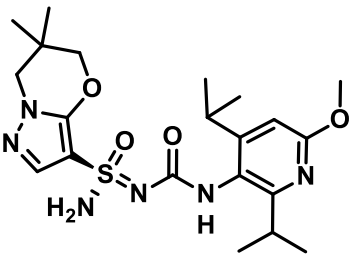
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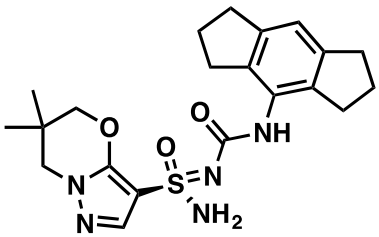
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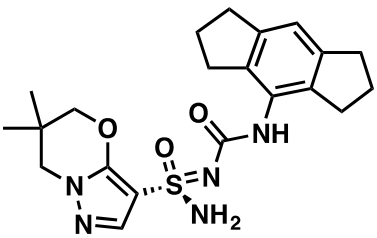
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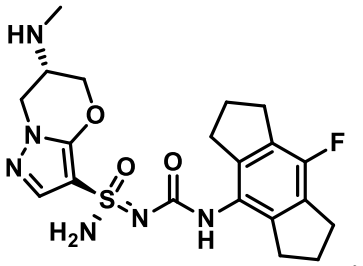
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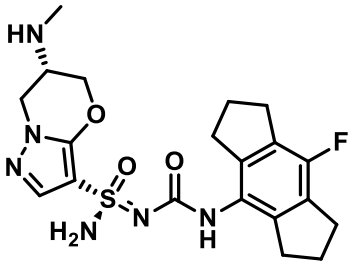
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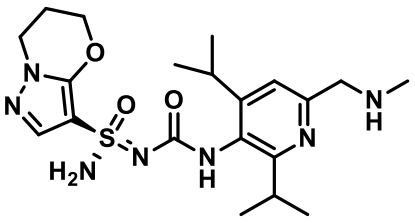
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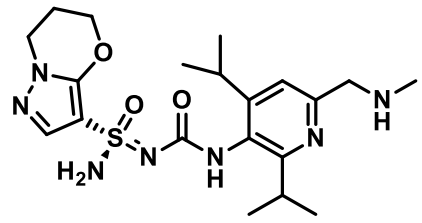
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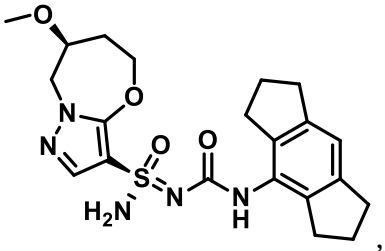
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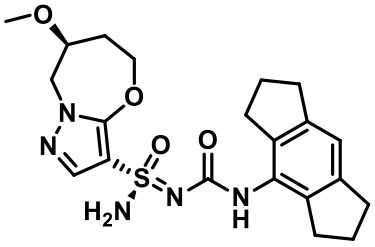
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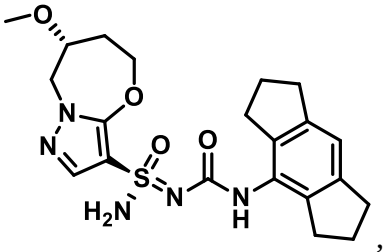
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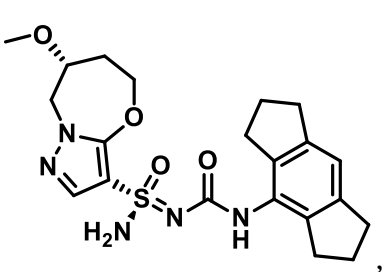
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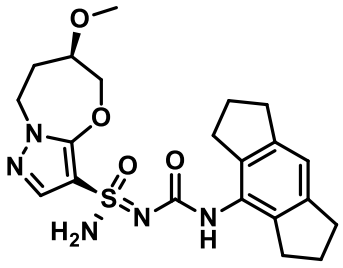
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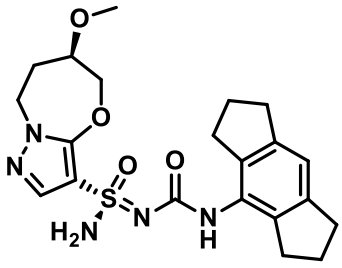
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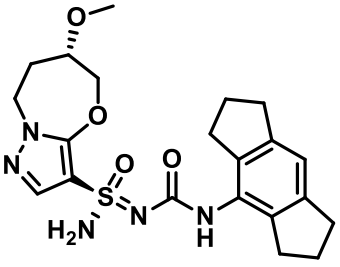
