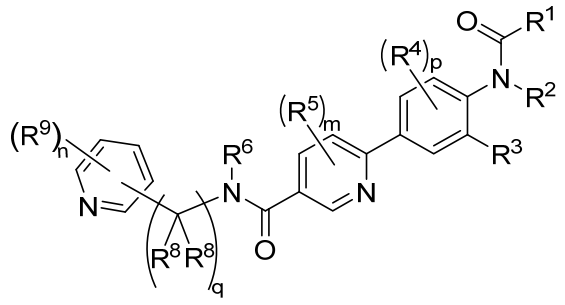
CLAIMS

1. A compound of Formula (**0**):



(**0**),

or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, wherein:

R^1 is substituted or unsubstituted, C_{1-12} alkyl, wherein when R^1 is substituted, R^1 is substituted with halo, −CN, $-NR^a_2$, $-CO_2R^a$, $-C(=O)R^a$, or $-N(R^a)(C=O)R^a$;

R^2 is C_{1-6} haloalkyl, substituted or unsubstituted, 3- to 13-membered heterocyclyl-C_{1-12}-alkyl, or substituted or unsubstituted, 3- to 13-membered carbocyclyl-C_{1-12}-alkyl;

R^3 is hydrogen, halogen, substituted or unsubstituted, C_{1-6} alkyl, $–COOR^a$, –CN, or $–(C=O)N(R^a)_2$;

each instance of R^a is independently hydrogen, substituted or unsubstituted, C_{1-6} alkyl, an oxygen protecting group when attached to an oxygen atom, or a nitrogen protecting group when attached to a nitrogen atom;

each instance of R^4 is independently hydrogen, halogen, substituted or unsubstituted, C_{1-6} alkyl, $–OR^a$, $–COOR^a$, $–COR^a$, $–N(R^a)_2$, –CN, or $–(C=O)N(R^a)_2$;

each instance of R^5 is independently hydrogen, halogen, substituted or unsubstituted, C_{1-6} alkyl, $–OR^a$, $–COOR^a$, $–COR^a$, $–N(R^a)_2$, –CN, or $–(C=O)N(R^a)_2$;

R^6 is hydrogen, substituted or unsubstituted, C_{1-6} alkyl, or a nitrogen protecting group;

each instance of R^8 is independently hydrogen, halogen, or substituted or unsubstituted, C_{1-6} alkyl;

each instance of R^9 is independently hydrogen, halogen, substituted or unsubstituted, C_{1-6} alkyl, $–OR^a$, $–COOR^a$, $–COR^a$, $–N(R^a)_2$, –CN, or $–(C=O)N(R^a)_2$, or two instances of R^9 are joined to form a 3- to 13-membered heterocyclyl, 3- to 13-membered heterocyclyl, 6- to 12-membered aryl ring, or 5- to 14-membered heteroaryl ring;

n is an integer from 0 to 4, inclusive;

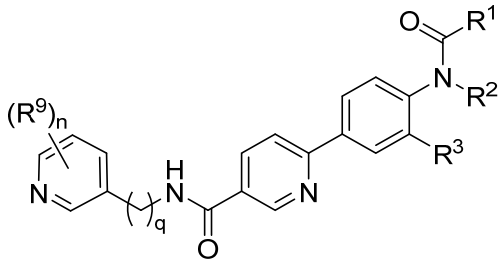
m is an integer from 0 to 3, inclusive;

p is an integer from 0 to 3, inclusive; and

q is an integer selected from 0 and 1.

2. The compound of claim 1, wherein:

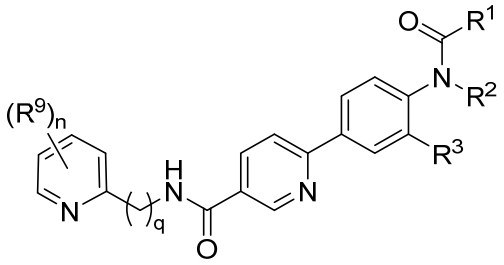
(a) the compound is of Formula (**0a**):



(**0a**),

or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof;

