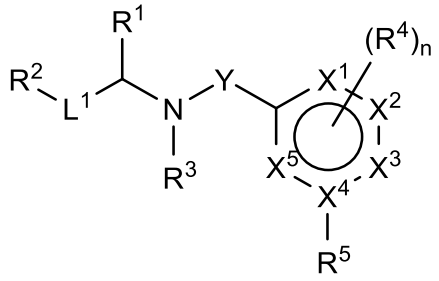
BRIEF SUMMARY OF THE DISCLOSURE

[0008a] In a first aspect of the present disclosure, there is provided a compound of formula **(I)** or pharmaceutically acceptable salt thereof:



(I)

wherein

Y is -C(O)-, -C(S)-, -C(=NR^6)-;

-L^1- is absent or a linker selected from C_1 alkylene, C_2-alkenylene, or C_2-alkynylene;

X^1 is absent or is selected from carbon and nitrogen;

X^2, X^3 and X^5 are each independently selected from carbon, nitrogen, oxygen and sulfur;

X^4 is selected from carbon and nitrogen;

wherein when X^1 is carbon or nitrogen, X^4 is carbon, X^2, X^3 and X^5 are each independently selected from carbon and nitrogen, and no more than two of X^1, X^2, X^3 and X^5 may be nitrogen ,

wherein when X^1 is absent, no more than two of X^2, X^3, X^4 and X^5 may be nitrogen and no more than one of X^2, X^3 and X^5 may be oxygen or sulfur;

R^1 is selected from the group comprising: C_1 or C_2 alkyl, C_1 or C_2 haloalkyl, and C_1 or C_2 alkylene-R^{1a}; wherein R^{1a} is selected from OR^6, SR^6, NR^{6}R^7, CO_2R^6 and CONR^{6}R^6;

R^2 is selected from phenyl, 5- or 6- membered heteroaryl, 5- or 6- membered heterocycloalkyl or C_5 or C_6 cycloalkyl, and said phenyl, heteroaryl or cycloalkyl is optionally fused to or substituted with a group selected from phenyl, 5- or 6- membered heteroaryl, 5- or 6- membered heterocycloalkyl or C_5 or C_6 cycloalkyl; wherein any said phenyl or heteroaryl group is optionally substituted with at least one R^8 group; or wherein any said heterocycloalkyl or cycloalkyl is optionally substituted with at least one R^9 group;

R^3, R^6 and R^{11} are each independently at each occurrence selected from the group comprising: H and C_1-C_6-alkyl;

R^4 is independently at each occurrence selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl;

R^5 is selected from the group comprising: -$C(O)NR^6R^{14}$, -$C(O)R^{12}$, phenyl, 5- or 6-membered heteroaryl; 5-, 6-, 7-, 8-, 9- or 10- membered heterocycloalkyl and cyclopropyl; wherein any said phenyl or heteroaryl group is optionally substituted with at least one R^8 group; or wherein any said heterocycloalkyl or cyclopropyl is optionally substituted with at least one R^9 group;

wherein when X^4 is nitrogen, R^5 is selected such that R^5 is attached to X^4 via a carbon atom;

R^7 is independently at each occurrence selected from the group comprising: H, C_1-C_6-alkyl, $C(O)$-C_1-C_6-alkyl and $S(O)_2$-C_1-C_6-alkyl;

R^8 is independently at each occurrence selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^{10}$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, 5-, 6-, 7-, 8-, 9- or 10- membered heterocycloalkyl, phenyl and 5- or 6-membered heteroaryl; wherein where R^8 is heterocycloalkyl, phenyl or heteroaryl, R^8 is optionally substituted where chemically possible with one or more R^{8c} groups;

R^{8c} is independently selected at each occurrence from: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, C_1-C_6-alkylene-NR^6R^{10}, -OR^{10}, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$;

R^9 is independently at each occurrence selected from the group comprising: =O, =S, halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, -OR^{10}, cyano, nitro, -NR^6R^7, -$NR^{11}R^{12}$, -SR^{10}, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^{10}$, C_{3-6} cycloalkyl, 4-, 5- or 6-membered heterocycloalkyl, C_{2-6}-alkenyl C_{2-6}-alkynyl and C_1-C_3-alkylene-R^{9a}; wherein R^{9a} is selected from OR^6, SR^6, $S(O)_2R^6$, $S(O)_2NR^6R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6, $CONR^6R^6$, 4-, 5- or 6- membered heterocycloalkyl, and cyclopropyl;

R^{10} is independently selected at each occurrence from the group comprising: H, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10a}, C_{3-8} cycloalkyl, 4-, 5-, 6-, 7- or 8- membered heterocycloalkyl, phenyl and 5- or 6- membered heteroaryl; wherein R^{10a} is independently selected at each occurrence from C_{3-8} cycloalkyl, OR^6, SR^6, $S(O)_2R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6, $CONR^6R^6$, phenyl, 5- or 6- membered heteroaryl, and 5- or 6-membered heterocycloalkyl;

R^{12} is 6-membered heterocycloalkyl; wherein said heterocycloalkyl is optionally substituted with at least one R^{13} group;

R^{13} is independently at each occurrence selected from: =O, =S, halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, -OR^6, cyano, nitro, -NR^6R^7, -SR^6, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^6$, -$S(O)_2R^6$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl and C_1-C_3-alkylene-R^{13a}; wherein R^{13a} is selected from OR^6, SR^6, $S(O)_2R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6 and $CONR^6R^6$;

R^{14} is selected from H and C_1-C_3-alkylene-R^{14a}; wherein R^{14a} is selected from OR^6, SR^6, $S(O)_2R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6 and $CONR^6R^6$; and

n is an integer selected from 0, 1, 2, 3 or 4;

wherein any aforementioned alkyl, alkenyl, alkynyl, haloalkyl, cycloalkyl, heterocycloalkyl, phenyl, heteroaryl, alkylene, alkenylene, alkynylene, C(O)-alkyl and $S(O)_2$-alkyl is optionally substituted, where chemically possible, by 1 to 4 substituents which are each independently selected at each occurrence from the group consisting of: =O; $=NR^a$, $=NOR^a$, C_1-C_4-alkyl, halo, nitro, cyano, C_1-C_4-haloalkyl, C_2-C_4-alkenyl, C_2-C_4-alkynyl, NR^aR^b, $S(O)_2R^a$, $S(O)R^a$, $S(O)(NR^a)R^a$, $S(O)_2NR^aR^a$, CO_2R^a, $C(O)R^a$, $CONR^aR^a$, OR^a and SR^a;

wherein R^a is independently selected from H and C_1-C_4-alkyl; and R^b is independently selected from H, C_1-C_4-alkyl, C(O)-C_1-C_4-alkyl and $S(O)_2$-C_1-C_4-alkyl.

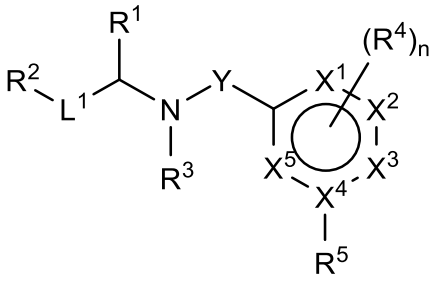
[0008b] In another aspect of the present disclosure, there is provided a pharmaceutical composition comprising a compound as disclosed herein, or a pharmaceutically acceptable salt thereof, in association with one or more pharmaceutically acceptable excipients.

[0008c] In yet another aspect of the present disclosure, there is provided a use of a compound as disclosed herein, or the composition as disclosed herein, in the manufacture of a medicament for the inhibition of PLpro activity.

[0008d] In a further aspect of the present disclosure, there is provided a use of a compound as disclosed herein, a pharmaceutically acceptable salt thereof, or a composition as disclosed herein, in the manufacture of a medicament for the treatment of a viral infection.

[0008e] In another aspect of the present disclosure, there is provided a compound as disclosed herein, a pharmaceutically acceptable salt thereof, or a composition as disclosed herein, for use in therapy.

[0009] In a first example of the present disclosure is provided a compound of formula **(I)** or pharmaceutically acceptable salt thereof:



(I)

wherein

Y is -C(O)-, -C(S)-, -C(=NR^6)-;

-L^1- is absent or a linker selected from C_1 alkylene, C_2-alkenylene, or C_2-alkynylene;

X^1 is absent or is selected from carbon and nitrogen;

X^2, X^3 and X^5 are each independently selected from carbon, nitrogen, oxygen and sulfur;

X^4 is selected from carbon and nitrogen;

wherein when X^1 is carbon or nitrogen, X^4 is carbon, X^2, X^3 and X^5 are each independently selected from carbon and nitrogen, and no more than two of X^1, X^2, X^3 and X^5 may be nitrogen ,

wherein when X^1 is absent, no more than two of X^2, X^3, X^4 and X^5 may be nitrogen and no more than one of X^2, X^3 and X^5 may be oxygen or sulfur;

R^1 is selected from the group comprising: C_1 or C_2 alkyl, C_1 or C_2 haloalkyl, and C_1 or C_2 alkylene-R^{1a}; wherein R^{1a} is selected from OR^6, SR^6, NR^{6}R^7, CO_2R^6 and CONR^{6}R^6;

R^2 is selected from phenyl, 5- or 6- membered heteroaryl, 5- or 6- membered heterocycloalkyl or C_5 or C_6 cycloalkyl, and said phenyl, heteroaryl or cycloalkyl is optionally fused to or substituted with a group selected from phenyl, 5- or 6- membered heteroaryl, 5- or 6- membered heterocycloalkyl or C_5 or C_6 cycloalkyl; wherein any said phenyl or heteroaryl group is optionally substituted with at least one R^8 group; or wherein any said heterocycloalkyl or cycloalkyl is optionally substituted with at least one R^9 group;

R^3, R^6 and R^{11} are each independently at each occurrence selected from the group comprising: H and C_1-C_6-alkyl;

R^{10a} is independently selected at each occurrence from C_{3-8} cycloalkyl, OR^6, SR^6, $S(O)_2R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6, $CONR^6R^6$, phenyl, 5- or 6- membered heteroaryl, and 5- or 6- membered heterocycloalkyl;

R^{12} is 6-membered heterocycloalkyl; wherein said heterocycloalkyl is optionally substituted with at least one R^{13} group;

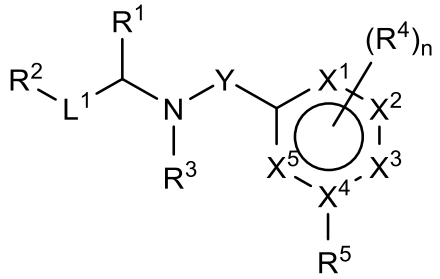
R^{13} is independently at each occurrence selected from: =O, =S, halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, -OR^6, cyano, nitro, -NR^6R^7, -SR^6, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^6$, -$S(O)_2R^6$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl and C_1-C_3-alkylene-R^{13a}; wherein R^{13a} is selected from OR^6, SR^6, $S(O)_2R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6 and $CONR^6R^6$;

R^{14} is selected from H and C_1-C_3-alkylene-R^{14a}; wherein R^{14a} is selected from OR^6, SR^6, $S(O)_2R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6 and $CONR^6R^6$; and

n is an integer selected from 0, 1, 2, 3 or 4;

wherein any aforementioned alkyl, alkenyl, alkynyl, haloalkyl, cycloalkyl, heterocycloalkyl, phenyl, heteroaryl, alkylene, alkenylene, alkynylene, C(O)-alkyl and $S(O)_2$-alkyl is optionally substituted, where chemically possible, by 1 to 4 substituents which are each independently selected at each occurrence from the group consisting of: =O; $=NR^a$, $=NOR^a$, C_1-C_4-alkyl, halo, nitro, cyano, C_1-C_4-haloalkyl, C_2-C_4-alkenyl, C_2-C_4-alkynyl, NR^aR^b, $S(O)_2R^a$, $S(O)R^a$, $S(O)(NR^a)R^a$, $S(O)_2NR^aR^a$, CO_2R^a, $C(O)R^a$, $CONR^aR^a$, OR^a and SR^a;
wherein R^a is independently selected from H and C_1-C_4-alkyl; and R^b is independently selected from H, C_1-C_4-alkyl, C(O)-C_1-C_4-alkyl and $S(O)_2$-C_1-C_4-alkyl.

[0010] In an example of the first example, there is provided a compound of formula **(Ia)** or pharmaceutically acceptable salt thereof:



(Ia)

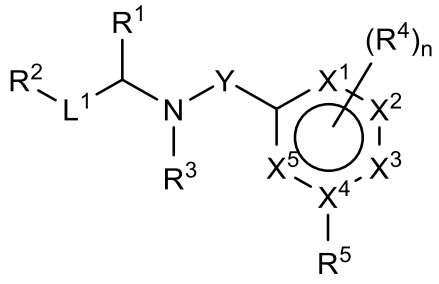
wherein

Y is -C(O)-, -C(S)-, -C(=NR^6)-;

wherein any aforementioned alkyl, alkenyl, alkynyl, haloalkyl, cycloalkyl, heterocycloalkyl, phenyl, heteroaryl, alkylene, alkenylene, alkynylene, C(O)-alkyl and $S(O)_2$-alkyl is optionally substituted, where chemically possible, by 1 to 4 substituents which are each independently selected at each occurrence from the group consisting of: =O; $=NR^a$, $=NOR^a$, C_1-C_4-alkyl, halo, nitro, cyano, C_1-C_4-haloalkyl, C_2-C_4-alkenyl, C_2-C_4-alkynyl, NR^aR^b, $S(O)_2R^a$, $S(O)R^a$, $S(O)(NR^a)R^a$, $S(O)_2NR^aR^a$, CO_2R^a, $C(O)R^a$, $CONR^aR^a$, OR^a and SR^a;

wherein R^a is independently selected from H and C_1-C_4-alkyl; and R^b is independently selected from H, C_1-C_4-alkyl, C(O)-C_1-C_4-alkyl and $S(O)_2$-C_1-C_4-alkyl.

[0011] In an example of the first example, there is provided a compound of formula **(Ia)** or pharmaceutically acceptable salt thereof:



(Ib)

wherein

Y is -C(O)-, -C(S)-, $-C(=NR^6)$-;

$-L^1-$ is absent or a linker selected from C_1 alkylene, C_2-alkenylene, or C_2-alkynylene;

X^1 is absent or is selected from carbon and nitrogen;

X^2, X^3 and X^5 are each independently selected from carbon, nitrogen, oxygen and sulfur;

X^4 is selected from carbon and nitrogen;

wherein when X^1 is carbon or nitrogen, X^4 is carbon, X^2, X^3 and X^5 are each independently selected from carbon and nitrogen, and no more than two of X^1, X^2, X^3 and X^5 may be nitrogen ,

wherein when X^1 is absent, no more than two of X^2, X^3, X^4 and X^5 may be nitrogen and no more than one of X^2, X^3 and X^5 may be oxygen or sulfur;

R^1 is selected from the group comprising: C_1 or C_2 alkyl, C_1 or C_2 haloalkyl, and C_1 or C_2 alkylene-R^{1a}; wherein R^{1a} is selected from OR^6, SR^6, NR^6R^7, CO_2R^6 and $CONR^6R^6$;

R^{12} is 6-membered heterocycloalkyl; wherein said heterocycloalkyl is optionally substituted with at least one R^{13} group;

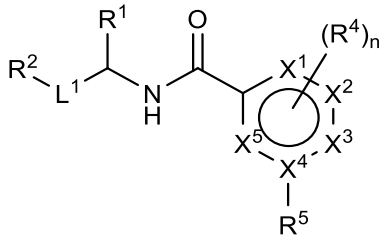
R^{13} is independently at each occurrence selected from: =O, =S, halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, -OR^6, cyano, nitro, -NR^6R^7, -SR^6, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^6$, -$S(O)_2R^6$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl and C_1-C_3-alkylene-R^{13a}; wherein R^{13a} is selected from OR^6, SR^6, $S(O)_2R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6 and $CONR^6R^6$;

R^{14} is selected from H and C_1-C_3-alkylene-R^{14a}; wherein R^{14a} is selected from OR^6, SR^6, $S(O)_2R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6 and $CONR^6R^6$; and

n is an integer selected from 0, 1, 2, 3 or 4;

wherein any aforementioned alkyl, alkenyl, alkynyl, haloalkyl, cycloalkyl, heterocycloalkyl, phenyl, heteroaryl, alkylene, alkenylene, alkynylene, C(O)-alkyl and $S(O)_2$-alkyl is optionally substituted, where chemically possible, by 1 to 4 substituents which are each independently selected at each occurrence from the group consisting of: =O; $=NR^a$, $=NOR^a$, C_1-C_4-alkyl, halo, nitro, cyano, C_1-C_4-haloalkyl, C_2-C_4-alkenyl, C_2-C_4-alkynyl, NR^aR^b, $S(O)_2R^a$, $S(O)R^a$, $S(O)(NR^a)R^a$, $S(O)_2NR^aR^a$, CO_2R^a, $C(O)R^a$, $CONR^aR^a$, OR^a and SR^a; wherein R^a is independently selected from H and C_1-C_4-alkyl; and R^b is independently selected from H, C_1-C_4-alkyl, C(O)-C_1-C_4-alkyl and $S(O)_2$-C_1-C_4-alkyl.

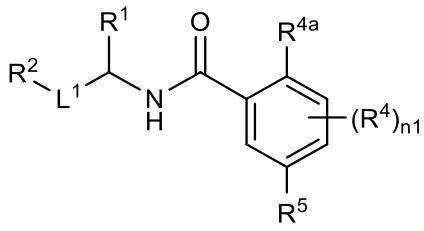
[0012] In certain examples, the compound of formula **(I),** formula **(Ia)** or formula **(Ib)** is a compound of formula **(II)**:



(II)

wherein L^1, X^1, X^2, X^3, X^4, X^5, R^1, R^2, R^4, R^5 and n are as described above for formula **(I)**, formula **(Ia)** or formula **(Ib)**.

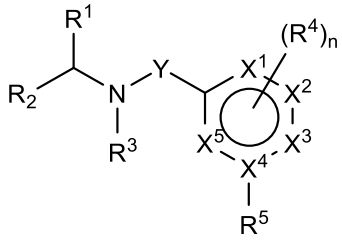
[0013] In certain examples, the compound of formula **(I),** formula **(Ia)** or formula **(Ib)** is a compound of formula **(III)**:



(III)

wherein L^1, R^1, R^2, R^4 and R^5 are as described above for formula **(I)** formula **(Ia),** or formula **(Ib)** and wherein R^{4a} is independently selected from from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl; and n1 is an integer selected from 0, 1, 2 or 3.

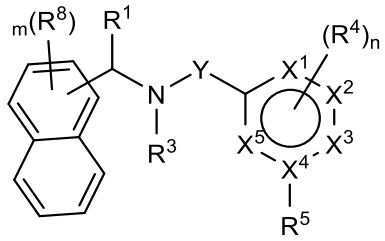
[0014] In certain examples, the compound of formula **(I),** formula **(Ia)** or formula **(Ib)** is a compound of formula **(IV)**:



(IV)

wherein Y, X^1, X^2, X^3, X^4, X^5, R^1, R^2, R^3, R^4, R^5 and n are as described above for formula **(I),** formula **(Ia)** or formula **(Ib)**.

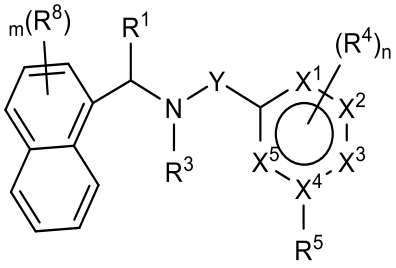
[0015] In certain examples, the compound of formula **(I),** formula **(Ia)** or formula **(Ib)** is a compound of formula **(V)**:



(V)

wherein Y, X^1, X^2, X^3, X^4, X^5, R^1, R^3, R^4, R^5, R^8 and n are as described above for formula **(I),** formula **(Ia)** or formula **(Ib)**; and wherein m is an integer independently selected from 0, 1, 2, 3, 4, 5, 6, and 7.

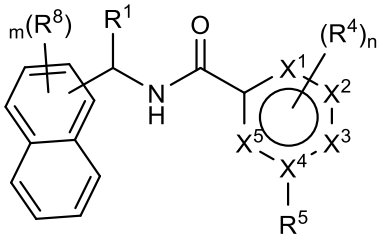
[0016] In certain examples, the compound of formula **(I),** formula **(Ia)** or formula **(Ib)** is a compound of formula **(VI)**:



(VI)

wherein Y, X^1, X^2, X^3, X^4, X^5, R^1, R^3, R^4, R^5, R^8 and n are as described above for formula **(I),** formula **(Ia)** or formula **(Ib)**; and wherein m is an integer independently selected from 0, 1, 2, 3, 4, 5, 6, and 7.

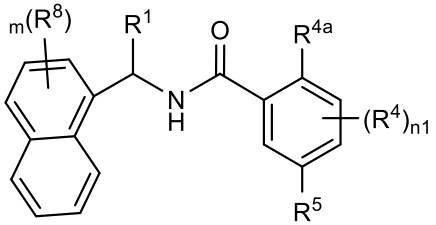
[0017] In certain examples, the compound of formula **(I),** formula **(Ia)** or formula **(Ib)** is a compound of formula **(VII)**:



(**VII)**

wherein X^1, X^2, X^3, X^4, X^5, R^1, R^4, R^5, R^8 and n are as described above for formula **(I),** formula **(Ia)** or formula **(Ib)** and wherein m is an integer independently selected from 0, 1, 2, 3, 4, 5, 6, and 7.

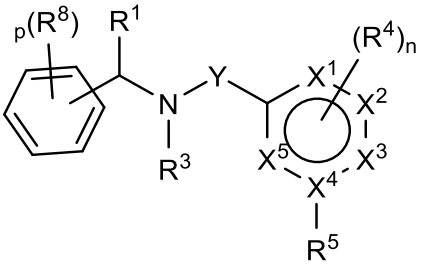
[0018] In certain examples, the compound of formula **(I),** formula **(Ia)** or formula **(Ib)** is a compound of formula **(VIII)**:



(VIII)

wherein R^1, R^4, R^5 and R^8 are as described above for formula **(I),** formula **(Ia)** or formula **(Ib)**; and wherein R^{4a} is independently selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl; n1 is an integer selected from 0, 1, 2 or 3; and m is an integer independently selected from 0, 1, 2, 3, 4, 5, 6, and 7.