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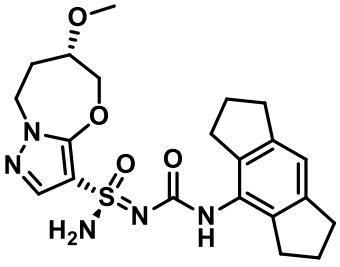
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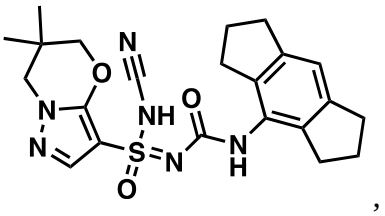
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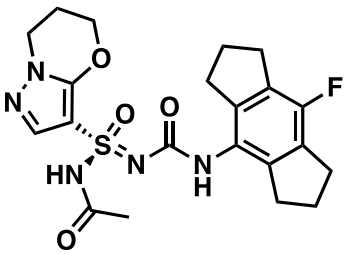
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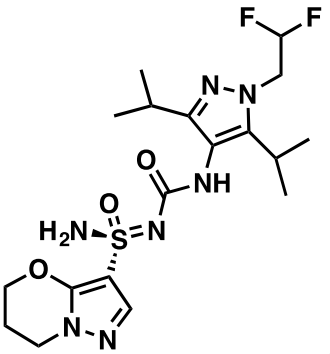
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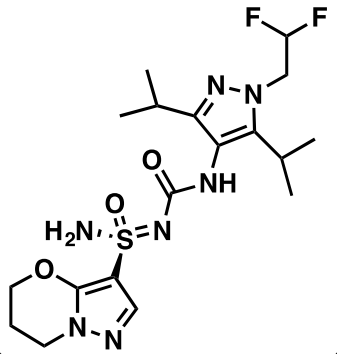
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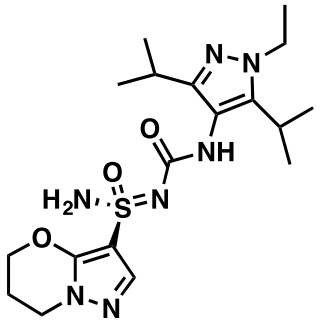
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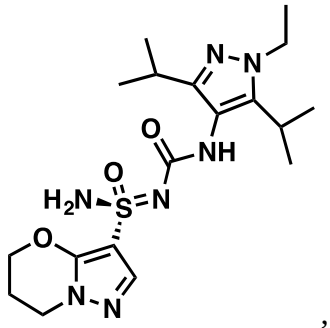
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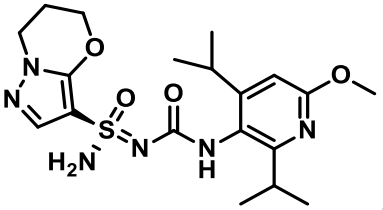
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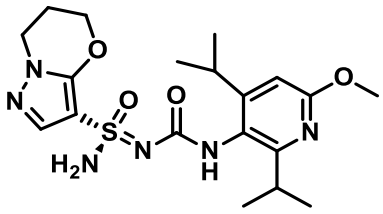
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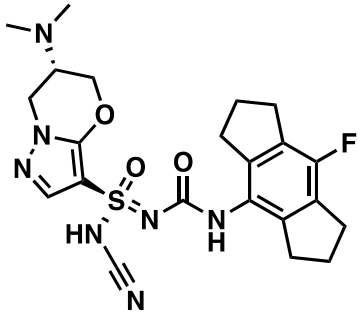
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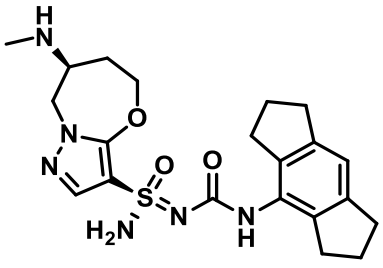
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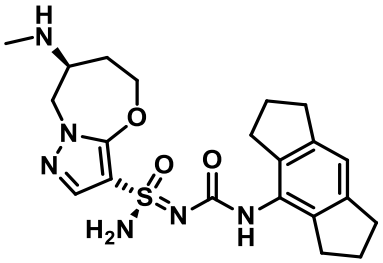
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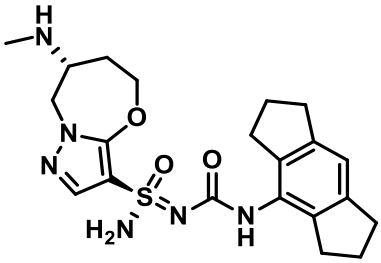
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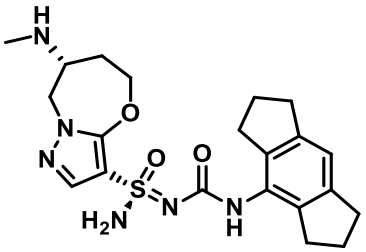