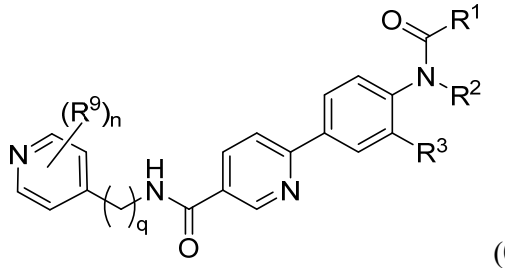
(b) the compound is of Formula (**0b**):



(**0b**),

or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof; or

(c) the compound is of Formula (**0c**):



(**0c**),

or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof;

optionally, wherein;

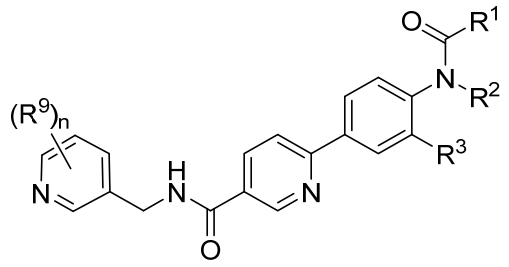
(i) q is 0; or

(ii) q is 1; and/or

optionally, wherein two instances of R^9 are joined to form a 5-membered heteroaryl ring or 5-membered heterocyclyl ring.

3. The compound of claim 1 or 2, wherein:

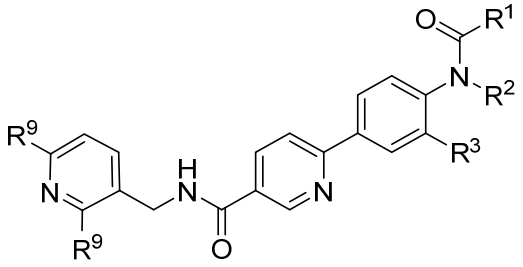
(a) the compound is of Formula (**Iz**):



(**Iz**),

or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof;

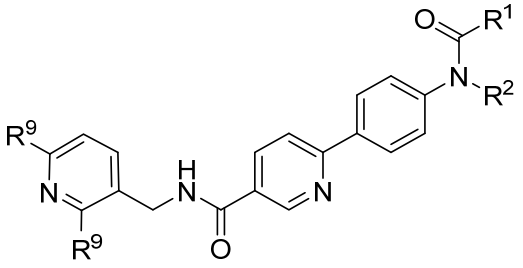
(b) the compound is of Formula (**Ia**):



(**Ia**),

or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof;

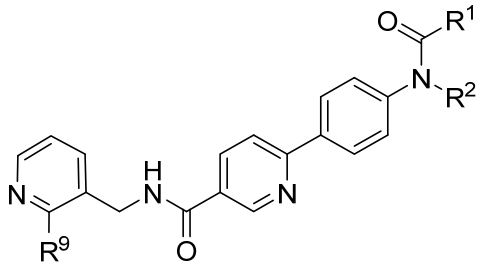
(c) the compound is of Formula (**Ib**):



(**Ib**),

or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof; or

(d) the compound is of Formula (**Ic**):



(**Ic**),

or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof.

4. The compound of any one of claims 1-3, wherein:

(i) each R^9 is independently hydrogen, substituted or unsubstituted methyl, chloro, fluoro, methoxy, or $-NH_2$;

(ii) each R^9 is independently substituted or unsubstituted methyl, chloro, fluoro, methoxy, or $-NH_2$; or

(iii) R^9 is methyl;

optionally wherein:

(a) n is 0; (b) n is 1; or (c) n is 2.

5. The compound of any one of claims 1-4, wherein:

(a) R^3 is hydrogen, substituted or unsubstituted methyl, fluoro, chloro, -CN, or $-COOR^a$;

(b) R^3 is hydrogen, substituted or unsubstituted methyl, chloro, bromo, iodo, -CN, or $-COOR^a$;

(c) R^3 is hydrogen, substituted or unsubstituted methyl, -CN, or $-COOR^a$; or

(d) R^3 is methyl or chloro.

6. The compound of any one of claims 1-5, wherein:

(a) R^1 is substituted or unsubstituted, C_{1-3} alkyl; or

(b) R^1 is methyl or ethyl.