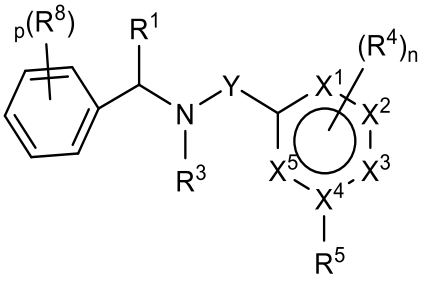
[0019] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(IX)**:



(IX)

wherein Y, X^1, X^2, X^3, X^4, X^5, R^1, R^3, R^4, R^5, R^8 and n are as described above for formula **(I)** or formula **(Ia)**; and wherein p is an integer independently selected from 0, 1, 2, 3, 4, and 5.

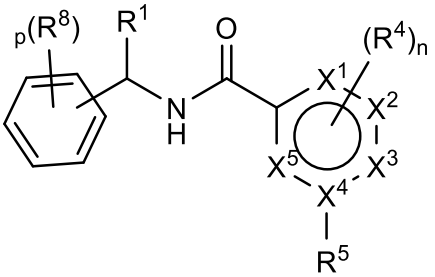
[0020] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(X)**:



(X)

wherein Y, X^1, X^2, X^3, X^4, X^5, R^1, R^3, R^4, R^5, R^8 and n are as described above for formula **(I)** or formula **(Ia)**; and wherein p is an integer independently selected from 0, 1, 2, 3, 4, and 5.

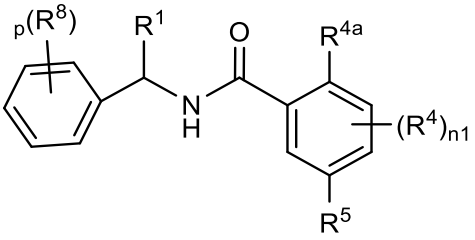
[0021] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XI)**:



(**XI)**

wherein X^1, X^2, X^3, X^4, X^5, R^1, R^4, R^5, R^8 and n are as described above for formula **(I)** or formula **(Ia)** and wherein p is an integer independently selected from 0, 1, 2, 3, 4, and 5.

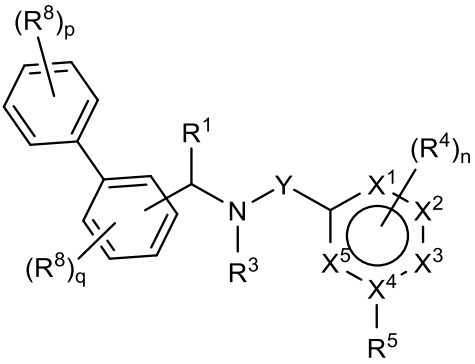
[0022] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XII)**:



(XII)

wherein R^1, R^4, R^5 and R^8 are as described above for formula **(I)** or formula **(Ia)**; and wherein R^{4a} is independently selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl; n1 is an integer selected from 0, 1, 2 or 3; and p is an integer independently selected from 0, 1, 2, 3, 4, and 5.

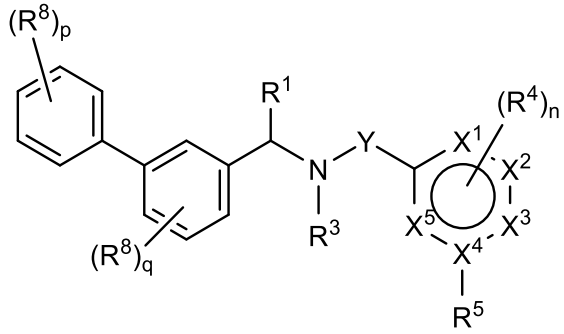
[0023] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XIII)**:



(XIII)

wherein Y, X^1, X^2, X^3, X^4, X^5, R^1, R^3, R^4, R^5, R^8 and n are as described above for formula **(I)** or formula **(Ia)**; wherein p is an integer independently selected from 0, 1, 2, 3, 4, and 5; and wherein q is an integer independently selected from 0, 1, 2, 3, and 4.

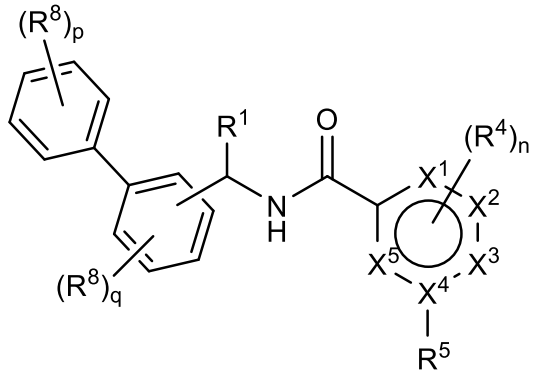
[0024] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XIV)**:



(XIV)

wherein Y, X^1, X^2, X^3, X^4, X^5, R^1, R^3, R^4, R^5, R^8 and n are as described above for formula **(I)** or formula **(Ia)**; wherein p is an integer independently selected from 0, 1, 2, 3, 4, and 5; and wherein q is an integer independently selected from 0, 1, 2, 3, and 4.

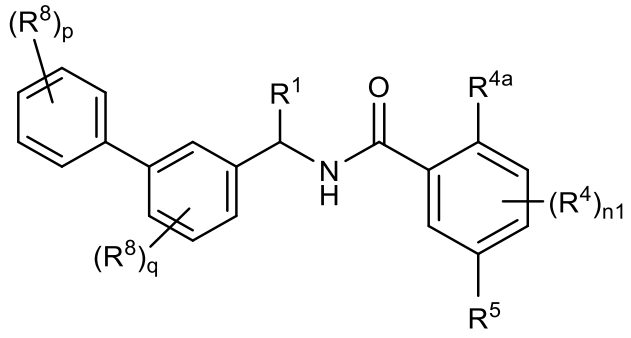
[0025] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XV)**:



(**XV)**

wherein X^1, X^2, X^3, X^4, X^5, R^1, R^4, R^5, R^8 and n are as described above for formula **(I)** or formula **(Ia);** wherein p is an integer independently selected from 0, 1, 2, 3, 4, and 5; and wherein q is an integer independently selected from 0, 1, 2, 3, and 4.

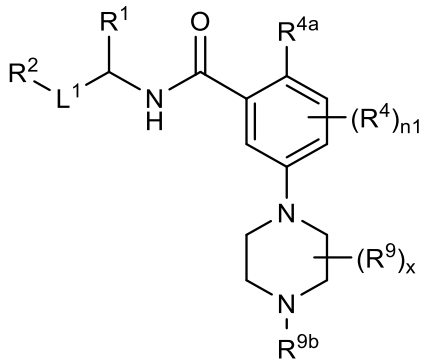
[0026] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XVI)**:



(XVI)

wherein R^1, R^4, R^5 and R^8 are as described above for formula **(I)** or formula **(Ia)**; and wherein R^{4a} is independently selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl; n1 is an integer selected from 0, 1, 2 or 3; wherein p is an integer independently selected from 0, 1, 2, 3, 4, and 5; and wherein q is an integer independently selected from 0, 1, 2, 3, and 4.

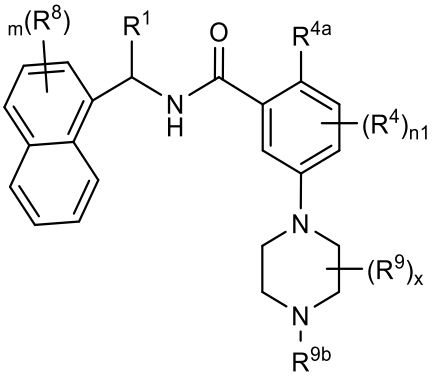
[0027] In certain examples, the compound of formula **(I),** formula **(Ia)** or formula **(Ib)** is a compound of formula **(XVII)**:



(XVII)

wherein L^1, R^1, R^2, R^4 and R^5 are as described above for formula **(I),** formula **(Ia)** or formula **(Ib)** and wherein R^{4a} is independently selected from from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl; R^{9b} is independently at each occurrence selected from the group comprising: H, C_1-C_6-alkyl, C_1-C_6-haloalkyl, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^6$, -$S(O)_2R^6$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, 4-, 5- or 6- membered heterocycloalkyl, C_{2-6}-alkenyl C_{2-6}-alkynyl, C_2-C_3-alkylene-R^{9a}, and CH_2-cyclopropyl; n1 is an integer selected from 0, 1, 2 or 3; and x is an integer selected from 0, 1, 2, 3, 4, 5 and 6.

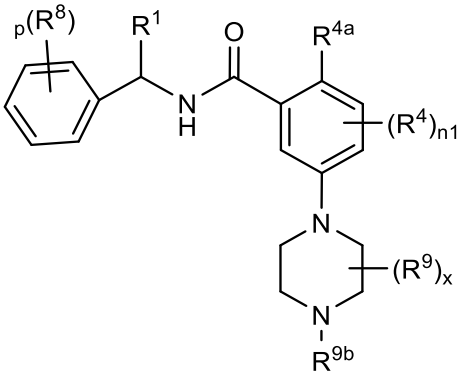
[0028] In certain examples, the compound of formula **(I),** formula **(Ia)** or formula **(Ib)** is a compound of formula **(XVIII)**:



(XVIII)

wherein R^1, R^4, R^5 and R^8 are as described above for formula **(I),** formula **(Ia)** or formula **(Ib)**; and wherein R^{4a} is independently selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl; R^{9b} is independently at each occurrence selected from the group comprising: C_1-C_6-alkyl, C_1-C_6-haloalkyl, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^6$, -$S(O)_2R^6$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, 4-, 5- or 6-membered heterocycloalkyl, C_{2-6}-alkenyl C_{2-6}-alkynyl, C_2-C_3-alkylene-R^{9a} and CH_2-cyclopropyl; n1 is an integer selected from 0, 1, 2 or 3; and m is an integer independently selected from 0, 1, 2, 3, 4, 5, 6, and 7; and x is an integer selected from 0, 1, 2, 3, 4, 5 and 6.

[0029] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XIX)**:

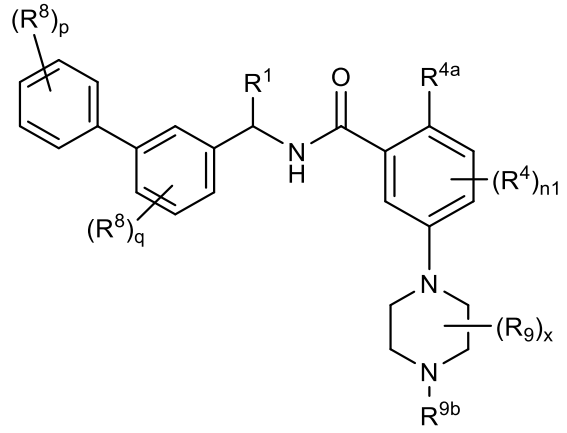


(XIX)

wherein R^1, R^4, R^5 and R^8 are as described above for formula **(I)** or formula **(Ia)**; and wherein R^{4a} is independently selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl,

phenyl and 5- or 6- membered heteroaryl; R^{9b} is independently at each occurrence selected from the group comprising: C_1-C_6-alkyl, C_1-C_6-haloalkyl, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$, $-S(O)R^{10}$, $-S(O)_2R^{10}$, $-S(O)_2NR^6R^{10}$, C_{3-6} cycloalkyl, 4-, 5- or 6- membered heterocycloalkyl, C_{2-6}-alkenyl C_{2-6}-alkynyl, C_2-C_3-alkylene-R^{9a} and CH_2-cyclopropyl; n1 is an integer selected from 0, 1, 2 or 3; and p is an integer independently selected from 0, 1, 2, 3, 4, and 5; and x is an integer selected from 0, 1, 2, 3, 4, 5 and 6.

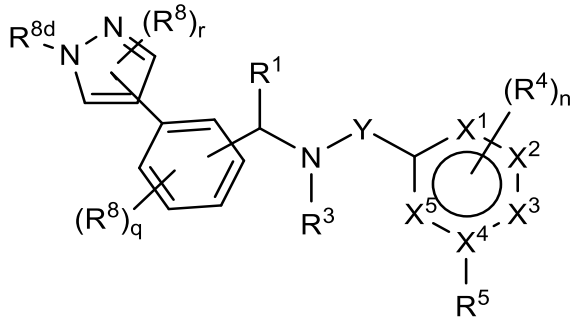
[0030] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XX)**:



(XX)

wherein R^1, R^4, R^5 and R^8 are as described above for formula **(I)** or formula **(Ia)**; and wherein R^{4a} is independently selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, $-OR^{10}$, cyano, nitro, $-NR^6R^7$, $-SR^{10}$, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, $-S(O)R^{10}$, $-S(O)_2R^{10}$, $-S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl; R^{9b} is independently at each occurrence selected from the group comprising: C_1-C_6-alkyl, C_1-C_6-haloalkyl, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$, $-S(O)R^{10}$, $-S(O)_2R^{10}$, $-S(O)_2NR^6R^{10}$, C_{3-6} cycloalkyl, 4-, 5- or 6- membered heterocycloalkyl, C_{2-6}-alkenyl C_{2-6}-alkynyl, C_2-C_3-alkylene-R^{9a} and CH_2-cyclopropyl; n1 is an integer selected from 0, 1, 2 or 3; p is an integer independently selected from 0, 1, 2, 3, 4, and 5; q is an integer independently selected from 0, 1, 2, 3 or 4; and x is an integer selected from 0, 1, 2, 3, 4, 5 and 6.

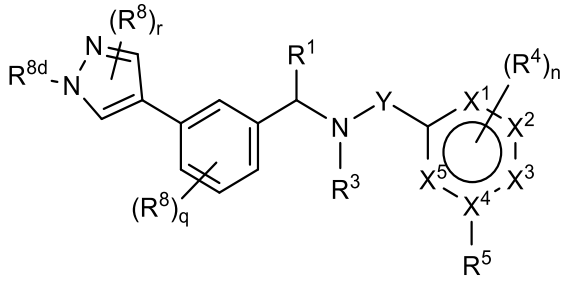
[0031] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XXI)**:



(XXI)

wherein Y, X^1, X^2, X^3, X^4, X^5, R^1, R^3, R^4, R^5, R^8 and n are as described above for formula **(I)** or formula **(Ia)**; wherein R^{8d} is independently selected from H, halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^{10}$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, 5-, 6-, 7-, 8-, 9- or 10- membered heterocycloalkyl, phenyl and 5- or 6-membered heteroaryl; wherein q is an integer independently selected from 0, 1, 2, 3, and 4; and wherein r is an integer independently selected from 0, 1 and 2.

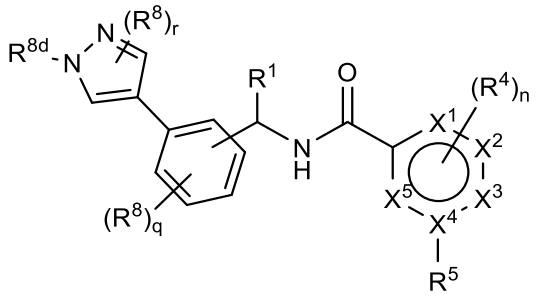
[0032] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XXII)**:



(XXII)

wherein Y, X^1, X^2, X^3, X^4, X^5, R^1, R^3, R^4, R^5, R^8 and n are as described above for formula **(I)** or formula **(Ia)**; wherein R^{8d} is as described above for formula **(XXI);** wherein q is an integer independently selected from 0, 1, 2, 3, and 4; and wherein r is an integer independently selected from 0, 1 and 2.

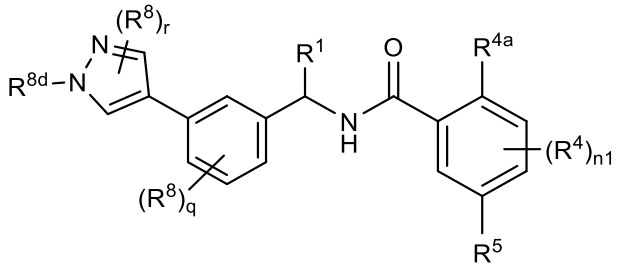
[0033] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XXIII)**:



(**XXIII**)

wherein X^1, X^2, X^3, X^4, X^5, R^1, R^4, R^5, R^8 and n are as described above for formula **(I)** or formula **(Ia);** wherein R^{8d} is as described above for formula **(XXI);** wherein q is an integer independently selected from 0, 1, 2, 3, and 4; and wherein r is an integer independently selected from 0, 1 and 2.

[0034] In certain examples, the compound of formula **(I)** or formula **(Ia)** is a compound of formula **(XXIV)**:



(XXIV)

wherein R^1, R^4, R^5 and R^8 are as described above for formula **(I)** or formula **(Ia)**; wherein R^{8d} is as described above for formula **(XXI);** and wherein R^{4a} is independently selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl; n1 is an integer selected from 0, 1, 2 or 3; wherein q is an integer independently selected from 0, 1, 2, 3, and 4; and wherein r is an integer independently selected from 0, 1 and 2.

[0035] The following examples apply to compounds of any of formulae **(I), (Ia), (Ib)** and **(II)-(XXIV)**. These examples are independent and interchangeable. Any one example may be combined with any other example, where chemically allowed. In other words, any of the features described in the following examples may (where chemically allowable) be combined with the features described in one or more other examples. In particular, where a compound is exemplified or illustrated in this specification, any two or more of the examples listed below, expressed at any level

of generality, which encompass that compound may be combined to provide a further example which forms part of the present disclosure.

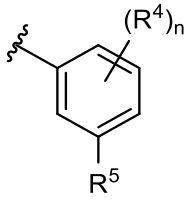
[0036] It may be that Y is -C(O)-. It may be that Y is -C(S)-. It may be that Y is -C(=NR^6)-.

[0037] -L^1- may be absent, -CH_2-, -CH_2CH_2- or -CHCH-. -L^1- may be absent or -CH_2-. -L^1- may be -CH_2-, -CH_2CH_2- or -CHCH-. Preferably, -L^1- is absent.

[0038] It may that Y is -C(O)- and -L^1- is absent.

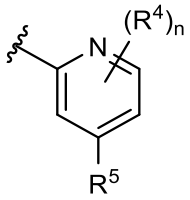
[0039] X^1 may be selected from carbon and nitrogen. In these examples, X^4 is carbon, X^2, X^3 and X^5 are each independently selected from carbon and nitrogen, and no more than two of X^1, X^2, X^3 and X^5 may be nitrogen. It may be that each of X^1, X^2, X^3, and X^5 is carbon. It may be that at least one of X^1, X^2, X^3 and X^5 is nitrogen. It may be that a single one of X^1, X^2, X^3 and X^5 is nitrogen. It may be that X^1 is carbon. It may be that at least one of X^2, X^3 and X^5 is nitrogen. It may be that a single one of X^2, X^3 and X^5 is nitrogen. It may be that X^1 is nitrogen and each of X^2, X^3, and X^5 is carbon. It may be that X^5 is nitrogen and each of X^1, X^2, and X^3 is carbon. It may be that each of X^2, X^3 and X^4 is carbon.

[0040] The ring comprising X^1, X^2, X^3, X^4, and X^5 may be:



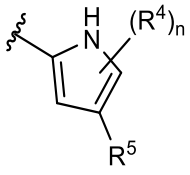
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[0041] The ring comprising X^1, X^2, X^3, X^4, and X^5 may be:

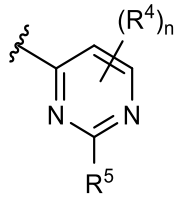


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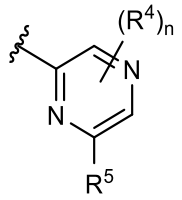
[0042] The ring comprising X^1, X^2, X^3, X^4, and X^5 may be:



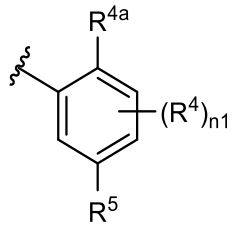
[0043] The ring comprising X^1, X^2, X^3, X^4, and X^5 may be:



[0044] The ring comprising X^1, X^2, X^3, X^4, and X^5 may be:



[0045] The ring comprising X^1, X^2, X^3, X^4, and X^5 may be:



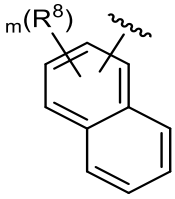
, wherein R^{4a} is independently selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl; and n1 is an integer selected from 0, 1, 2 or 3.

[0046] It may be that X^1 is absent. In these examples, no more than two of X^2, X^3, X^4 and X^5 may be nitrogen and no more than one of X^2, X^3 and X^5 may be oxygen or sulfur.

[0047] R^1 may be C_1 or C_2 alkyl, e.g. methyl or ethyl. R^1 may be C_1 or C_2 haloalkyl, e.g. CF_3, CH_2CF_3, $CH(CF_3)CH_3$. R^1 may be C_1 or C_2 alkylene-R^{1a}, wherein R^{1a} is selected from OR^6, SR^6, NR^6R^7, CO_2R^6 and $CONR^6R^6$, e.g. CH_2-R^{1a} or $CH_2CH_2R^{1a}$. Preferably, R^1 is methyl.

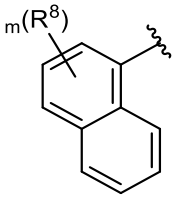
[0048] It may be that -L^1- is absent and R^1 is C_1 or C_2 alkyl. It may be that L^1 is absent and R^1 is methyl.

[0049] R^2 may be selected from phenyl, 5- or 6- membered heteroaryl, 5- or 6- membered heterocycloalkyl or C_5 or C_6 cycloalkyl, and said phenyl, heteroaryl or



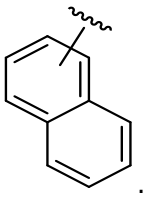
; wherein m is an integer independently selected from 0, 1, 2, 3, 4, 5, 6, and 7.