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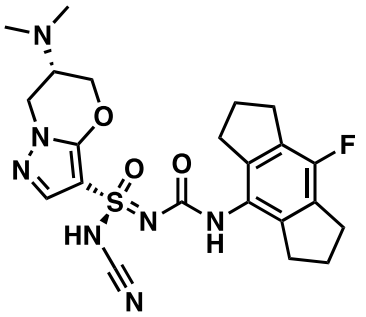
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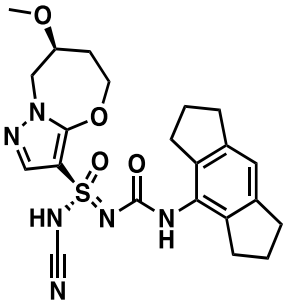
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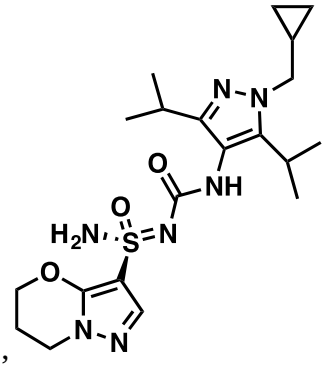
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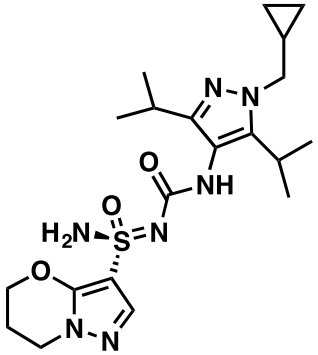
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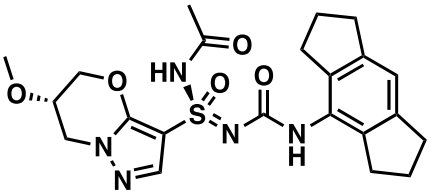
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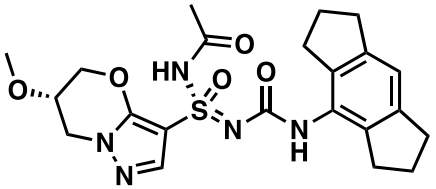
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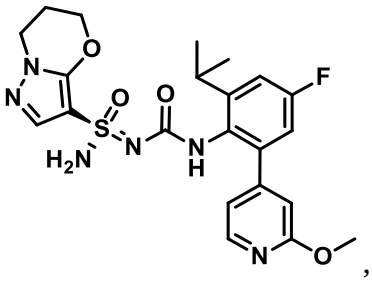
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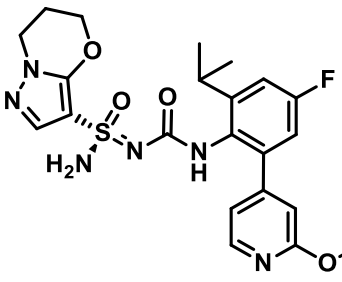
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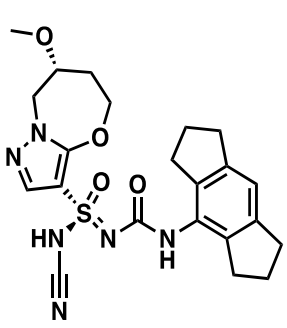
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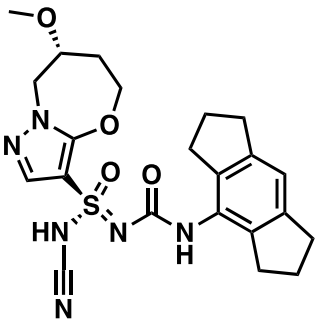
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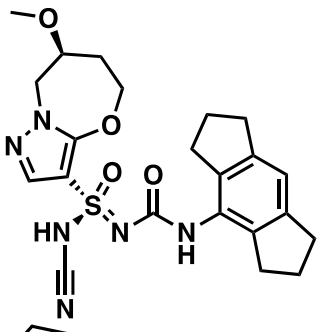
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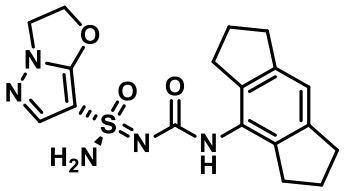
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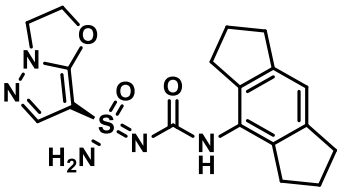
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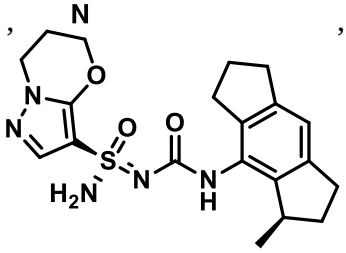