[0056] It may be that R^2 has the structure:

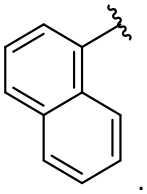


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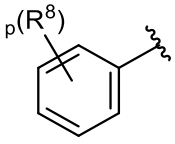
[0057] It may be that R^2 has the structure:


.

[0058] It may be that R^2 has the structure:


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[0059] It may be that R^2 has the structure:



wherein p is an integer selected from 0, 1, 2, 3, 4 and 5. In these examples, it may be that R^8 is independently selected at each occurrence from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^{10}$, C_{2-6}-alkenyl, C_{2-6}-alkynyl, and 5- or 6- membered heterocycloalkyl. In these examples, it may be that R^8 is independently selected at each occurrence from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, -OR^{10}, cyano, nitro, -

[0080] R^{4a} may be independently selected at each occurrence from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{2-6}-alkenyl and C_{2-6}-alkynyl. R^{4a} may be independently selected at each occurrence from the group comprising: halo, C_1-C_4-alkyl, C_1-C_4-haloalkyl, -OR^{10}, cyano, nitro and -NR^6R^7. R^{4a} may be independently selected at each occurrence from the group comprising: C_1-C_4-alkyl and C_1-C_4-haloalkyl. R^{4a} may be independently C_1-C_4-alkyl. R^{4a} may be methyl.

[0081] R^5 may be selected from the group comprising: -$C(O)NR^6R^{14}$, -$C(O)R^{12}$, phenyl, 6- membered heteroaryl; 5-, 6-, or 7- or 8- membered heterocycloalkyl and cyclopropyl; wherein any said phenyl or heteroaryl group may be optionally substituted with at least one R^8 group; or wherein any said heterocycloalkyl or cyclopropyl may be optionally substituted with at least one R^9 group.

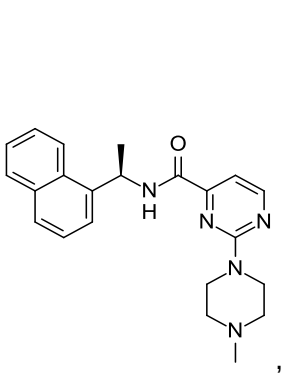
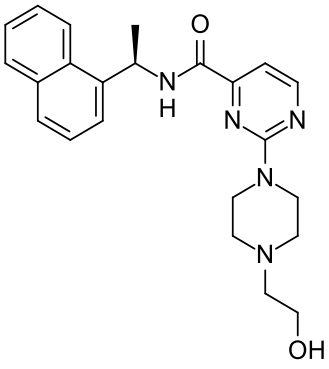
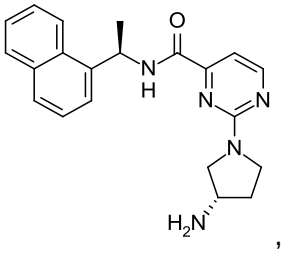
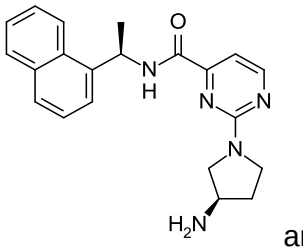
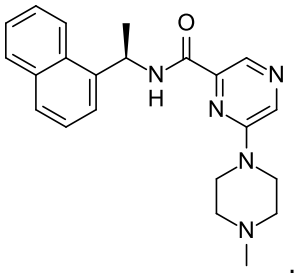
[0082] R^5 may be selected from the group comprising: -$C(O)NR^6R^{14}$ and -$C(O)R^{12}$. R^5 may be -$C(O)NR^6R^{14}$, e.g. -C(O)NHR^{14} or -C(O)MeR^{14}. R^5 may be -$C(O)R^{12}$, e.g. -C(O)-piperidyl or -C(O)-piperazinyl.

[0083] R^5 may be selected from the group comprising phenyl, 6- membered heteroaryl, 5-, 6- or 7- or 8- membered heterocycloalkyl and cyclopropyl; wherein any said phenyl or heteroaryl group is optionally substituted with at least one R^8 group; or wherein any said heterocycloalkyl or cyclopropyl is optionally substituted with at least one R^9 group.

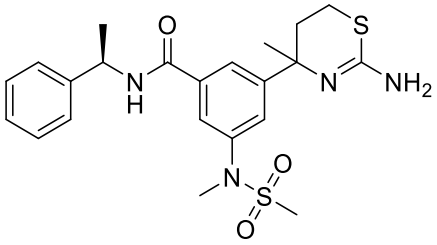
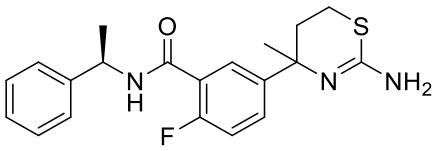
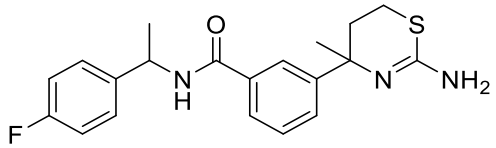
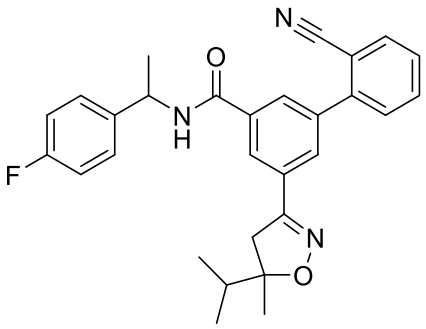
[0084] R^5 may be selected from the group comprising -$C(O)NR^6R^{14}$, -$C(O)R^{12}$, 5-, 6-, 7-, 8-, 9- or 10- membered heterocycloalkyl and cyclopropyl; wherein any said heterocycloalkyl or cyclopropyl is optionally substituted with at least one R^9 group. In examples, the heterocycloalkyl or cyclopropyl group is a saturated ring system.

[0085] R^5 may be selected from the group comprising phenyl, 6- membered heteroaryl, 5-, 6-, 7-, 8-, 9- or 10- membered heterocycloalkyl and cyclopropyl; wherein any said phenyl or heteroaryl group is optionally substituted with at least one R^8 group; or wherein any said heterocycloalkyl or cyclopropyl is optionally substituted with at least one R^9 group.

[0086] R^5 may be selected from the group comprising 5-, 6-, 7-, 8-, 9- or 10- membered heterocycloalkyl and cyclopropyl; wherein any said heterocycloalkyl or cyclopropyl is optionally substituted with at least one R^9 group. In examples, the heterocycloalkyl or cyclopropyl group is a saturated ring system.

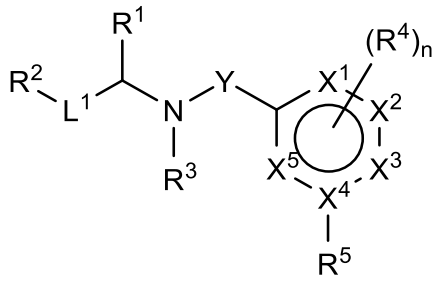

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and

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[00150] In examples, the compound of formula (**I**) may not be:


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, or

CLAIMS

1. A compound of formula **(I)** or pharmaceutically acceptable salt thereof:



(I)

wherein

Y is -C(O)-, -C(S)-, -C(=NR^6)-;

-L^1- is absent or a linker selected from C_1 alkylene, C_2-alkenylene, or C_2-alkynylene;

X^1 is absent or is selected from carbon and nitrogen;

X^2, X^3 and X^5 are each independently selected from carbon, nitrogen, oxygen and sulfur;

X^4 is selected from carbon and nitrogen;

wherein when X^1 is carbon or nitrogen, X^4 is carbon, X^2, X^3 and X^5 are each independently selected from carbon and nitrogen, and no more than two of X^1, X^2, X^3 and X^5 may be nitrogen ,

wherein when X^1 is absent, no more than two of X^2, X^3, X^4 and X^5 may be nitrogen and no more than one of X^2, X^3 and X^5 may be oxygen or sulfur;

R^1 is selected from the group comprising: C_1 or C_2 alkyl, C_1 or C_2 haloalkyl, and C_1 or C_2 alkylene-R^{1a}; wherein R^{1a} is selected from OR^6, SR^6, NR^{6}R^7, CO_2R^6 and CONR^{6}R^6;

R^2 is selected from phenyl, 5- or 6- membered heteroaryl, 5- or 6- membered heterocycloalkyl or C_5 or C_6 cycloalkyl, and said phenyl, heteroaryl or cycloalkyl is optionally fused to or substituted with a group selected from phenyl, 5- or 6- membered heteroaryl, 5- or 6- membered heterocycloalkyl or C_5 or C_6 cycloalkyl; wherein any said phenyl or heteroaryl group is optionally substituted with at least one R^8 group; or wherein any said heterocycloalkyl or cycloalkyl is optionally substituted with at least one R^9 group;

R^3, R^6 and R^{11} are each independently at each occurrence selected from the group comprising: H and C_1-C_6-alkyl;

R^4 is independently at each occurrence selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl;

R^5 is selected from the group comprising: -$C(O)NR^6R^{14}$, -$C(O)R^{12}$, phenyl, 5- or 6-membered heteroaryl; 5-, 6-, 7-, 8-, 9- or 10- membered heterocycloalkyl and cyclopropyl; wherein any said phenyl or heteroaryl group is optionally substituted with at least one R^8 group; or wherein any said heterocycloalkyl or cyclopropyl is optionally substituted with at least one R^9 group;

wherein when X^4 is nitrogen, R^5 is selected such that R^5 is attached to X^4 via a carbon atom;

R^7 is independently at each occurrence selected from the group comprising: H, C_1-C_6-alkyl, $C(O)$-C_1-C_6-alkyl and $S(O)_2$-C_1-C_6-alkyl;

R^8 is independently at each occurrence selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^{10}$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, 5-, 6-, 7-, 8-, 9- or 10- membered heterocycloalkyl, phenyl and 5- or 6-membered heteroaryl; wherein where R^8 is heterocycloalkyl, phenyl or heteroaryl, R^8 is optionally substituted where chemically possible with one or more R^{8c} groups;

R^{8c} is independently selected at each occurrence from: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, C_1-C_6-alkylene-NR^6R^{10}, -OR^{10}, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$;

R^9 is independently at each occurrence selected from the group comprising: =O, =S, halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, -OR^{10}, cyano, nitro, -NR^6R^7, -$NR^{11}R^{12}$, -SR^{10}, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^{10}$, C_{3-6} cycloalkyl, 4-, 5- or 6-membered heterocycloalkyl, C_{2-6}-alkenyl C_{2-6}-alkynyl and C_1-C_3-alkylene-R^{9a}; wherein R^{9a} is selected from OR^6, SR^6, $S(O)_2R^6$, $S(O)_2NR^6R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6, $CONR^6R^6$, 4-, 5- or 6- membered heterocycloalkyl, and cyclopropyl;

R^{10} is independently selected at each occurrence from the group comprising: H, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10a}, C_{3-8} cycloalkyl, 4-, 5-, 6-, 7- or 8- membered heterocycloalkyl, phenyl and 5- or 6- membered heteroaryl; wherein R^{10a} is independently selected at each occurrence from C_{3-8} cycloalkyl, OR^6, SR^6, $S(O)_2R^6$,

$S(O)_2Ph$, NR^6R^7, CO_2R^6, $CONR^6R^6$, phenyl, 5- or 6- membered heteroaryl, and 5- or 6-membered heterocycloalkyl;

R^{12} is 6-membered heterocycloalkyl; wherein said heterocycloalkyl is optionally substituted with at least one R^{13} group;

R^{13} is independently at each occurrence selected from: =O, =S, halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, $-OR^6$, cyano, nitro, $-NR^6R^7$, $-SR^6$, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, $-S(O)R^6$, $-S(O)_2R^6$, $-S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl and C_1-C_3-alkylene-R^{13a}; wherein R^{13a} is selected from OR^6, SR^6, $S(O)_2R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6 and $CONR^6R^6$;

R^{14} is selected from H and C_1-C_3-alkylene-R^{14a}; wherein R^{14a} is selected from OR^6, SR^6, $S(O)_2R^6$, $S(O)_2Ph$, NR^6R^7, CO_2R^6 and $CONR^6R^6$; and

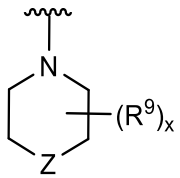
n is an integer selected from 0, 1, 2, 3 or 4;

wherein any aforementioned alkyl, alkenyl, alkynyl, haloalkyl, cycloalkyl, heterocycloalkyl, phenyl, heteroaryl, alkylene, alkenylene, alkynylene, C(O)-alkyl and $S(O)_2$-alkyl is optionally substituted, where chemically possible, by 1 to 4 substituents which are each independently selected at each occurrence from the group consisting of: =O; $=NR^a$, $=NOR^a$, C_1-C_4-alkyl, halo, nitro, cyano, C_1-C_4-haloalkyl, C_2-C_4-alkenyl, C_2-C_4-alkynyl, NR^aR^b, $S(O)_2R^a$, $S(O)R^a$, $S(O)(NR^a)R^a$, $S(O)_2NR^aR^a$, CO_2R^a, $C(O)R^a$, $CONR^aR^a$, OR^a and SR^a;

wherein R^a is independently selected from H and C_1-C_4-alkyl; and R^b is independently selected from H, C_1-C_4-alkyl, $C(O)$-C_1-C_4-alkyl and $S(O)_2$-C_1-C_4-alkyl.

2. The compound of claim 1, wherein R^5 is 5-, 6- or 7- or 8- membered heterocycloalkyl, wherein said heterocycloalkyl is optionally substituted with at least one R^9 group, and wherein said heterocycloalkyl group includes at least two heteroatoms.

3. The compound of claim 1 or claim 2, wherein R^5 is



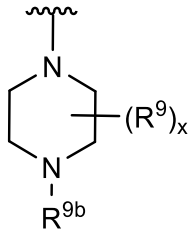
wherein Z is NR^{9b}, O or $S(O)_q$;

x is selected from 0, 1, 2, 3, 4, 5 or 6; and

q is selected from 0, 1 or 2;

R^{9b} is selected from the group comprising: H, C_1-C_6-alkyl, C_1-C_6-haloalkyl, $C(O)R^{10}$, $C(O)OR^{10}$, $C(O)NR^6R^{10}$, $-S(O)R^{10}$, $-S(O)_2R^{10}$, $-S(O)_2NR^6R^{10}$, C_{3-6} cycloalkyl, 4-, 5- or 6-membered heterocycloalkyl, C_{2-6}-alkenyl C_{2-6}-alkynyl, C_2-C_3-alkylene-R^{9a} and CH_2-cyclopropyl.

4. The compound of any of claims 1 to 3, wherein R^5 is:



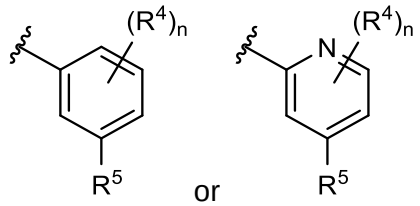
wherein x is selected from 0, 1, 2, 3, 4, 5 or 6; and

R^{9b} is selected from the group comprising: C_1-C_6-alkyl, C_1-C_6-haloalkyl, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, $-S(O)R^6$, $-S(O)_2R^6$, $-S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, 4-, 5- or 6-membered heterocycloalkyl, C_{2-6}-alkenyl C_{2-6}-alkynyl, C_2-C_3-alkylene-R^{9a} and CH_2-cyclopropyl.

5. The compound of claim 1, wherein R^5 is selected from the group comprising: $-C(O)NR^6R^{14}$ and $-C(O)R^{12}$.

6. The compound of any preceding claim, wherein X^1 is selected from carbon and nitrogen, X^4 is carbon, X^2, X^3 and X^5 are each independently selected from carbon and nitrogen, and no more than two of X^1, X^2, X^3 and X^5 may be nitrogen.

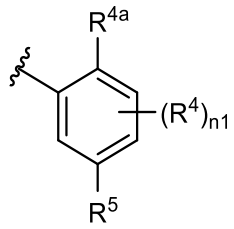
7. The compound of any preceding claim, wherein the ring comprising X^1, X^2, X^3, X^4, and X^5 is:



or

.

8. The compound of any preceding claim, wherein the ring comprising X^1, X^2, X^3, X^4, and X^5 is:



wherein R^{4a} is independently selected from the group comprising: halo, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylene-R^{10}, -OR^{10}, cyano, nitro, -NR^6R^7, -SR^{10}, $C(O)R^6$, $C(O)OR^6$, $C(O)NR^6R^6$, -$S(O)R^{10}$, -$S(O)_2R^{10}$, -$S(O)_2NR^6R^6$, C_{3-6} cycloalkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenyl and 5- or 6- membered heteroaryl; and

n1 is an integer selected from 0, 1, 2 or 3.

9. The compound of claim 8, wherein R^{4a} is C_{1-4} alkyl.

10. The compound of any preceding claim, wherein Y is -C(O)-.

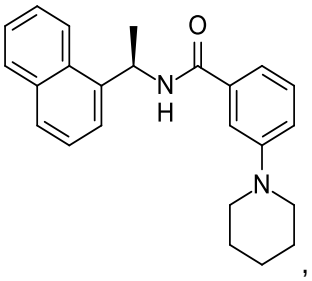
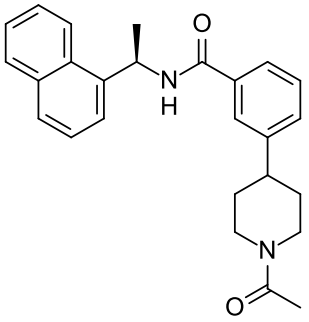
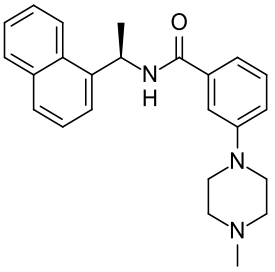
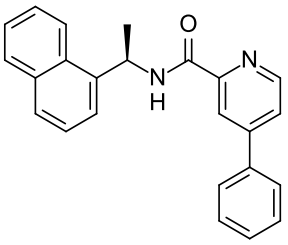
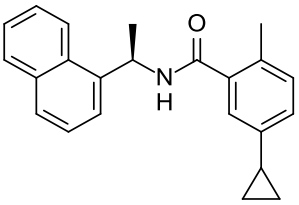
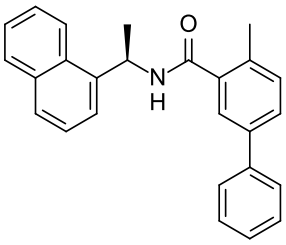
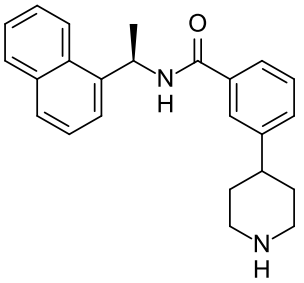
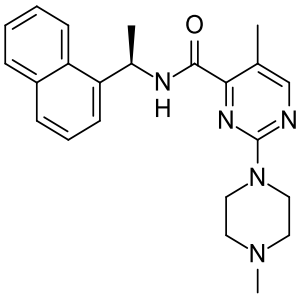
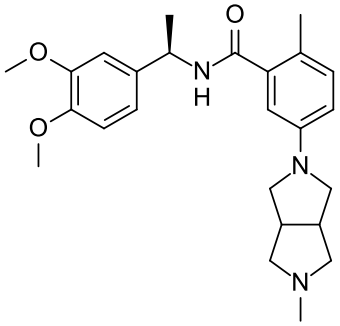
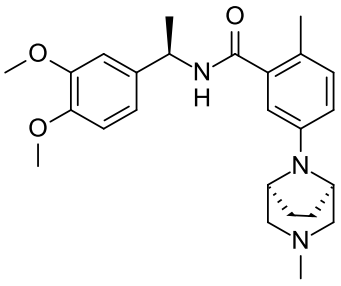
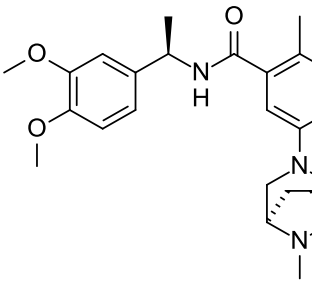
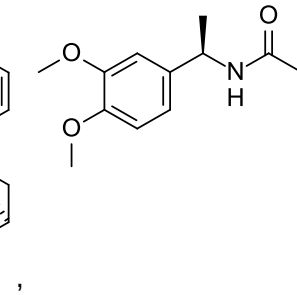
11. The compound of any preceding claim, wherein R^3 is H.

12. The compound of any preceding claim, wherein -L^1- is absent.

13. The compound of any preceding claim, wherein R^1 is C_1 or C_2 alkyl.

14. The compound of any preceding claim, wherein R^2 is phenyl, biphenyl, or naphthyl.

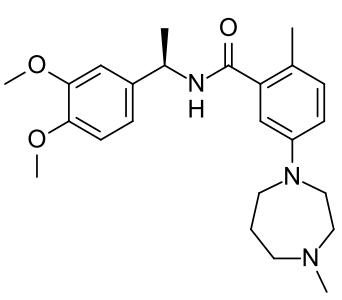
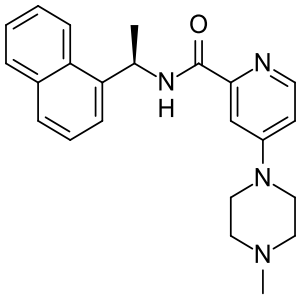
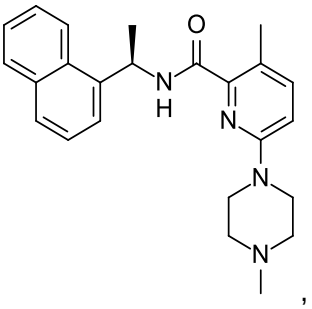
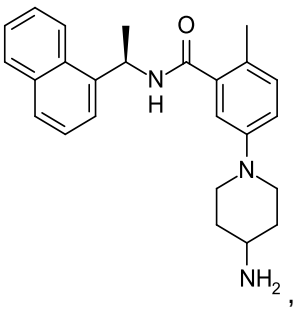
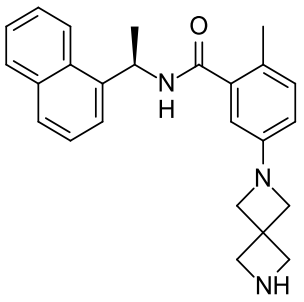
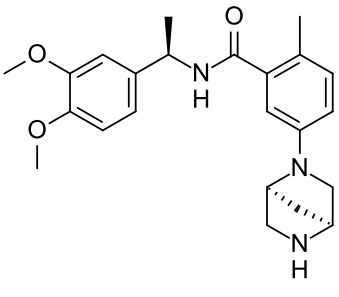
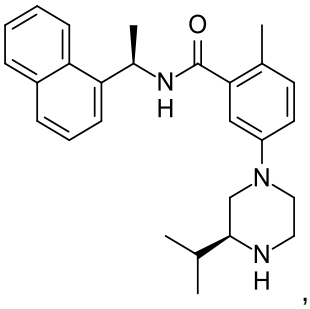
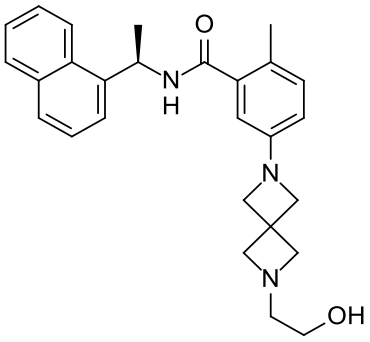
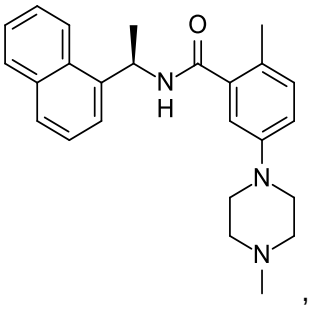
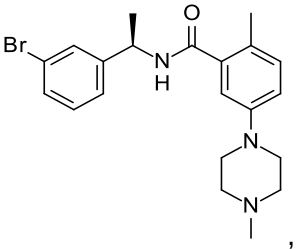
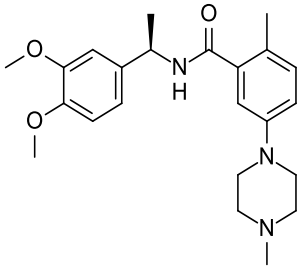
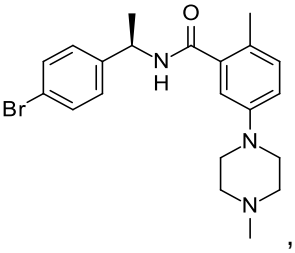
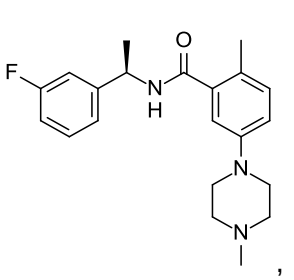
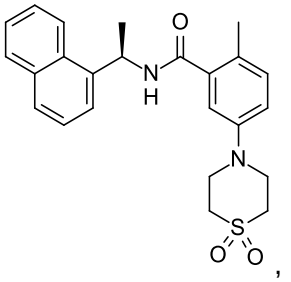
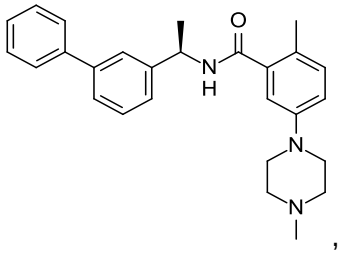
15. The compound of claim 1, wherein the compound is selected from the following compounds or pharmaceutically acceptable salts thereof:

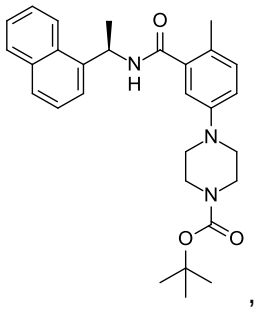
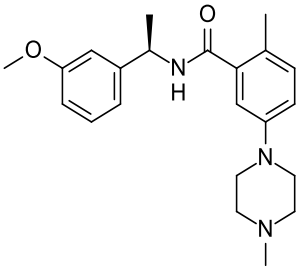
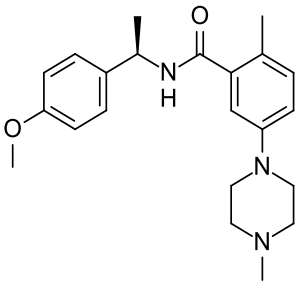
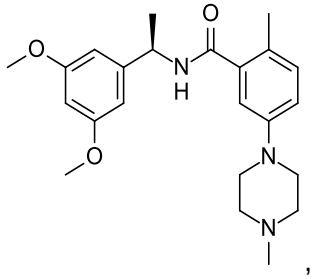
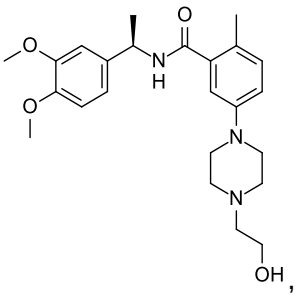
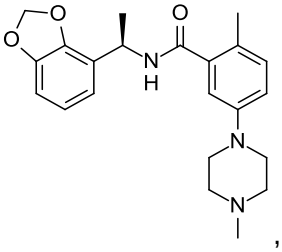
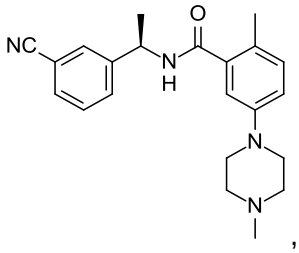
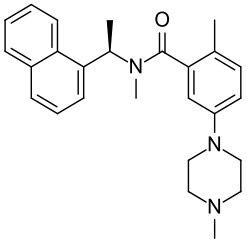
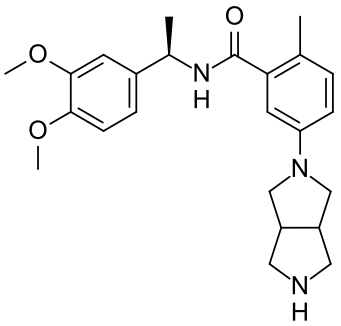
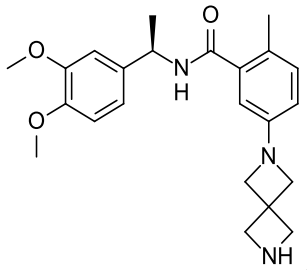
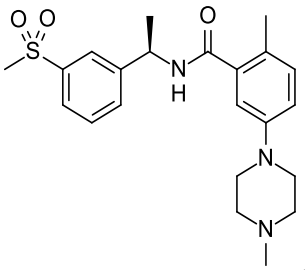
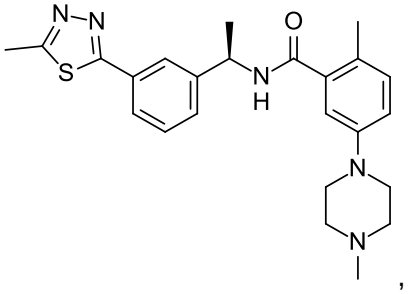
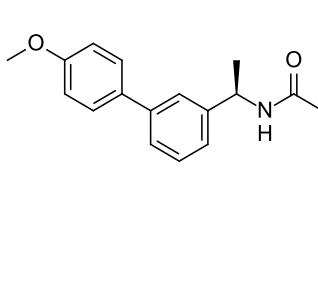
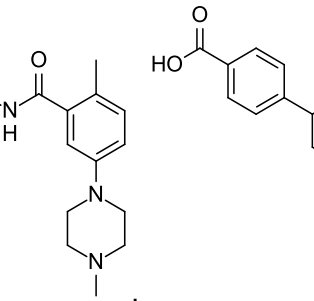
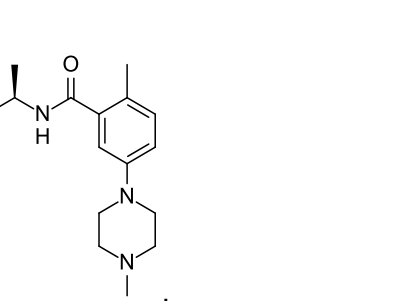

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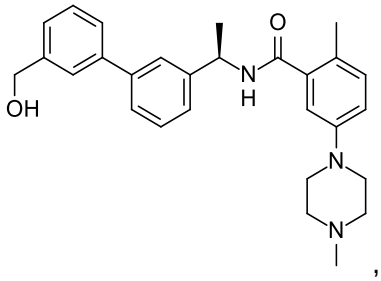
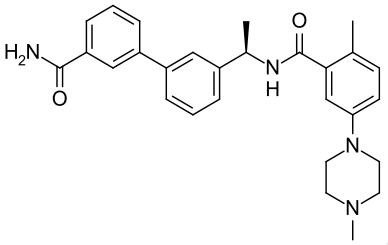
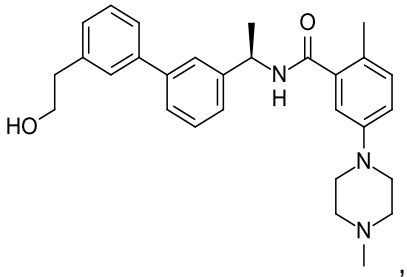
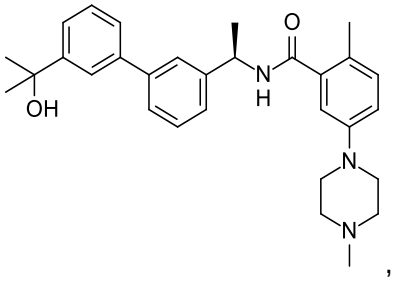
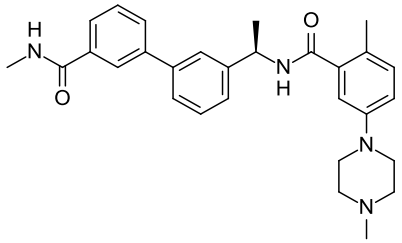
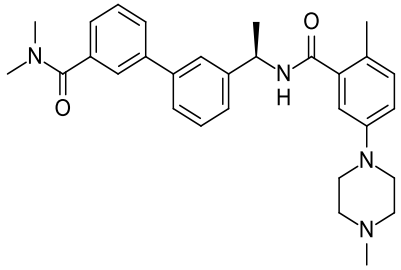
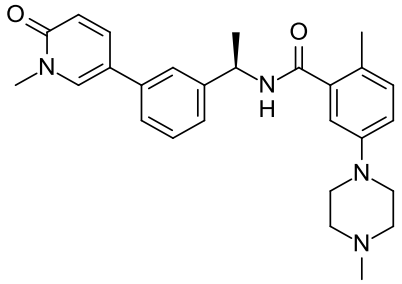
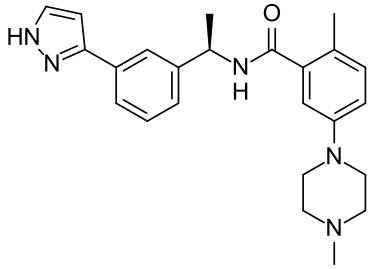
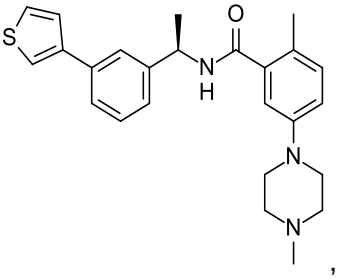
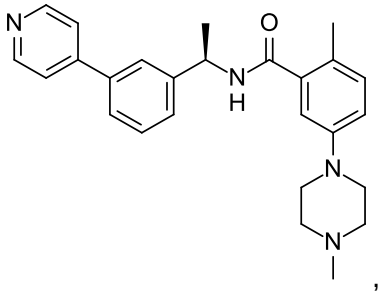
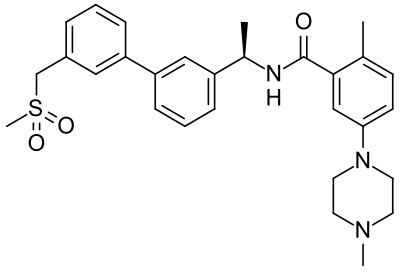
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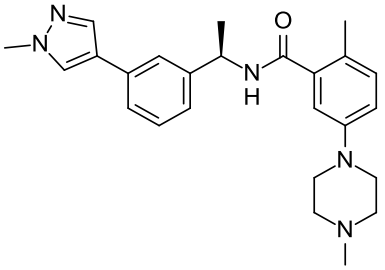
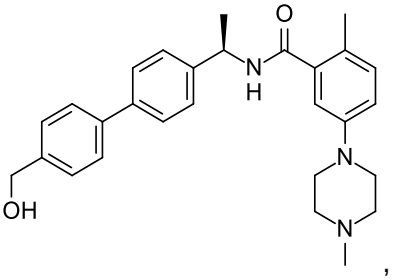
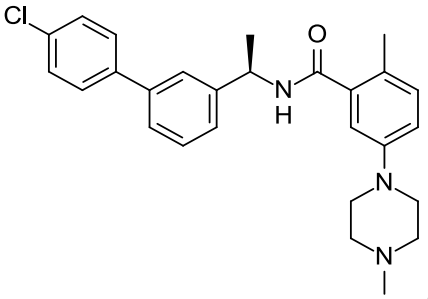
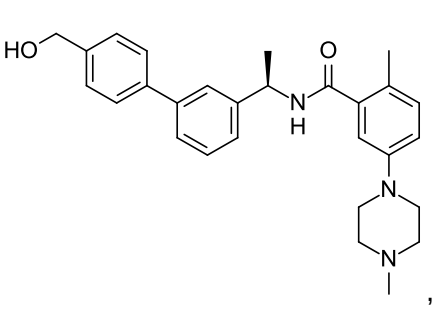
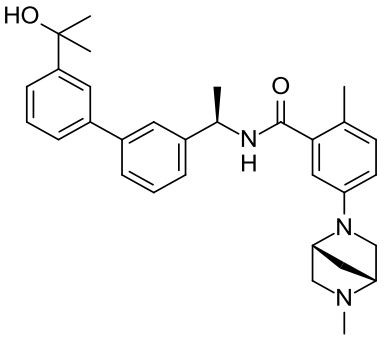
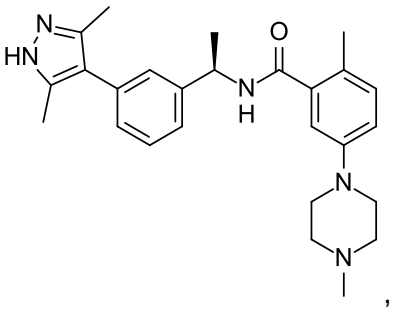
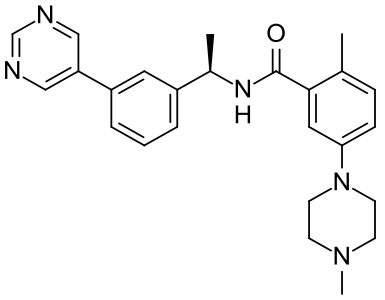
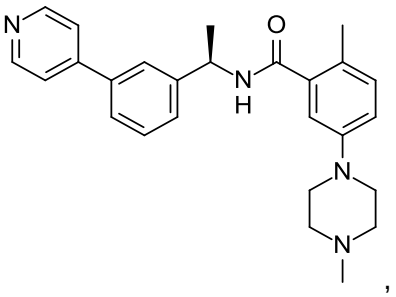
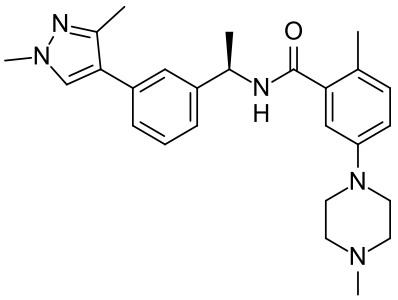
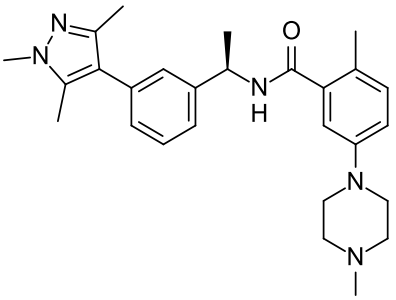