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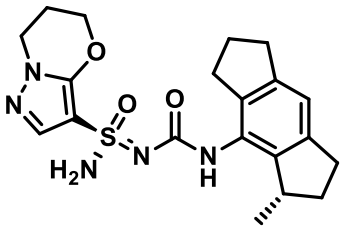
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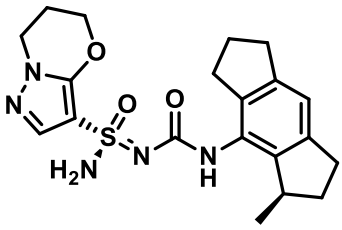
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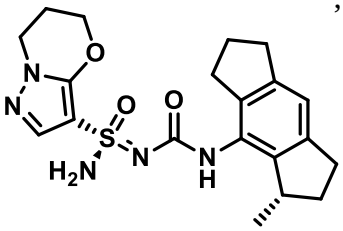
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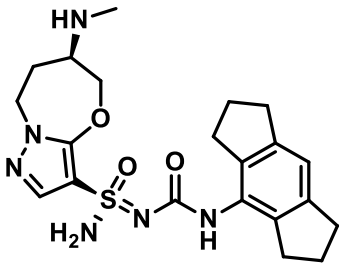
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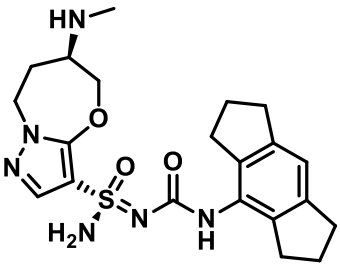
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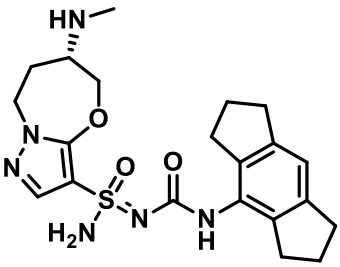
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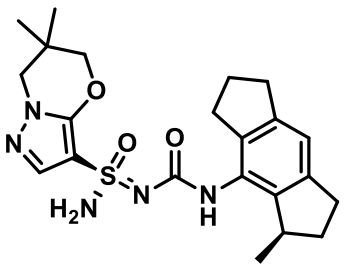
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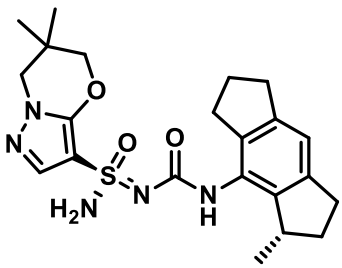
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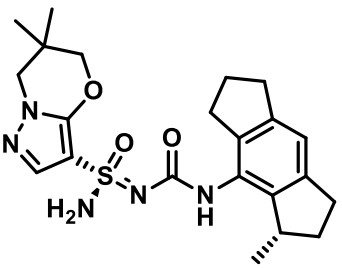
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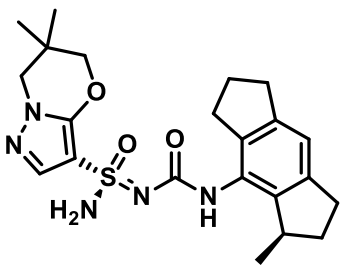
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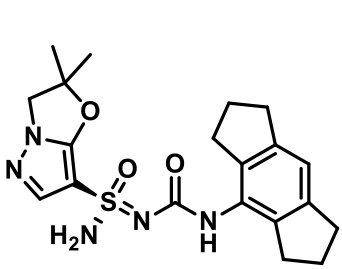
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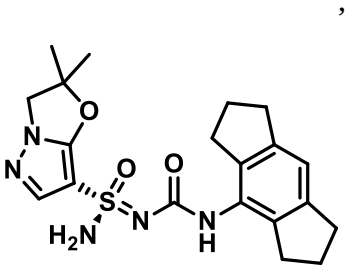
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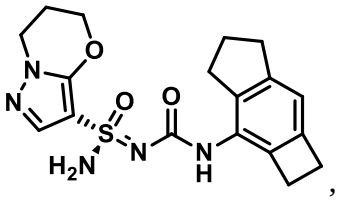
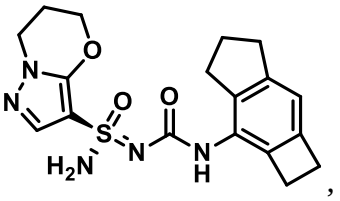