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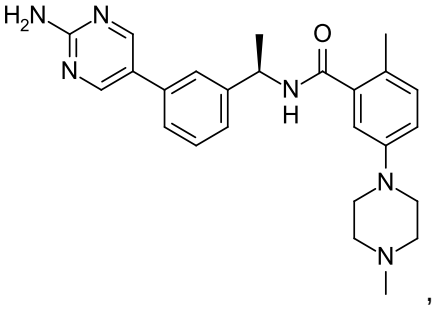
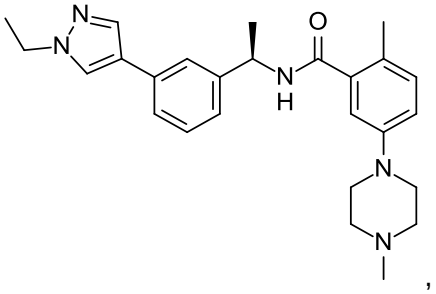
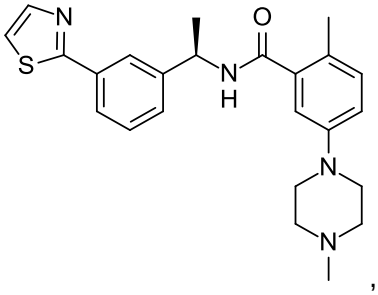
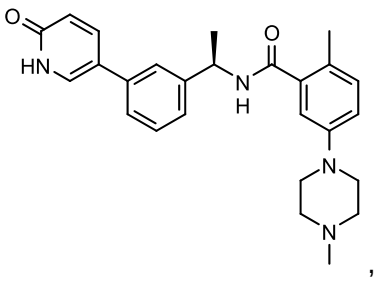
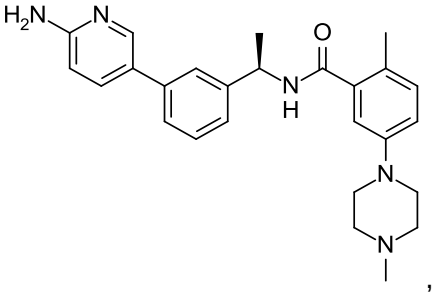
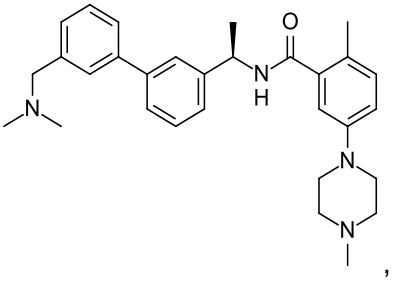
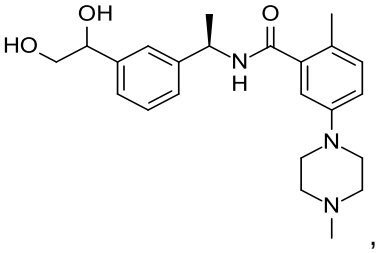
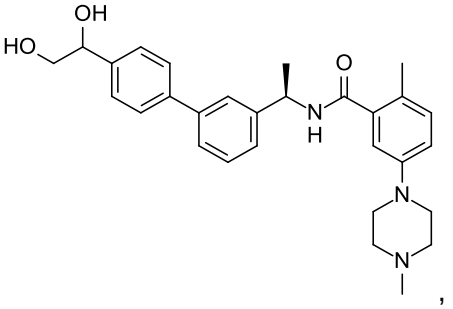
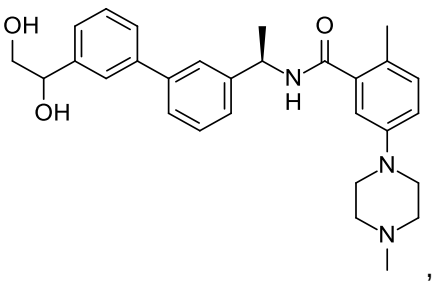
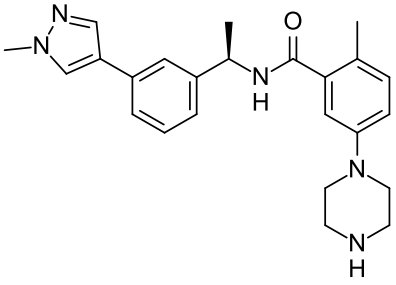
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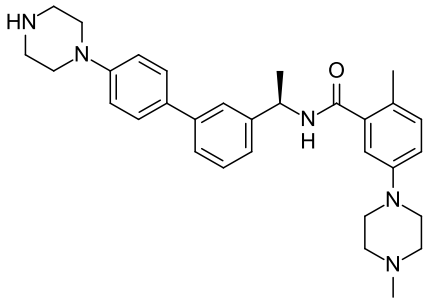
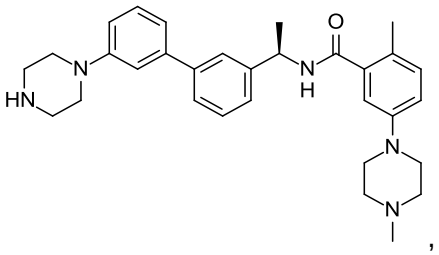
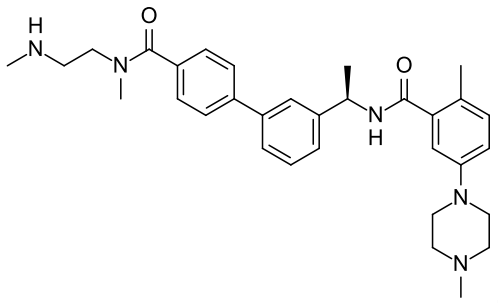
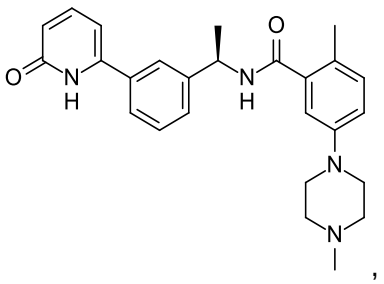
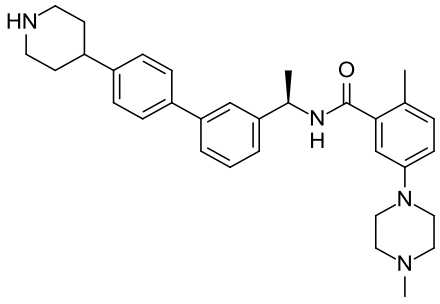
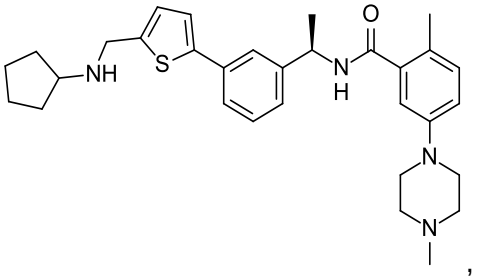
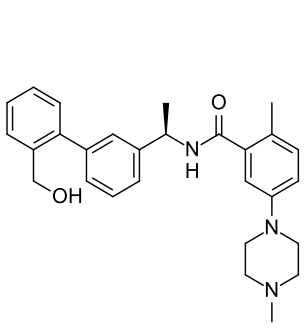
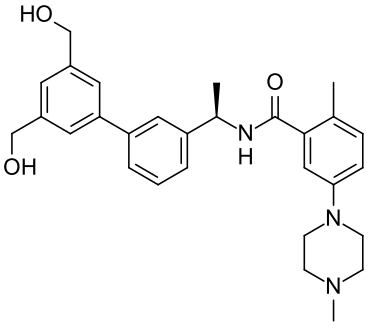
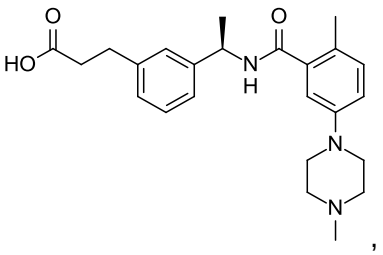
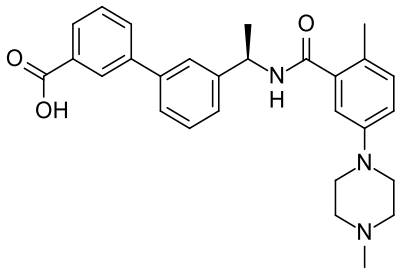
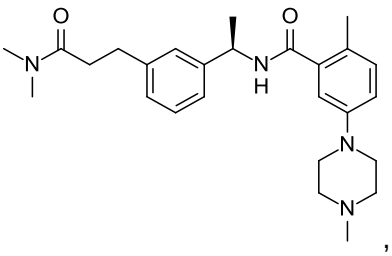
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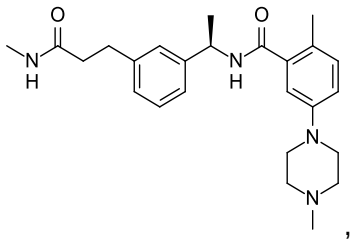
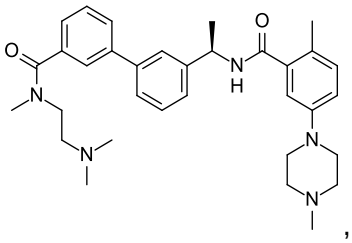
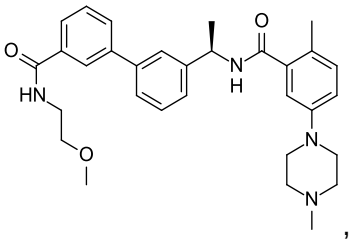
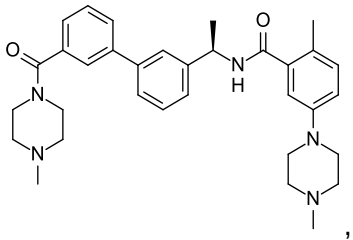
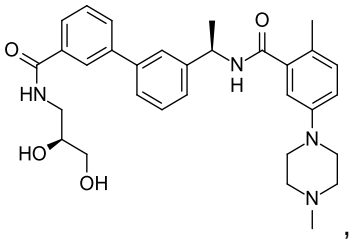
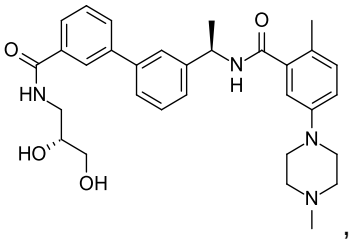
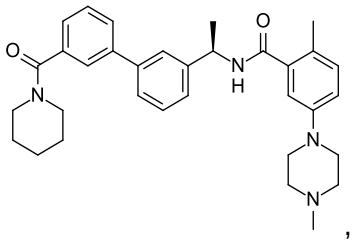
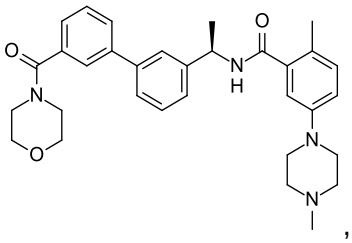
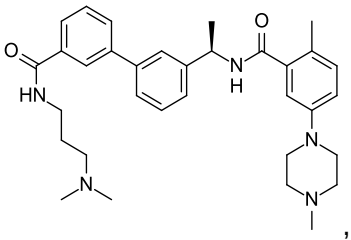
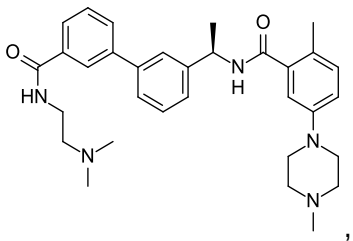
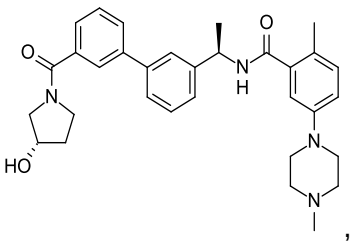
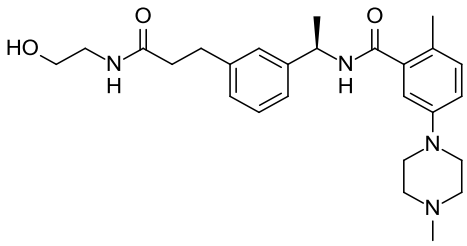
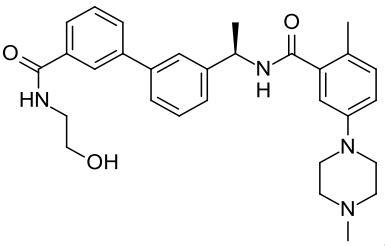
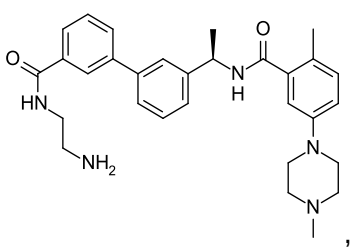
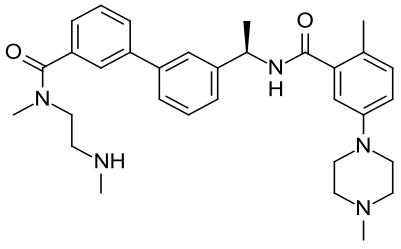

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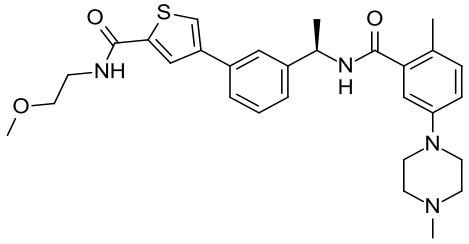
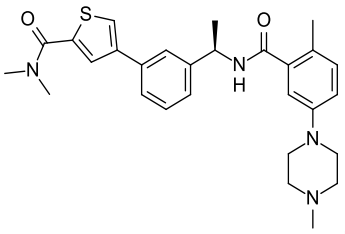
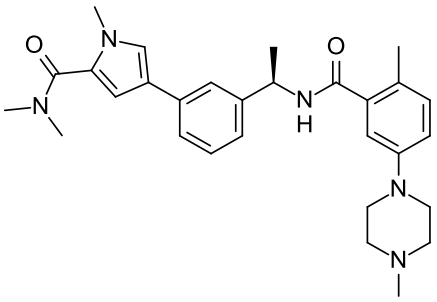
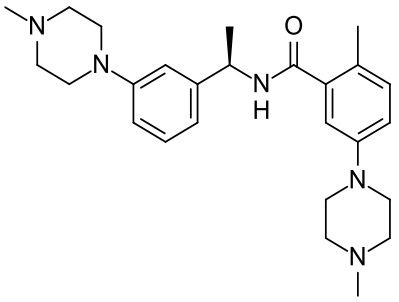
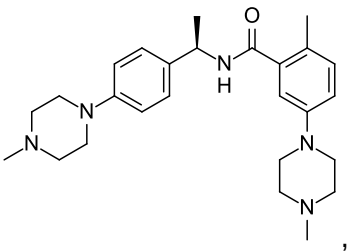
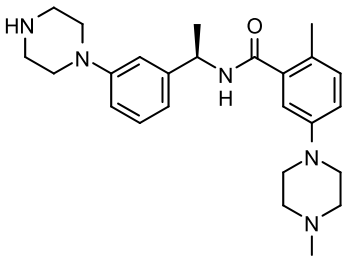
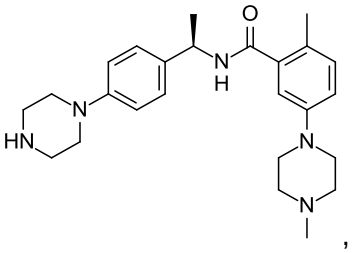
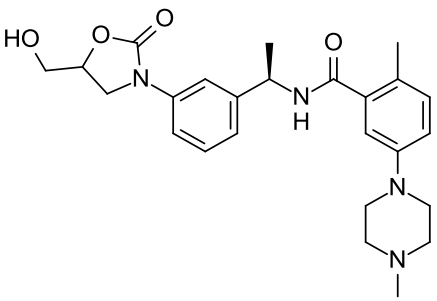
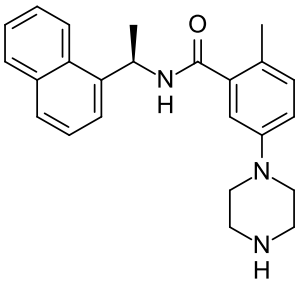
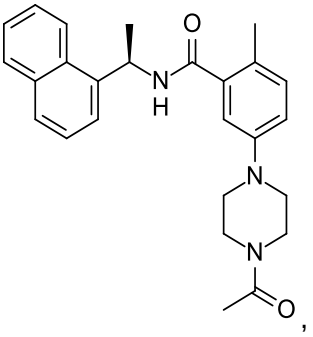
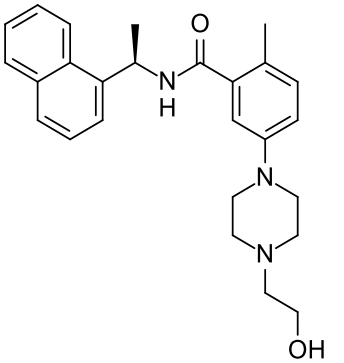
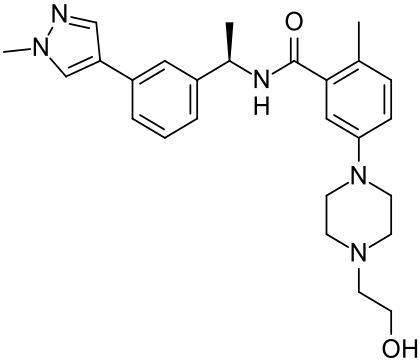
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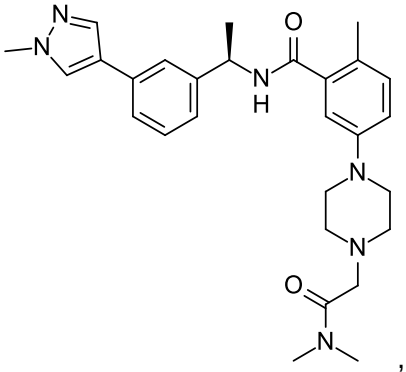
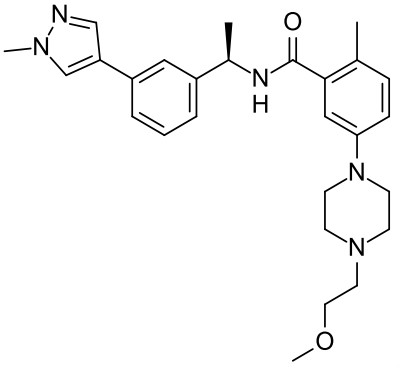
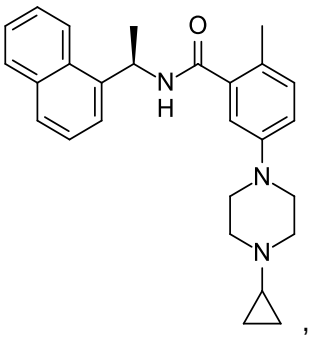
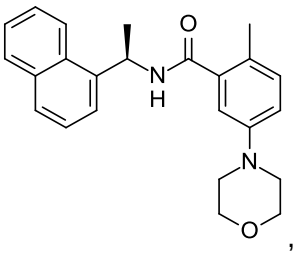
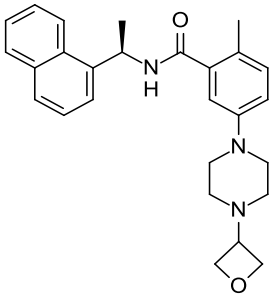
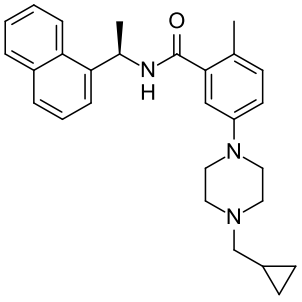
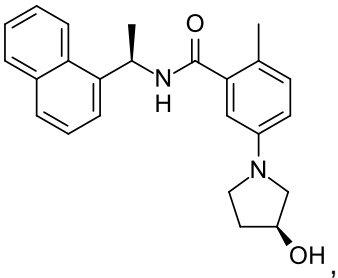
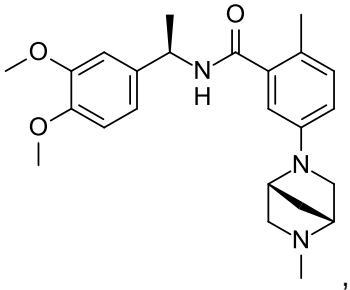
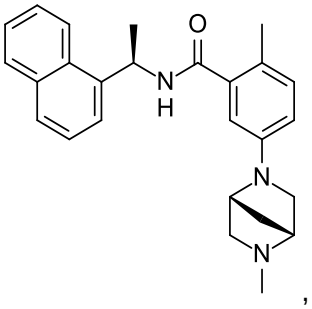
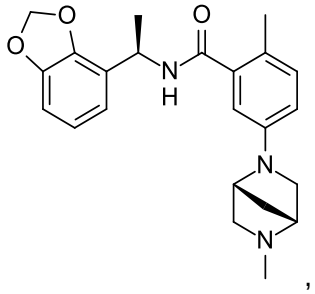
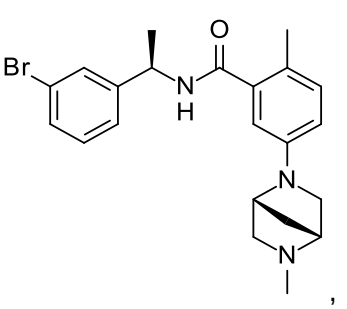
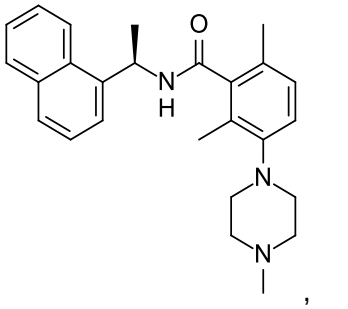
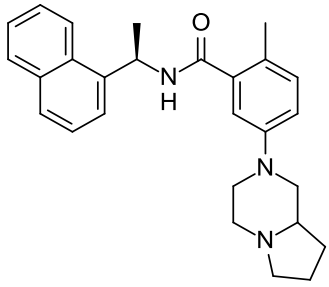
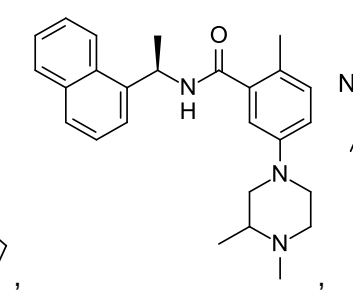
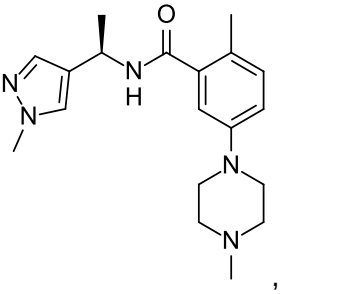