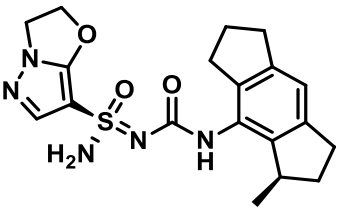
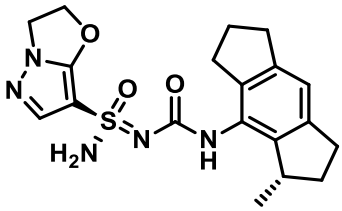
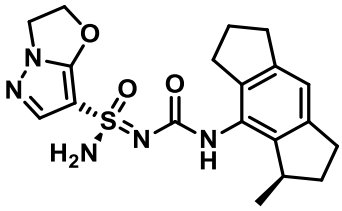
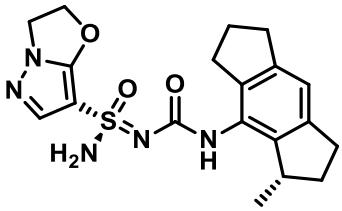
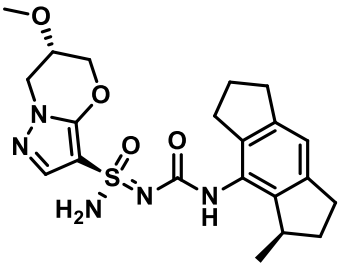
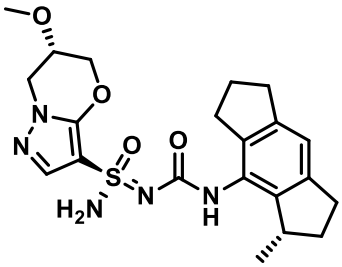
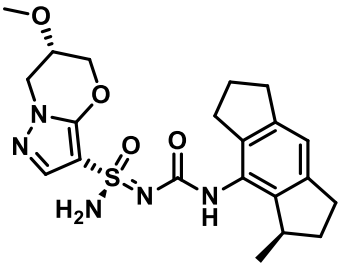
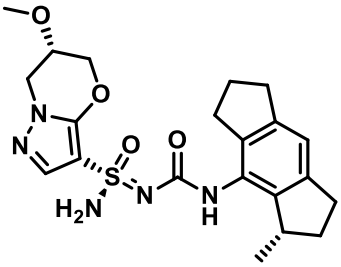
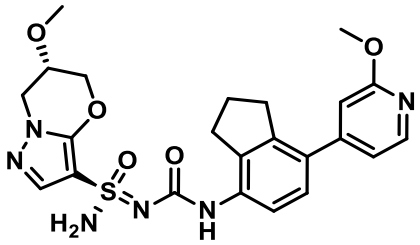
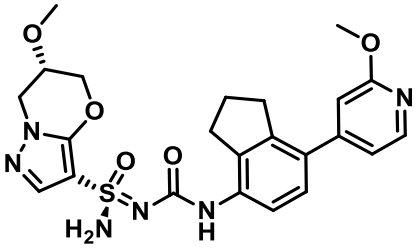
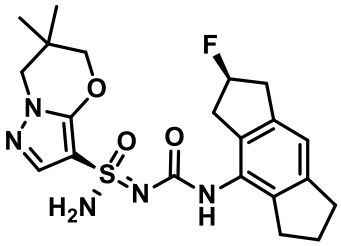
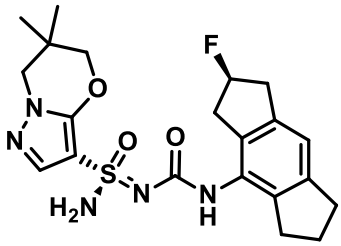
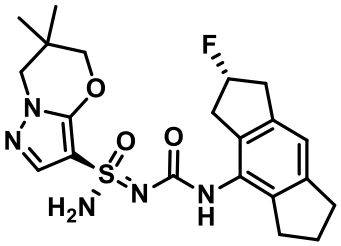
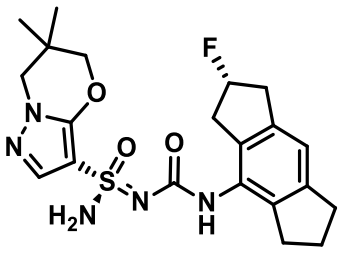
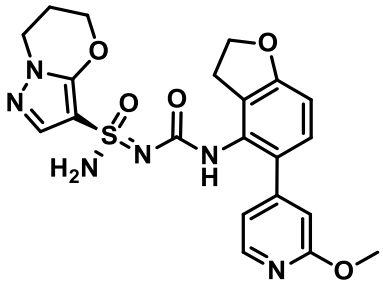
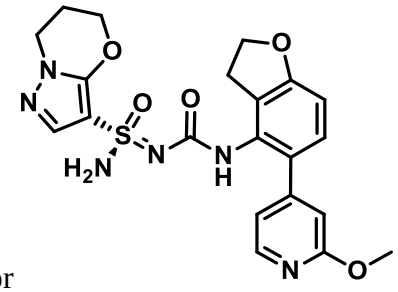
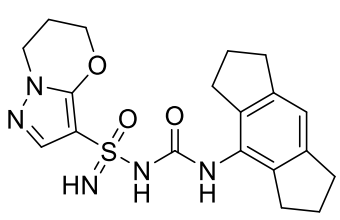
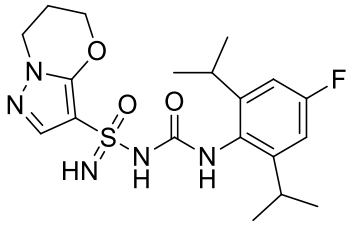
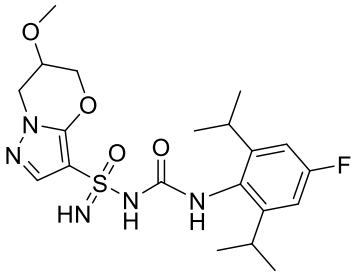
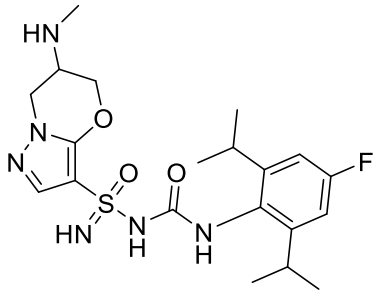
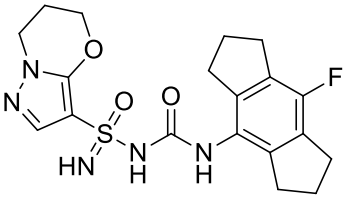
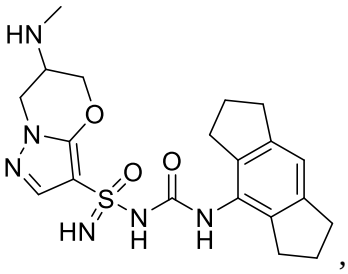
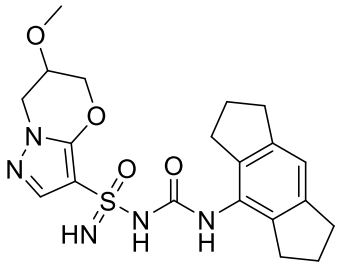
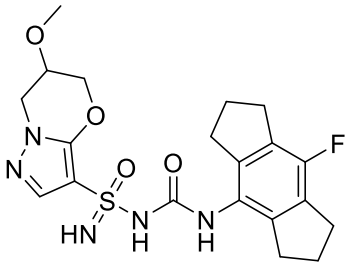
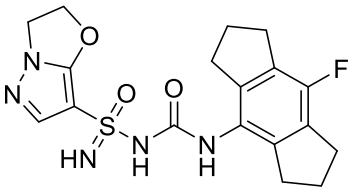
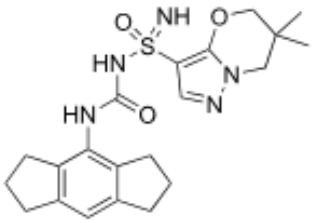
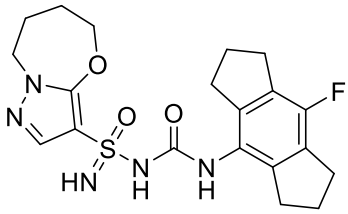
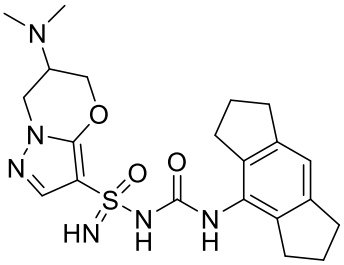
 ,  ,  ,
 ,  ,  ,
 ,  ,  ,
 ,  ,  ,
 ,  ,  ,
 ,  , or  , or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof.