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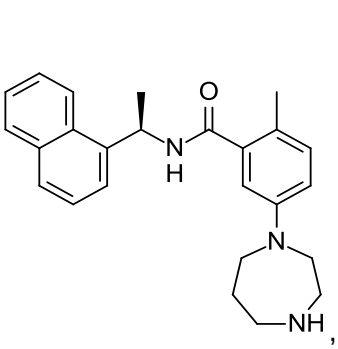
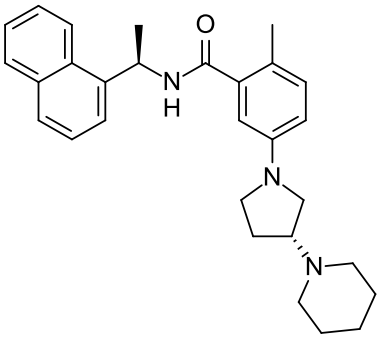
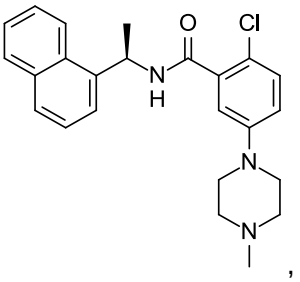
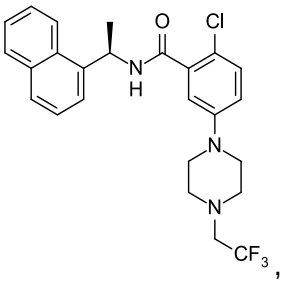
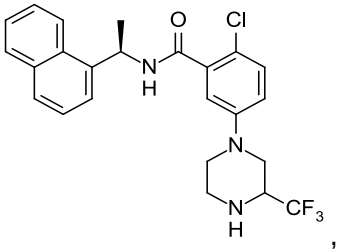
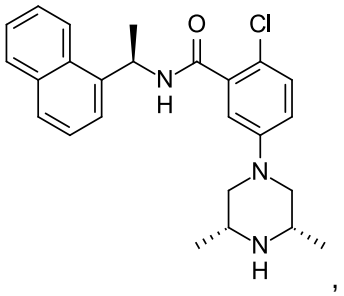
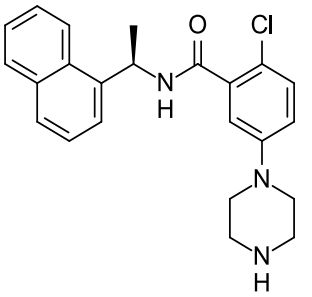
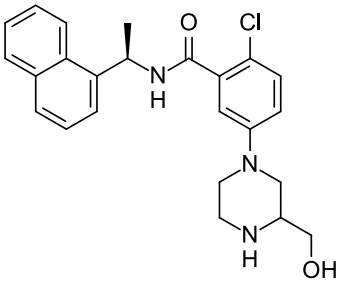
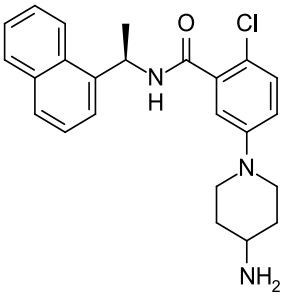
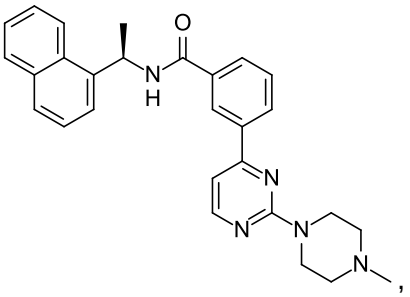
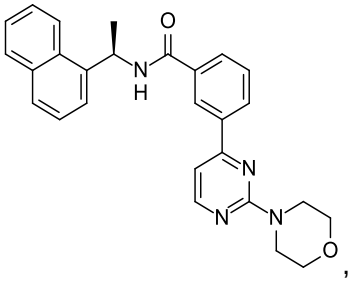
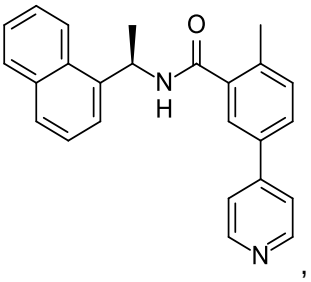
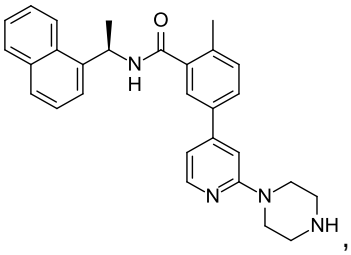
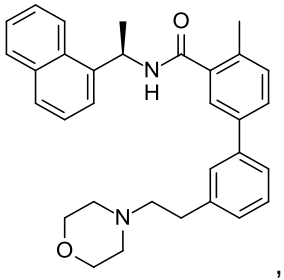
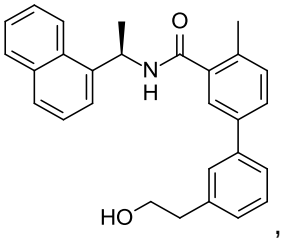
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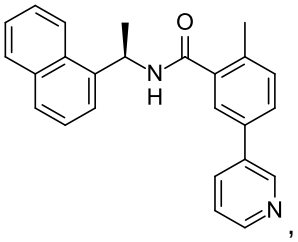
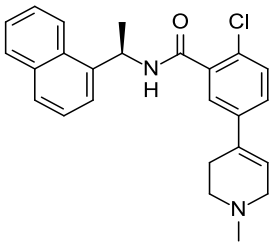
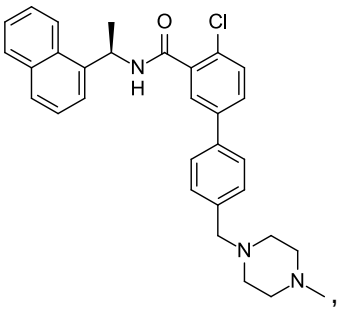
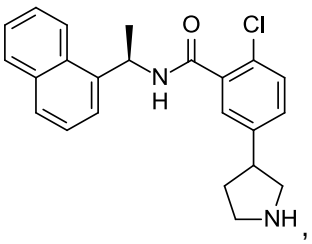
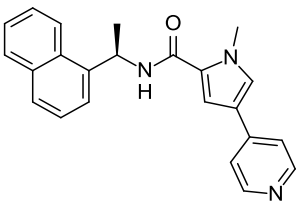
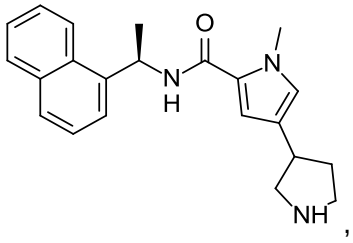
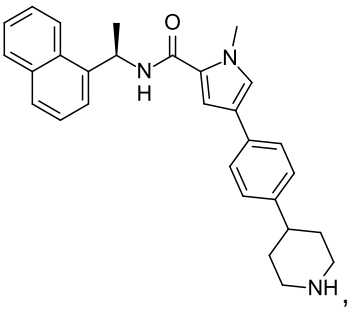
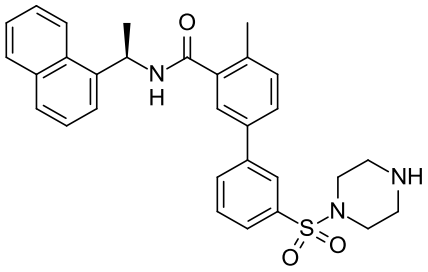
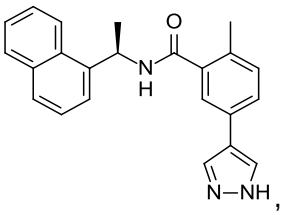
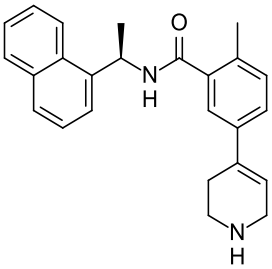
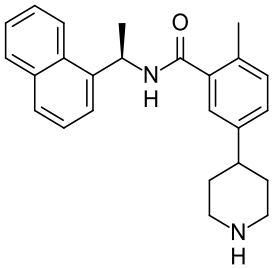
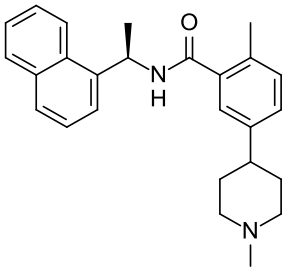
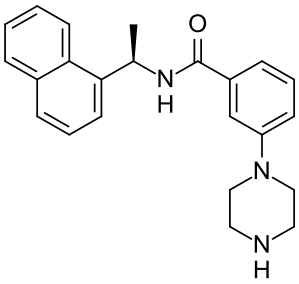
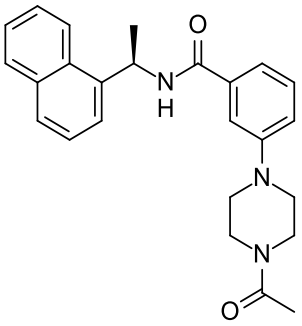
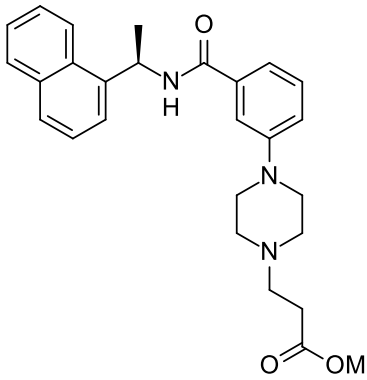
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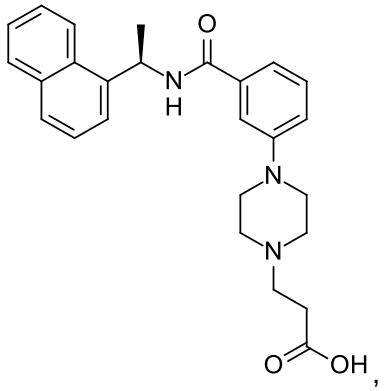
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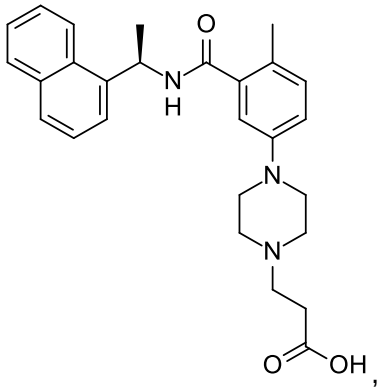

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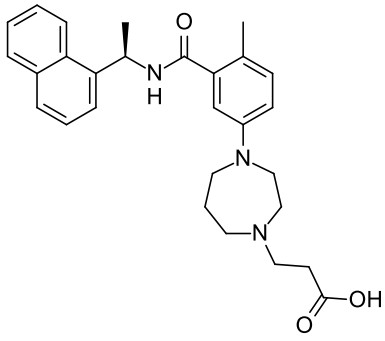
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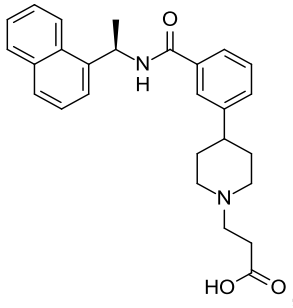

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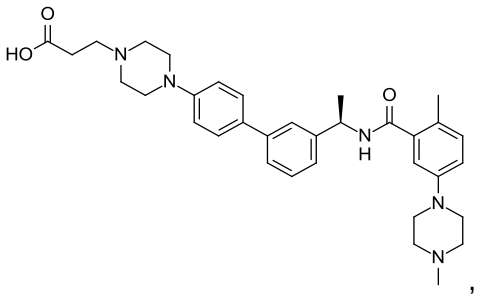
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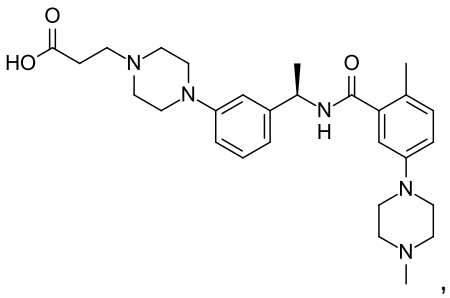

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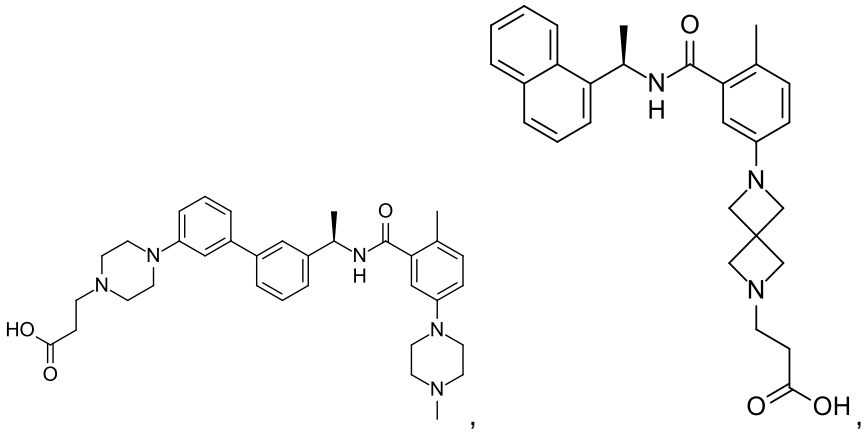

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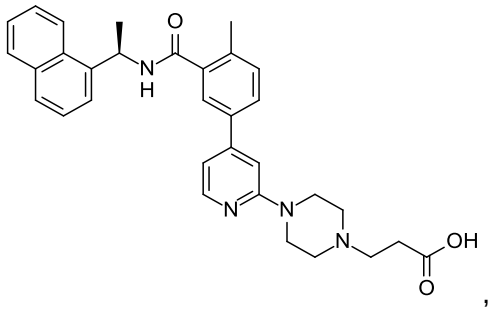

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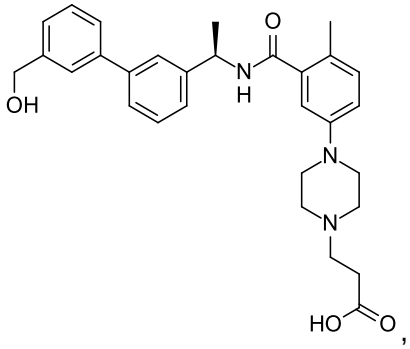

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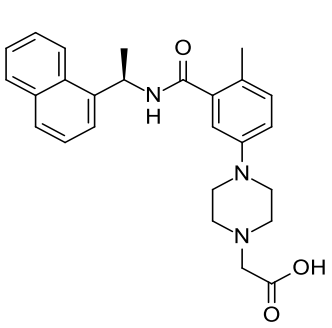

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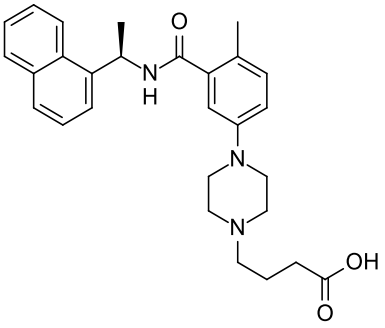

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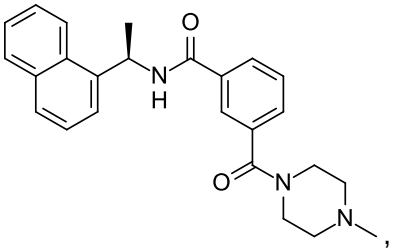
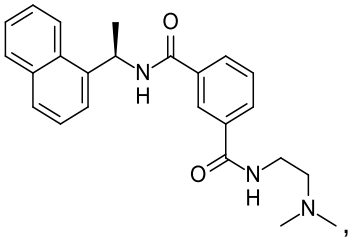
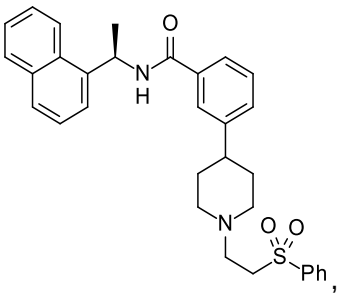
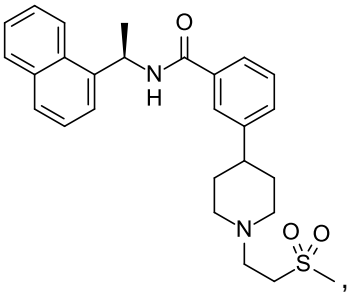
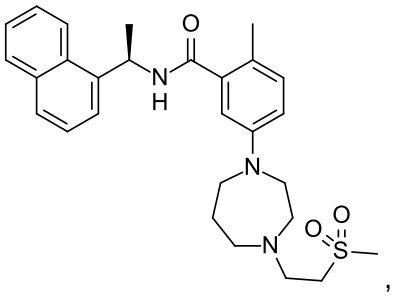
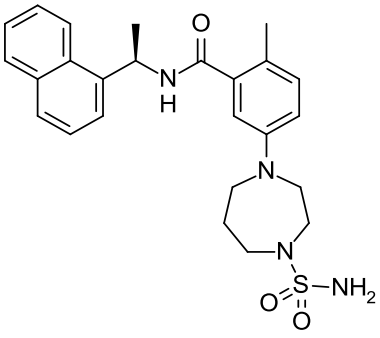
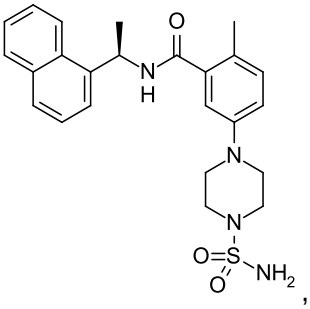
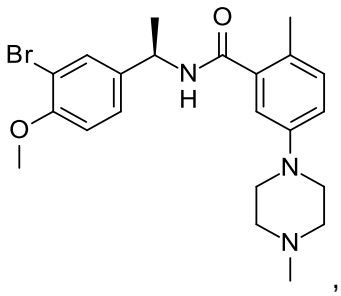
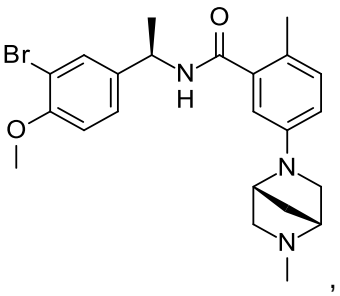
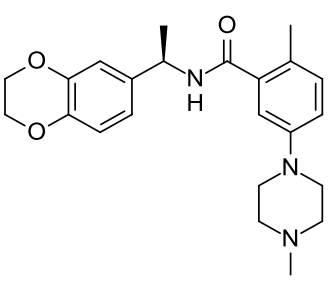
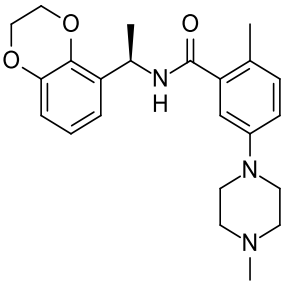
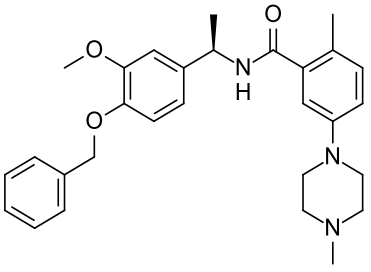
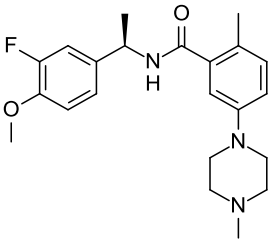
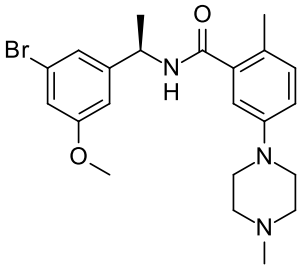
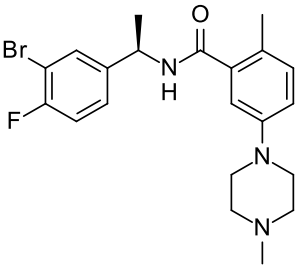


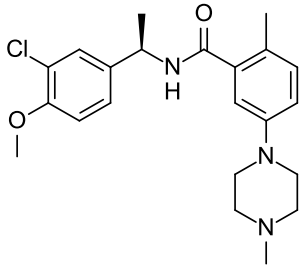
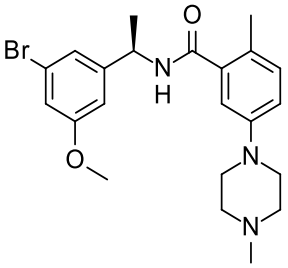
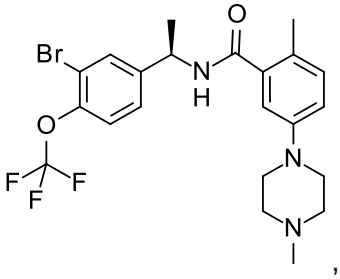
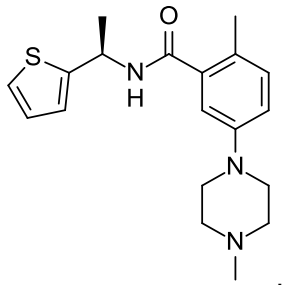
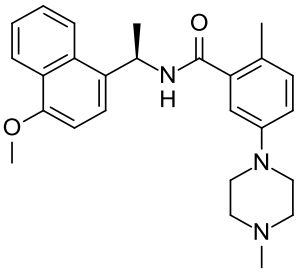
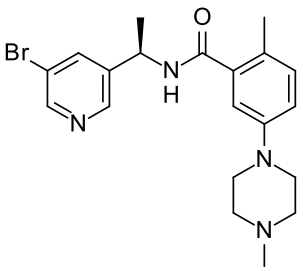
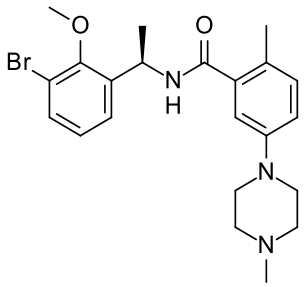
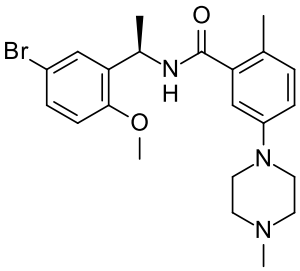
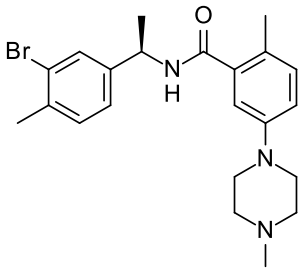
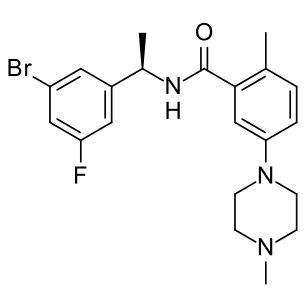
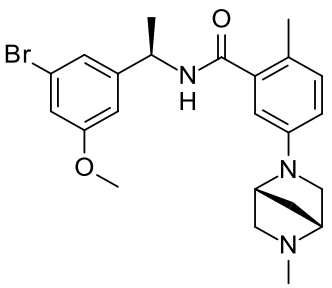
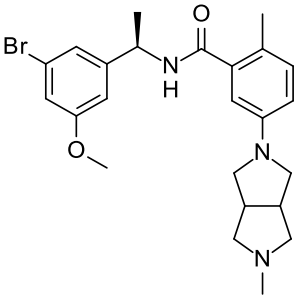
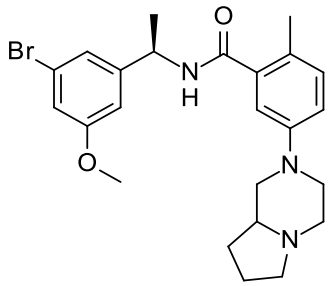
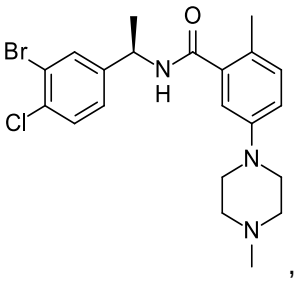
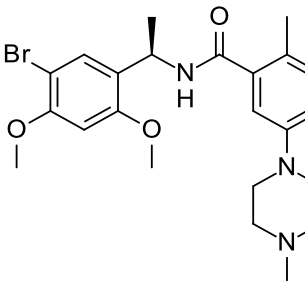








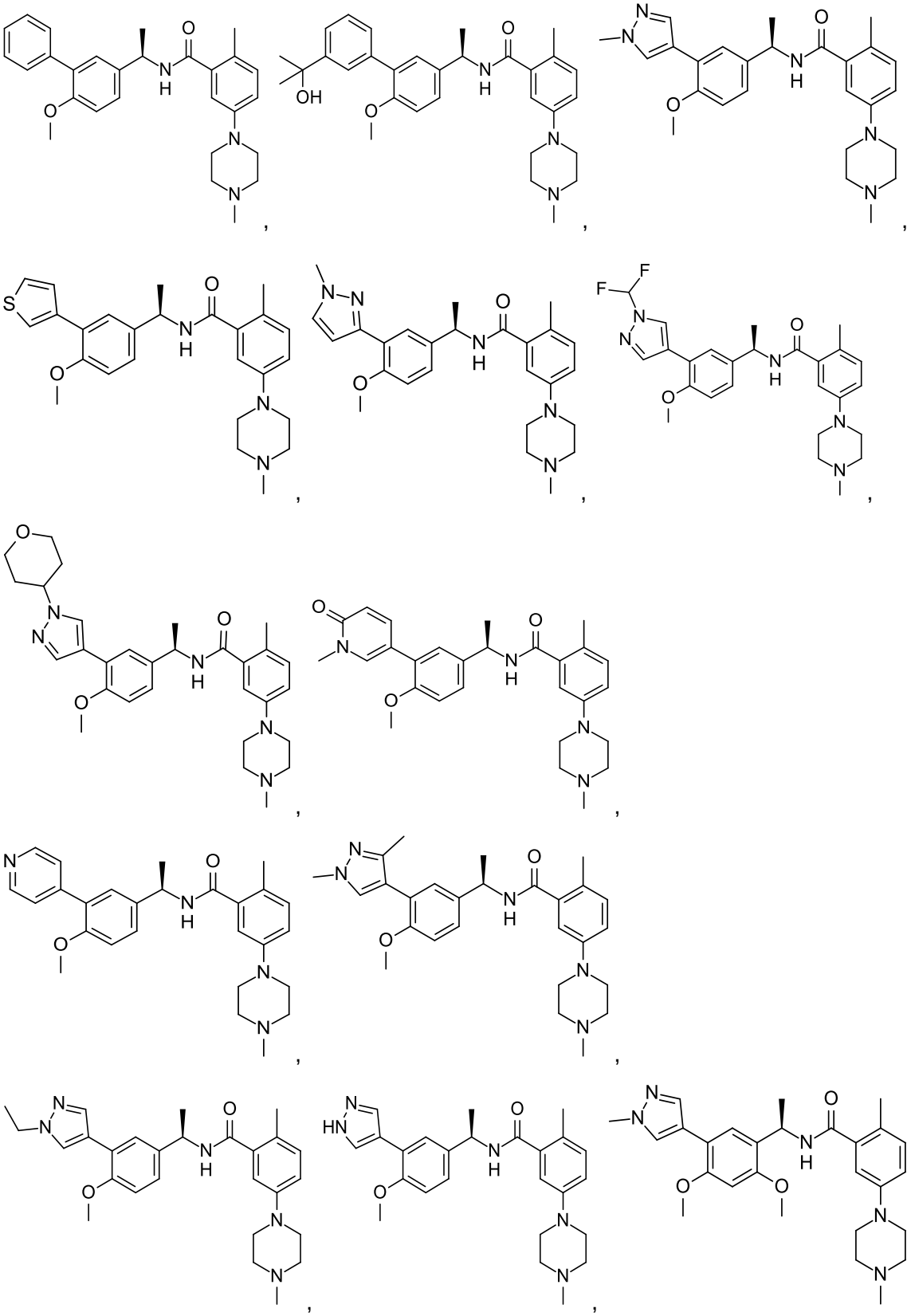

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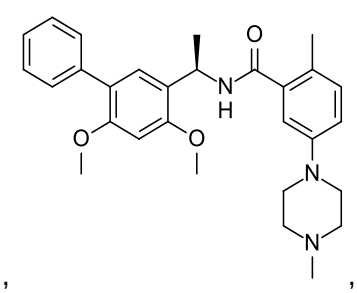
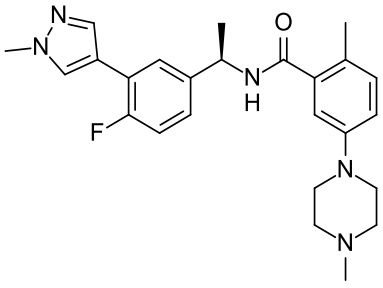
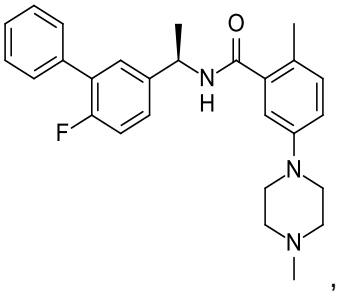
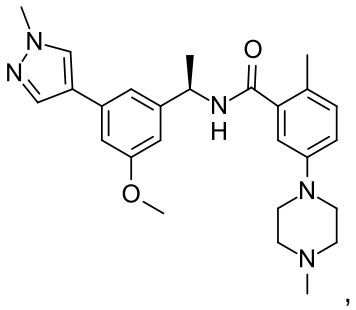
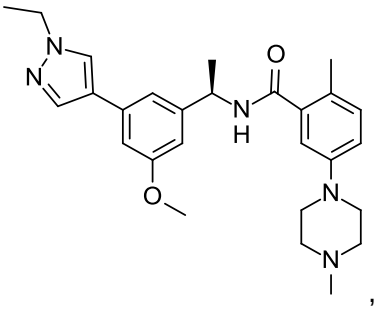
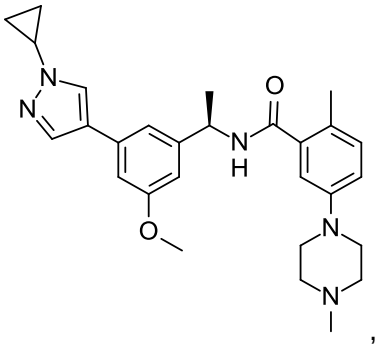
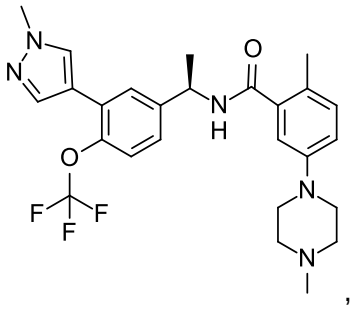
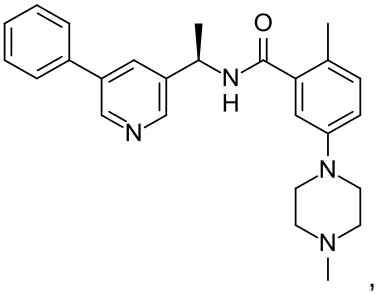
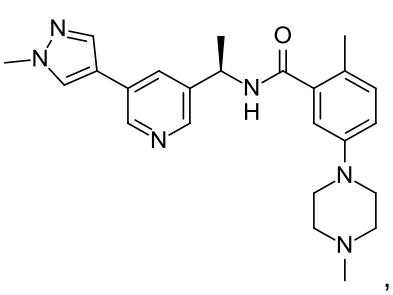
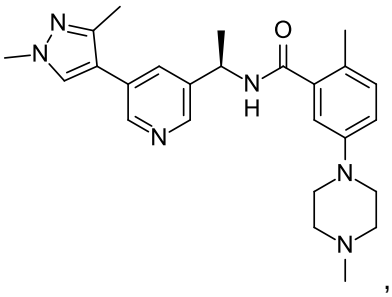
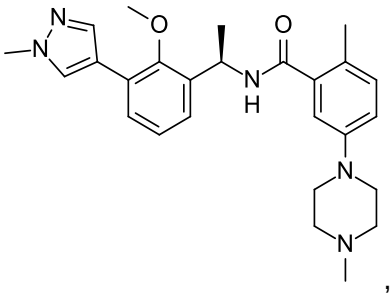
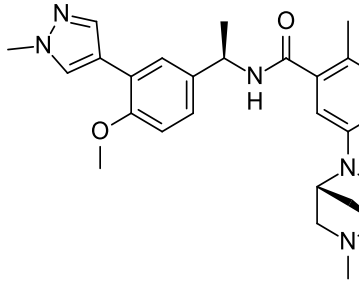
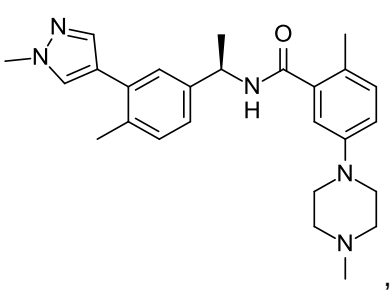

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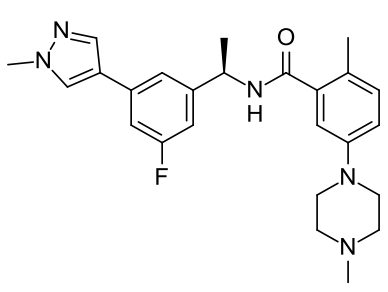
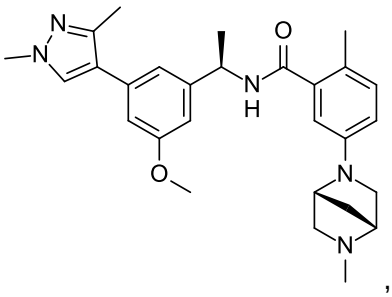
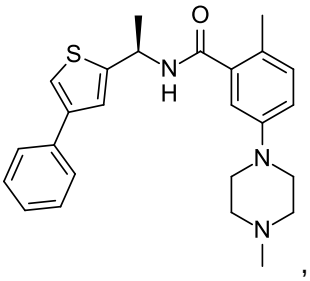
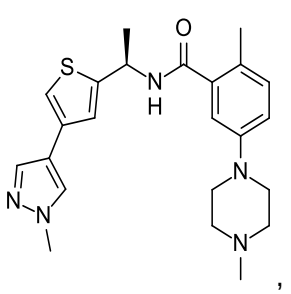
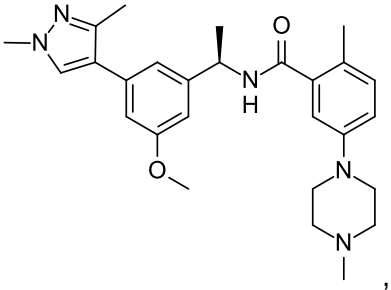
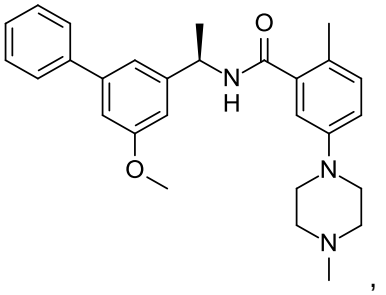
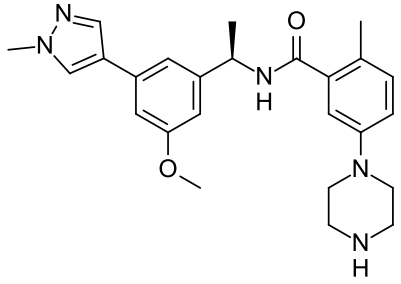
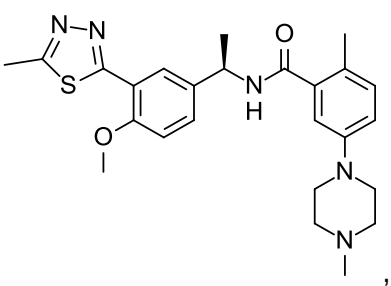
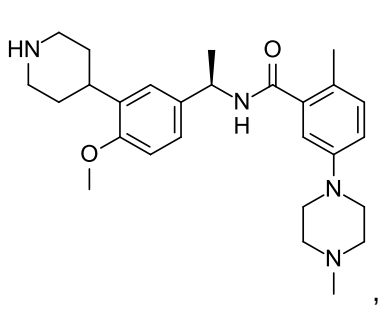
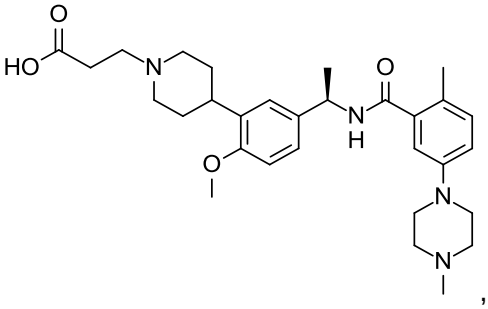
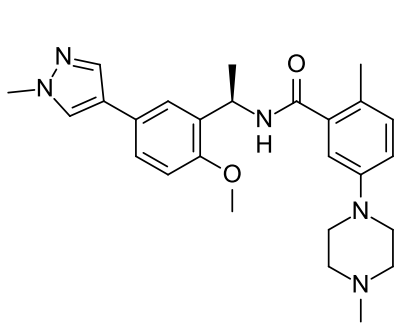
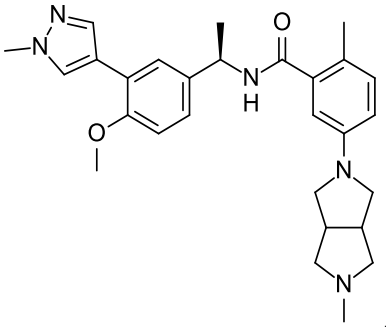
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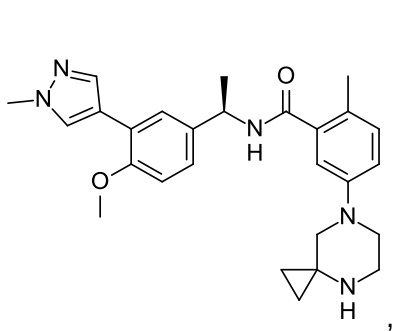
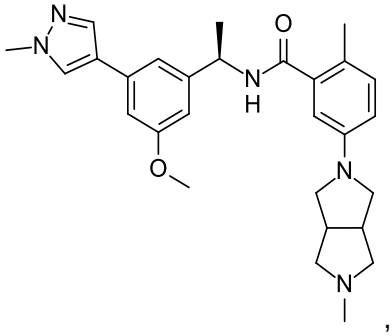
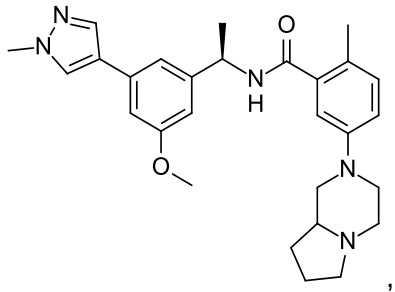
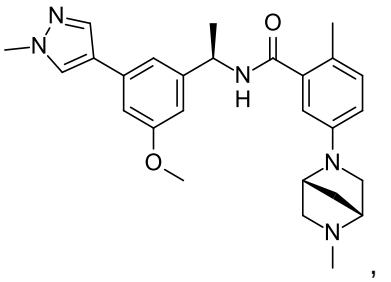
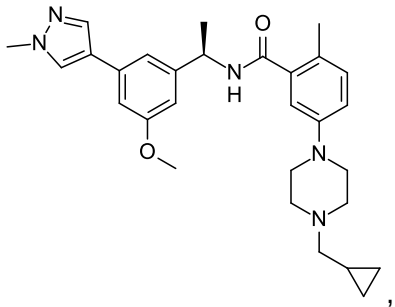
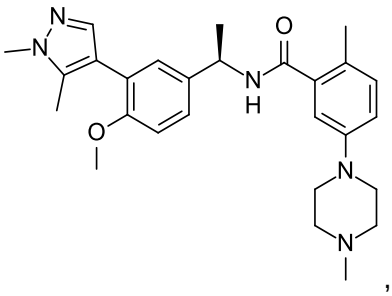
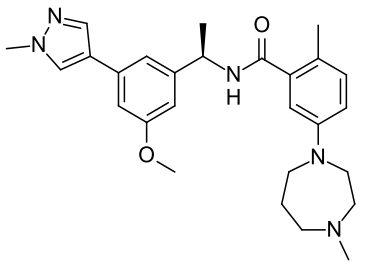
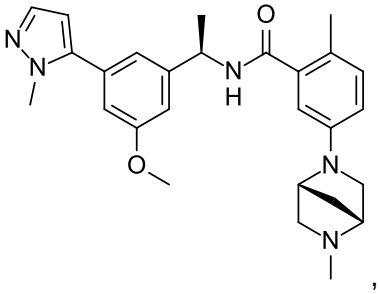
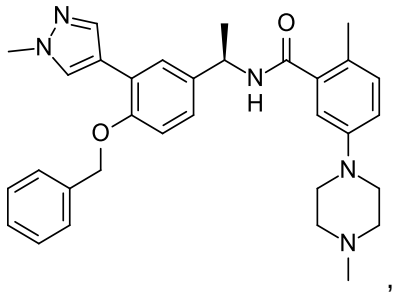
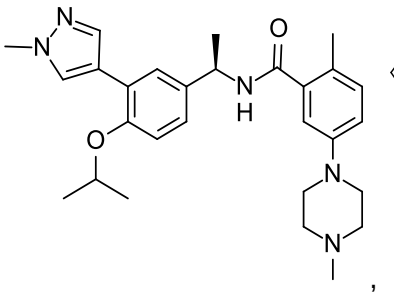
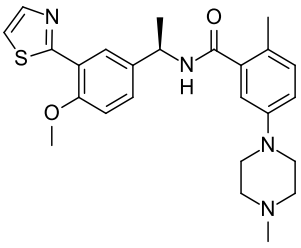
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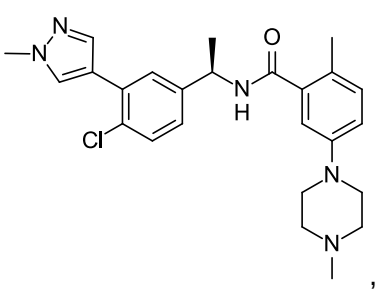
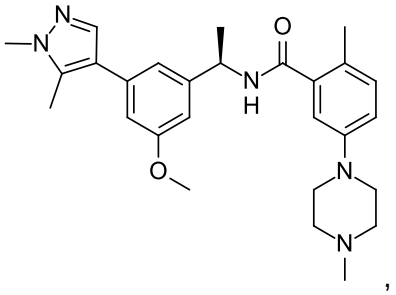
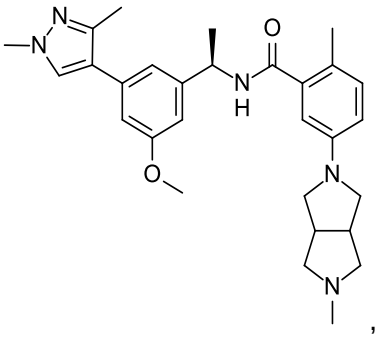
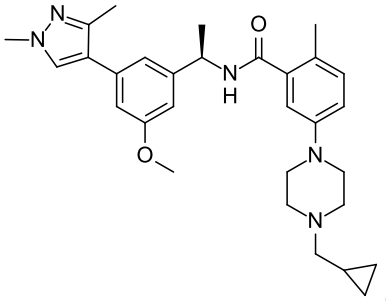
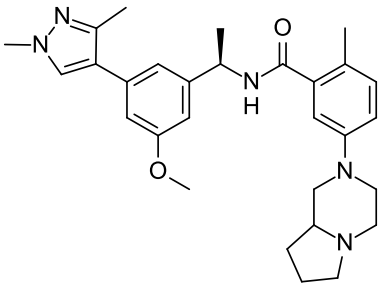
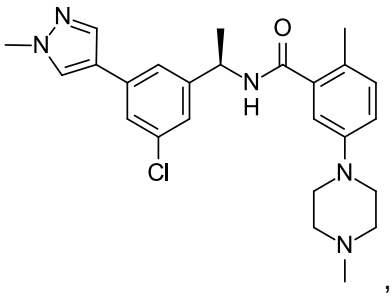
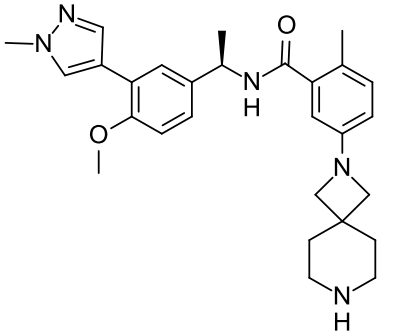
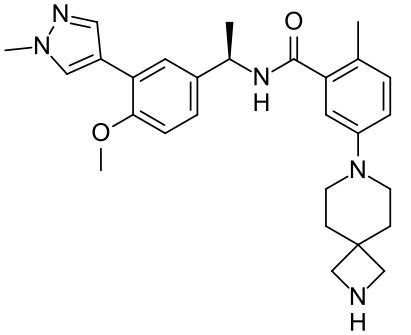
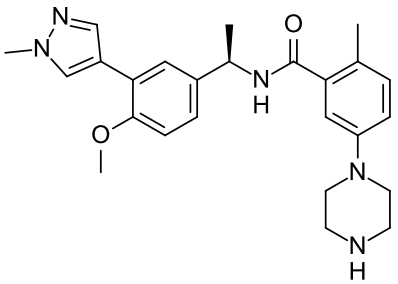
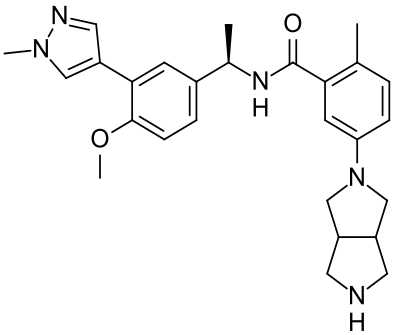
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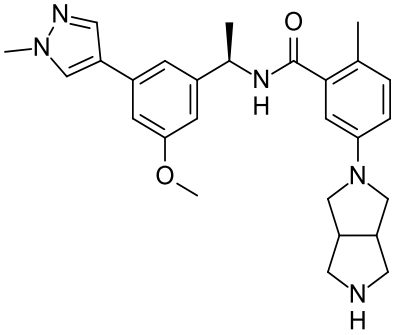
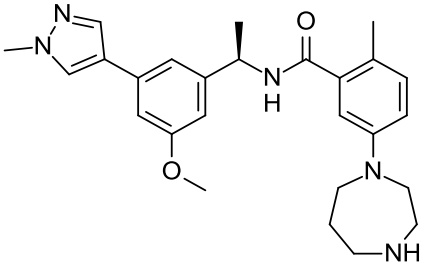
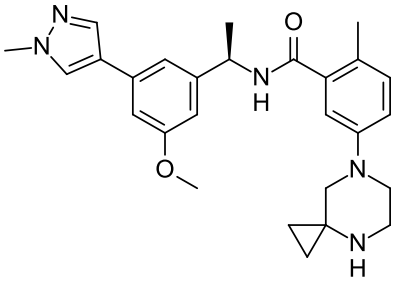
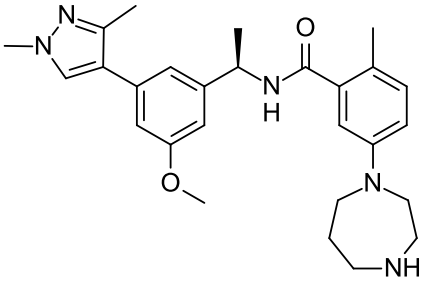
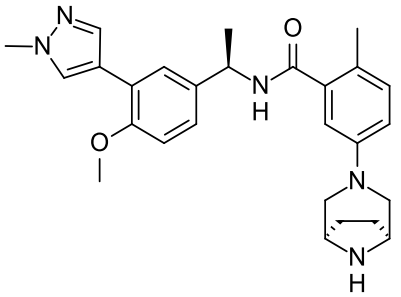
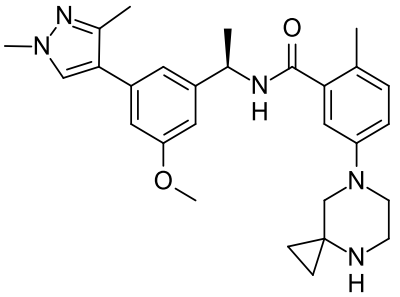
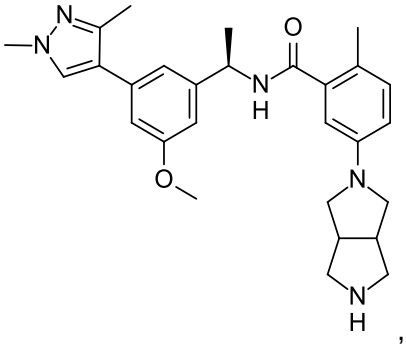
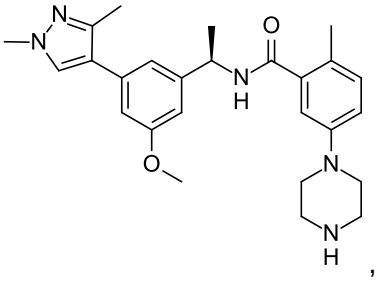