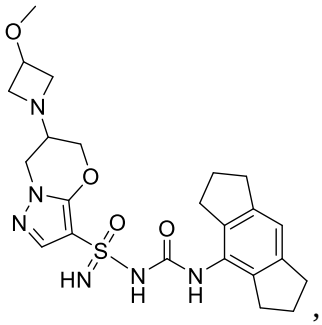
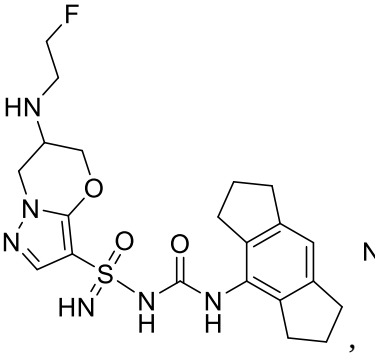
34. The compound of claim 1, wherein the compound is:

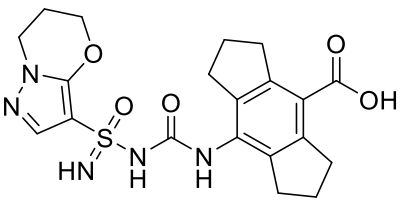
 ,  ,  ,

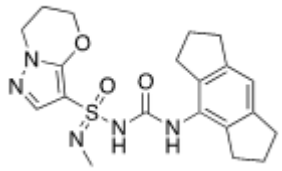
 ,  ,  ,

 ,  ,  ,

 ,  ,  ,

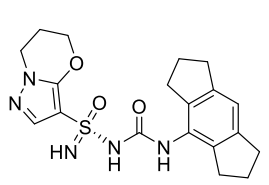
 ,  , ,

, ,  , or



, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof.