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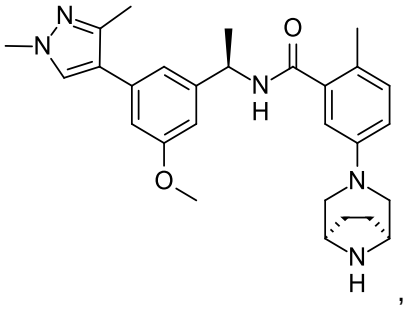
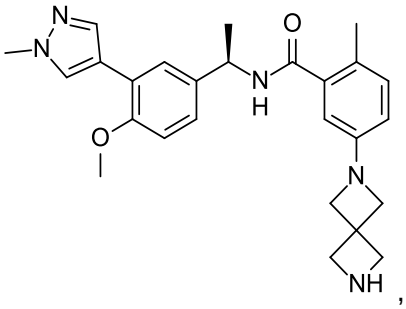
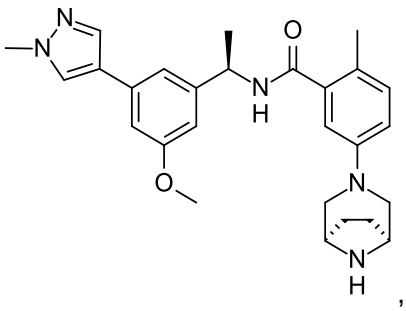
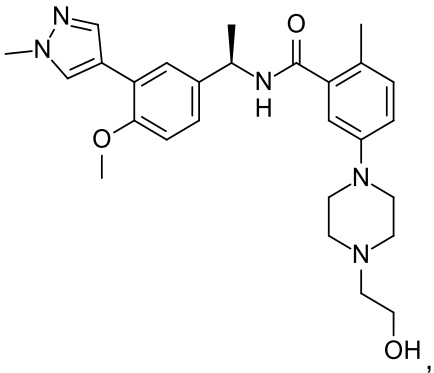
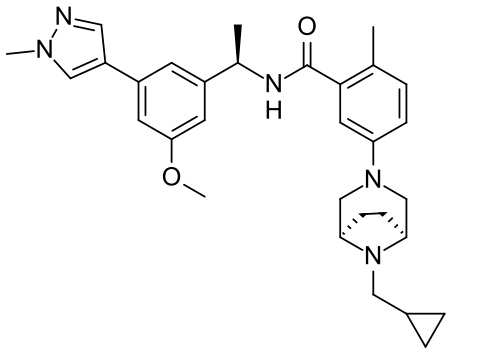
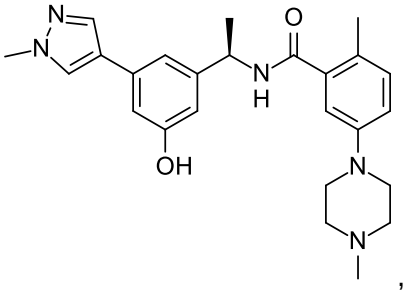
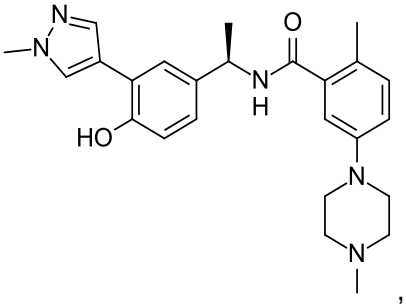
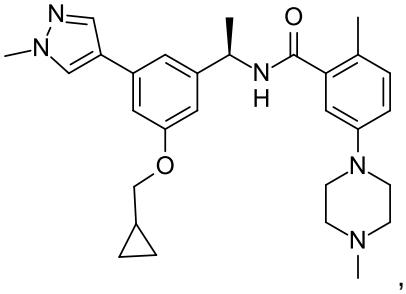
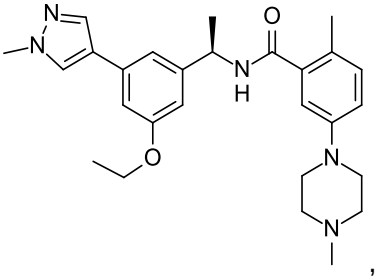

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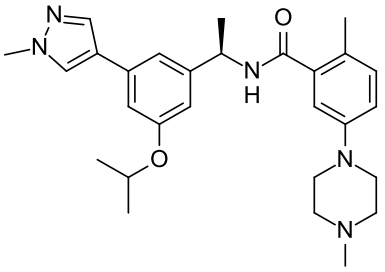
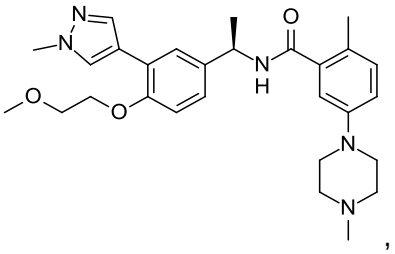
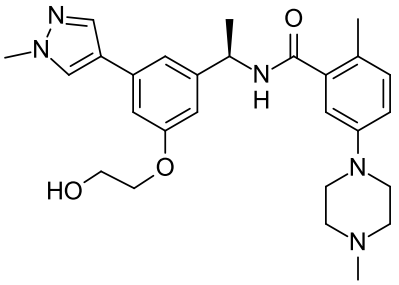
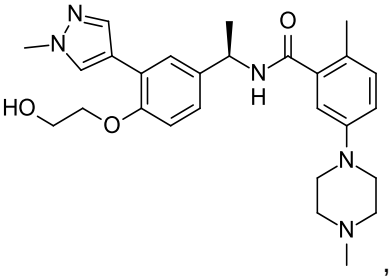
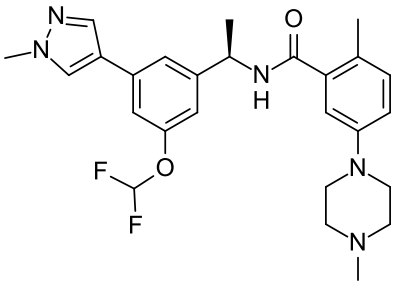
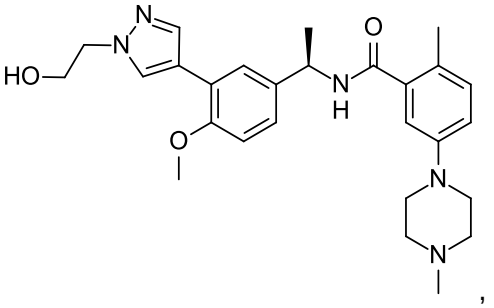
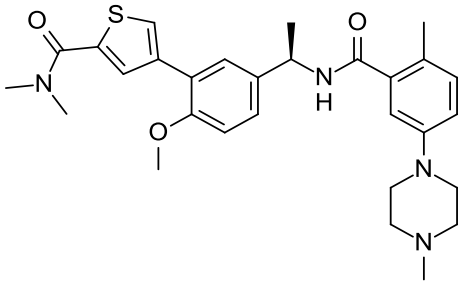
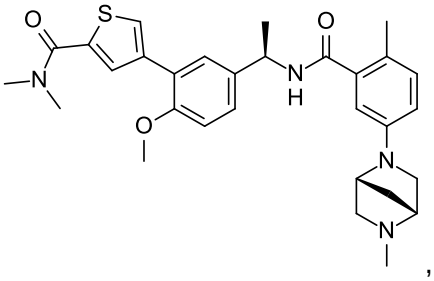
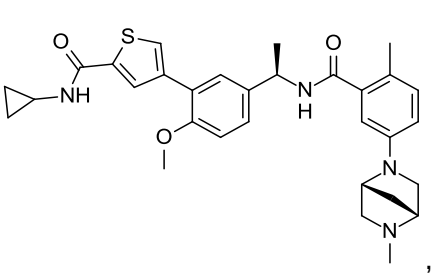
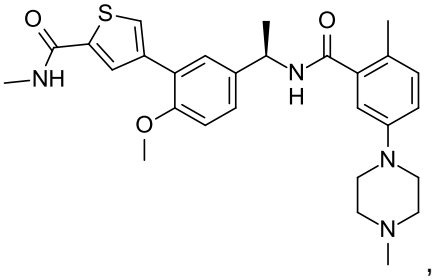

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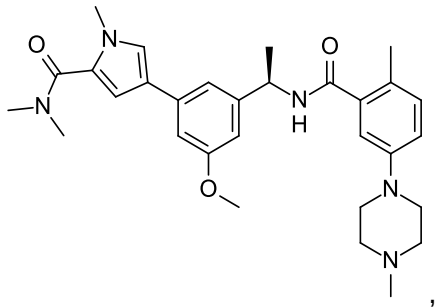
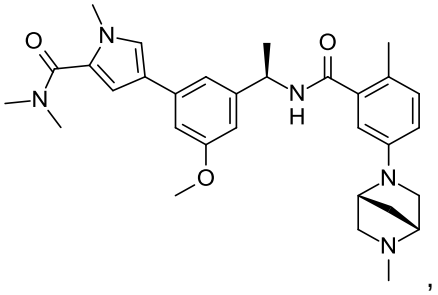
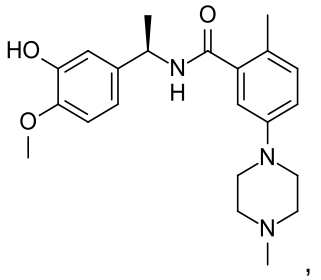
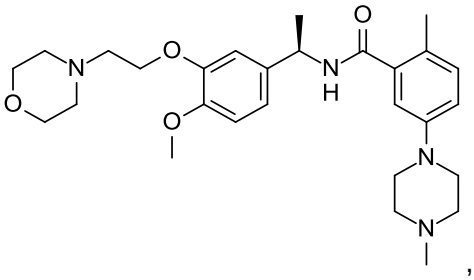
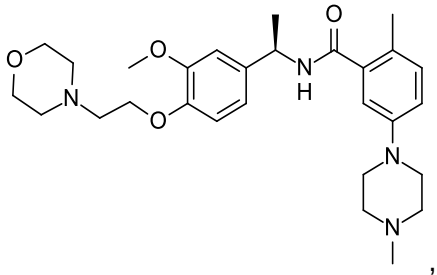
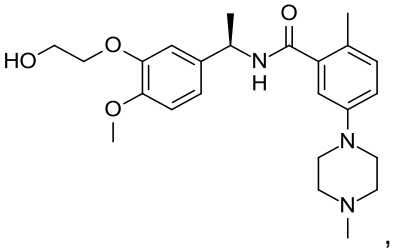
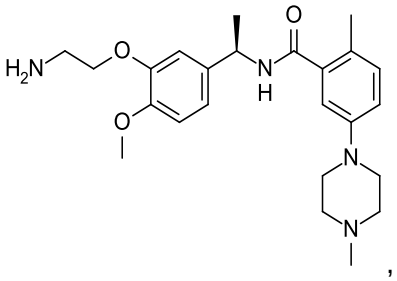
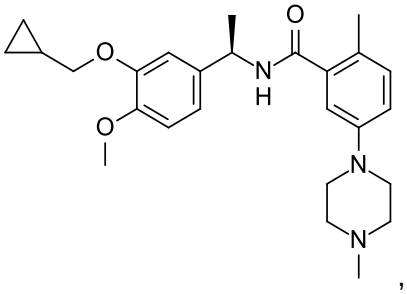
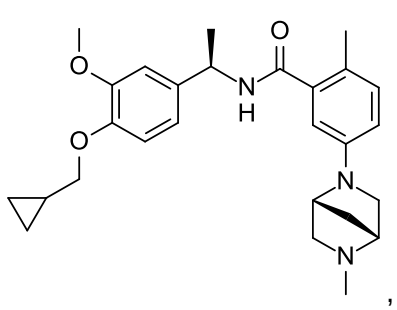
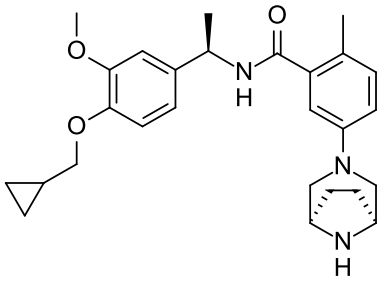

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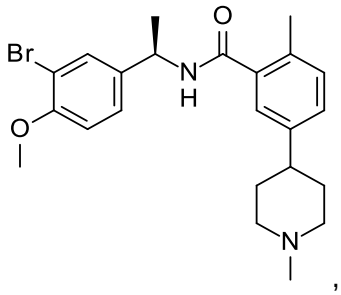
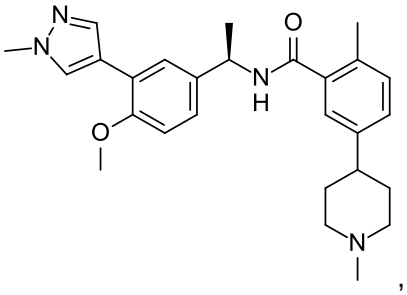
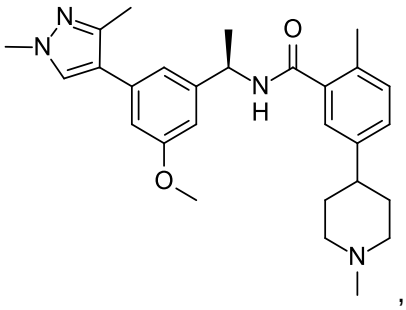
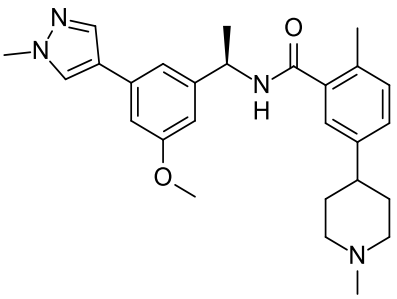
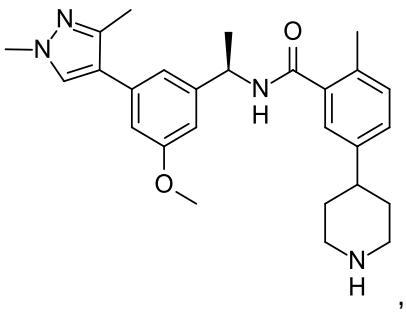
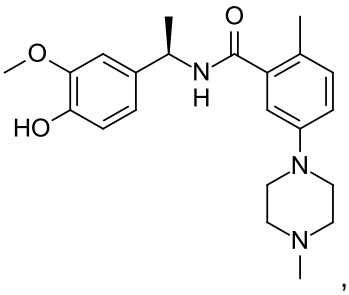
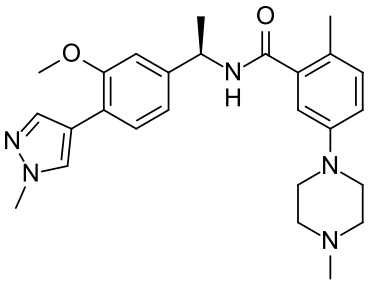
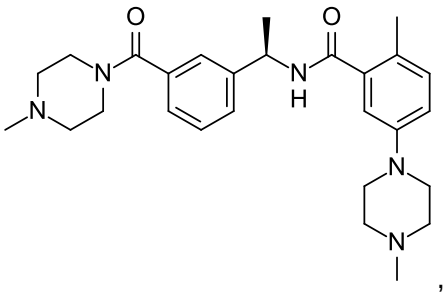
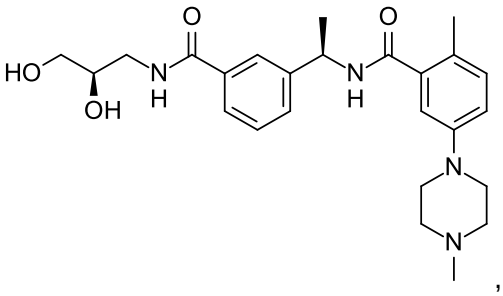
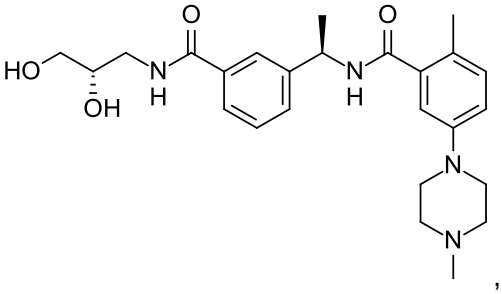
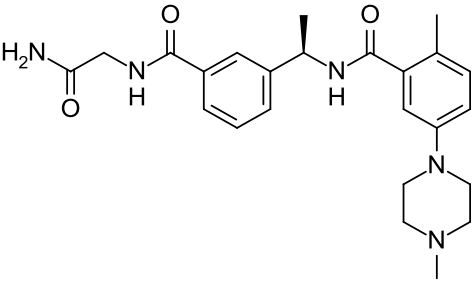
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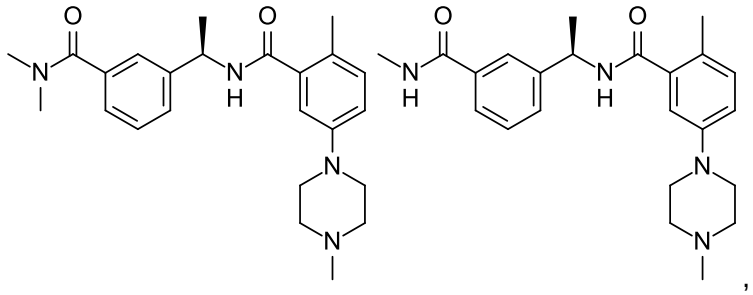

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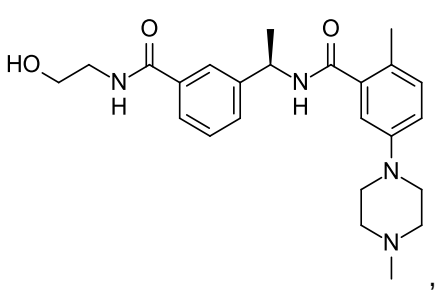

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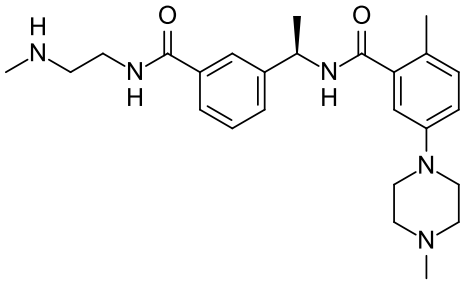

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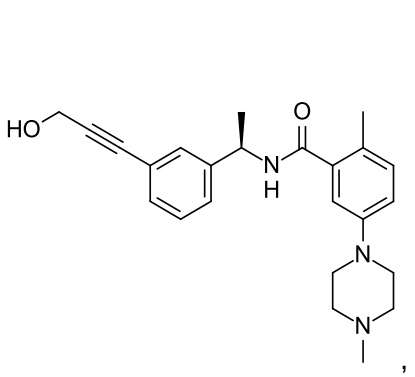
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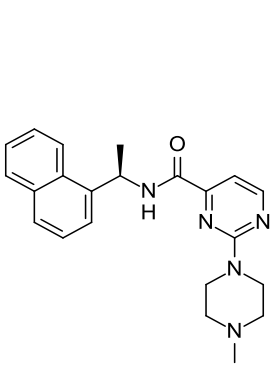
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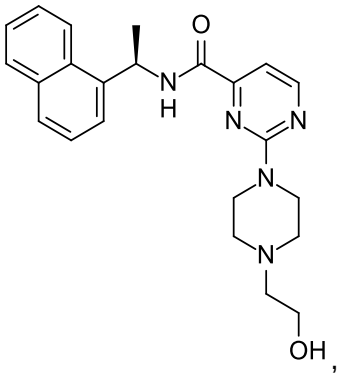

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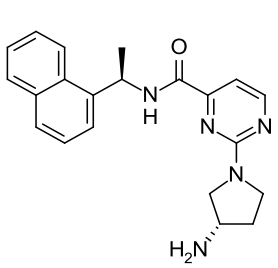

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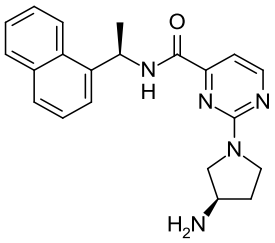

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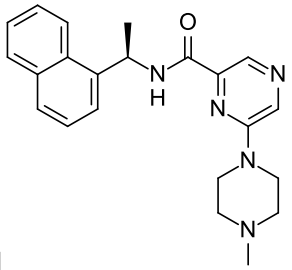

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16. A pharmaceutical composition comprising a compound of any of claims 1 to 15, or a pharmaceutically acceptable salt thereof, in association with one or more pharmaceutically acceptable excipients.

17. Use of a compound of any of claims 1 to 15, or the composition of claim 16, in
10 the manufacture of a medicament for the inhibition of PLpro activity.

18. Use of a compound of any of claims 1 to 15, a pharmaceutically acceptable salt thereof, or a composition of claim 16, in the manufacture of a medicament for the treatment of a viral infection.

19. The use of claim 18, wherein the viral infection is a disease or disorder caused by coronaviruses, rotaviruses, noroviruses, enteroviruses, hepatitis viruses (e.g. HAV, HBV, HCV, HDV, HEV), herpesviruses, papillomaviruses, arboviruses (e.g. West Nile virus, Zika virus, Dengue virus), ebolaviruses, rabies virus, or rubella virus.

20. The use of claim 19, wherein the disease or disorder is caused by coronaviruses, optionally wherein the disease or disorder is selected from: coronavirus disease 2019 (COVID-19), severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), common cold, or other coronavirus infections.

21. A compound of any of claims 1 to 15, a pharmaceutically acceptable salt thereof, or a composition of claim 16, for use in therapy.