35. The compound of claim 1, wherein the compound is: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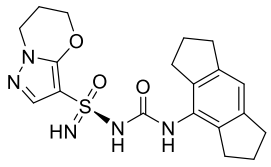
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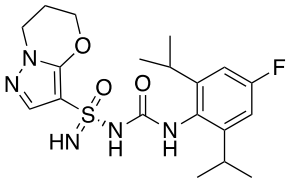
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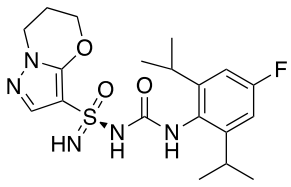
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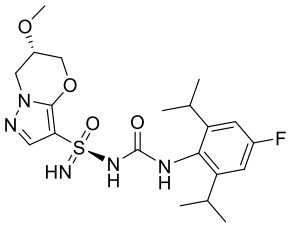
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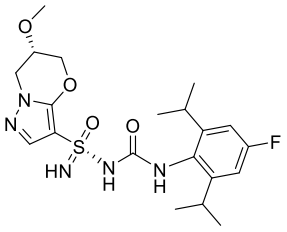
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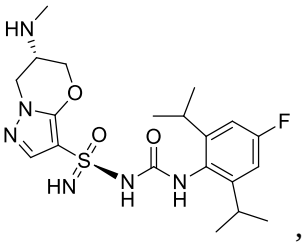
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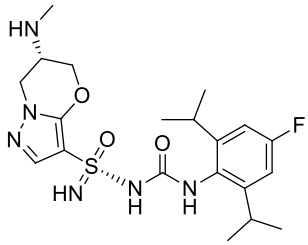
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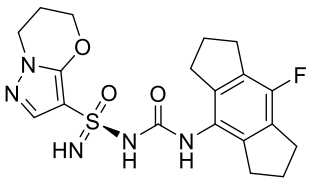
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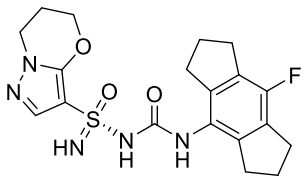
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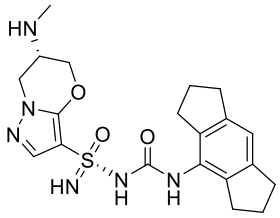
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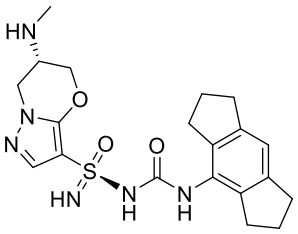
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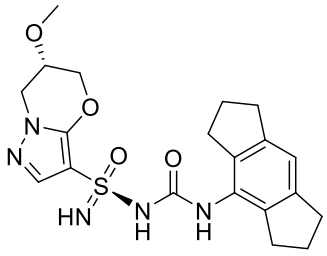
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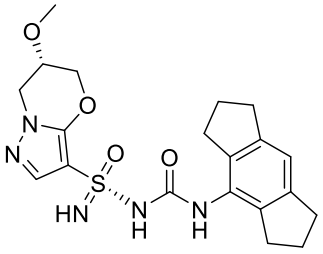
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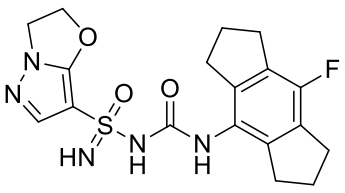
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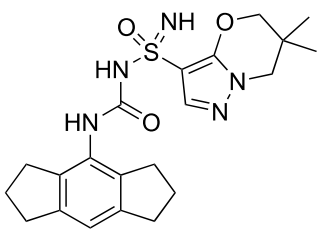
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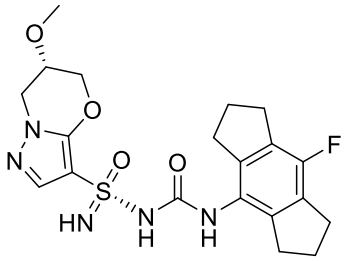
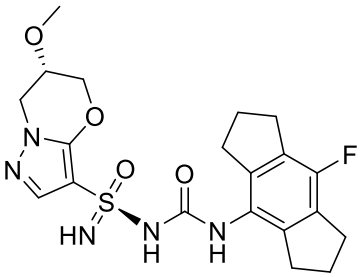
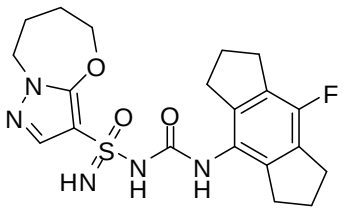
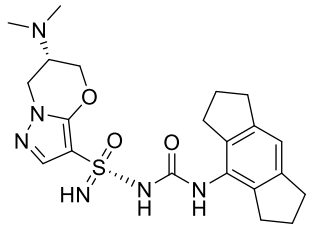
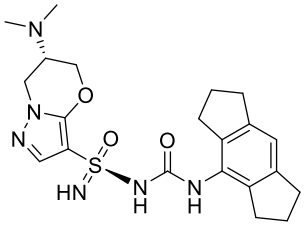
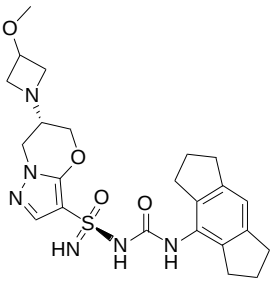
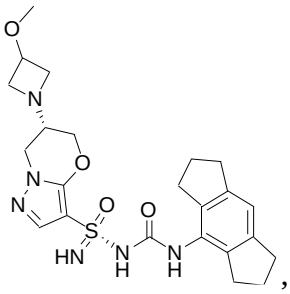
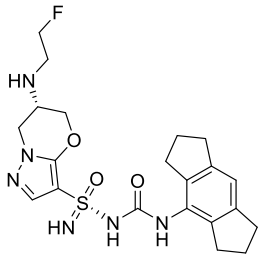
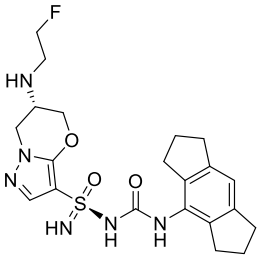
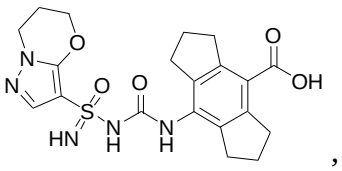
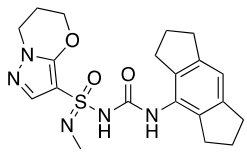
 ,  ,  ,  ,  ,  ,  ,  ,  ,  , or  , or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof.

36. A pharmaceutical composition comprising a compound of any one of claims 1 to 35, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, and a pharmaceutically acceptable carrier.

37. A compound of any one of claims 1 to 35, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, or a pharmaceutical composition of claim 36, for use as a medicament.

38. Use of a compound of any one of claims 1 to 35, or a pharmaceutically acceptable salt, solvate, isomer, or tautomer thereof, or a pharmaceutical composition of claim 36, in the manufacture of a medicament for the treatment of a disorder.

39. The use of claim 38, wherein the disorder is a disorder of an immune system, a disorder of a liver, a disorder of a lung, a disorder of a skin, a disorder of a cardiovascular system, a disorder is of a renal system, a disorder of a gastro-intestinal tract, a disorder of a respiratory system, a disorder of an endocrine system, a disorder of a central nervous system (CNS), an inflammatory disorder, an autoimmune disorder, or a cancer, tumor, or other malignancy.

40. The use of claim 38 or 39, wherein the disorder is selected from the group consisting of constitutive inflammation, the cryopyrin-associated periodic syndromes (CAPS), Muckle-Wells syndrome (MWS), familial cold autoinflammatory syndrome (FCAS), neonatal-onset multisystem inflammatory disease (NOMID), autoinflammatory diseases, familial Mediterranean fever (FMF), TNF receptor associated periodic syndrome (TRAPS), mevalonate kinase deficiency (MKD), hyperimmunoglobulinemia D, periodic fever syndrome (HIDS), deficiency of interleukin 1 receptor (DIRA) antagonist, Majeed syndrome, pyogenic arthritis, pyoderma gangrenosum and acne (PAPA), haploinsufficiency of A20 (HA20), pediatric granulomatous arthritis (PGA), PLCG2-associated antibody deficiency and immune dysregulation (PLAID), PLCG2-associated autoinflammation, antibody deficiency and immune dysregulation (APLAID), sideroblastic anemia with B-cell immunodeficiency, periodic fevers, developmental delay (SIFD), Sweet's syndrome, chronic nonbacterial osteomyelitis (CNO), chronic recurrent multifocal osteomyelitis (CRMO) and synovitis, acne, pustulosis, hyperostosis, osteitis syndrome (SAPHO), autoimmune diseases including multiple sclerosis (MS), type-1 diabetes, psoriasis, rheumatoid arthritis, Behcet's disease, Sjogren's syndrome, Schnitzler syndrome, respiratory diseases, idiopathic pulmonary fibrosis (IPF), chronic obstructive pulmonary disorder (COPD), steroid-resistant asthma, asbestosis, silicosis, cystic fibrosis, central nervous system diseases, Parkinson's disease, Alzheimer's disease, motor neuron disease, Huntington's disease, cerebral malaria, brain injury from pneumococcal meningitis, metabolic diseases, Type 2 diabetes, atherosclerosis, obesity, gout, pseudo-gout, ocular disease, disease of the ocular epithelium, age-related macular degeneration (AMD), corneal infection, uveitis, dry eye, kidney disease, chronic kidney disease, oxalate nephropathy, diabetic nephropathy, liver disease, non-alcoholic steatohepatitis, alcoholic liver disease, inflammatory reactions in skin, contact hypersensitivity, sunburn, inflammatory reactions in the joints, osteoarthritis, systemic juvenile idiopathic arthritis, adult-onset Still's disease, relapsing polychondritis, viral infections, alpha virus infection, Chikungunya virus infection, Ross River virus infection, flavivirus infection, Dengue virus infection, Zika virus infection, flu, HIV infection, hidradenitis

suppurativa (HS), cyst-causing skin diseases, cancers, lung cancer metastasis, pancreatic cancers, gastric cancers, myelodisplastic syndrome, leukemia, polymyositis, stroke, myocardial infarction, Graft versus Host Disease, hypertension, colitis, helminth infection, bacterial infection, abdominal aortic aneurism, wound healing, depression, psychological stress, pericarditis, Dressler's syndrome, ischaemia reperfusion injury, and any disease where an individual has been determined to carry a germ line or somatic non-silent mutation in NLRP3.

41. The use of claim 38 or 39, wherein the disorder is a bacterial infection, a viral infection, a fungal infection, inflammatory bowel disease, celiac disease, colitis, intestinal hyperplasia, cancer, metabolic syndrome, obesity, rheumatoid arthritis, liver disease, hepatic steatosis, fatty liver disease, liver fibrosis, non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH), lupus, lupus nephritis, cryopyrin-associated periodic syndromes (CAPS), myelodysplastic syndromes (MDS), gout, myeloproliferative neoplasms (MPN), atherosclerosis, Crohn’s disease, or inflammatory bowel disease (IBD).