7. The compound of any one of claims 1-6, wherein:

(a) R^2 is C_{1-6} haloalkyl;

(b) R^2 is difluoroethyl;

(c) R^2 is 2,2-difluoroethyl;

(d) R^2 is substituted or unsubstituted, 3- to 6-membered heterocyclyl-C_{1-6}-alkyl, or substituted or unsubstituted, 3- to 6-membered carbocyclyl-C_{1-6}-alkyl;

(e) R^2 is substituted or unsubstituted 3- to 6-membered heterocyclyl-C_1-alkyl, or substituted or unsubstituted, 3- to 6-membered carbocyclyl-C_1-alkyl; or

(f) R^2 is cyclopropylmethyl.

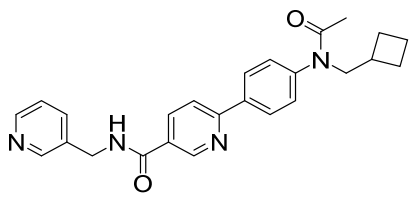
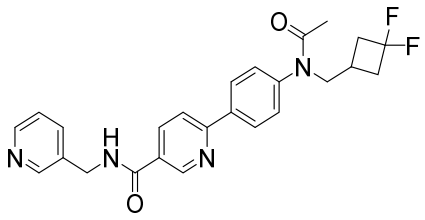
8. The compound of any one of claims 1-7, wherein:

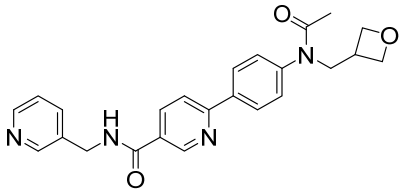
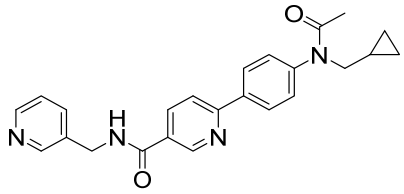
(a) R^2 is substituted or unsubstituted, 3- to 6-membered carbocyclyl-C_{1-6}-alkyl or C_{1-6} haloalkyl;

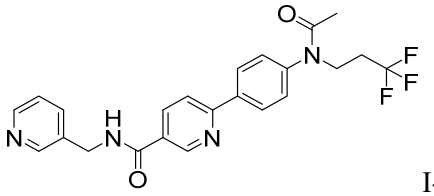
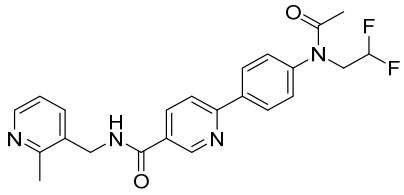
(b) R^2 is unsubstituted, 3- to 6-membered carbocyclyl-C_{1-2}-alkyl or C_{1-6} haloalkyl; or

(c) R^2 is 2,2-difluoroethyl or cyclopropylmethyl.

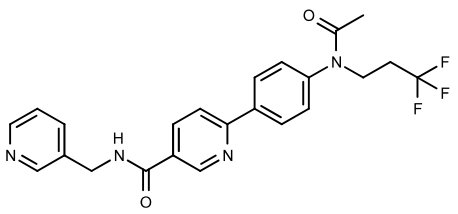
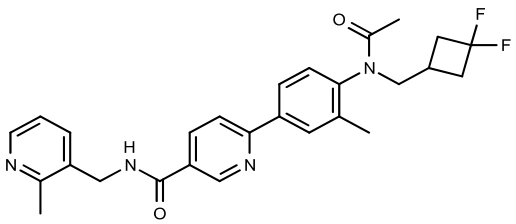
9. The compound of claim 1, wherein the compound is selected from the group consisting of:

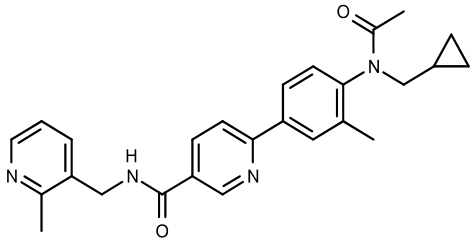
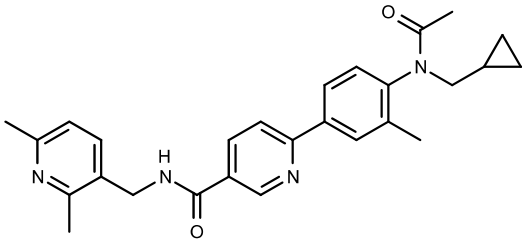
(a)  I-453,  I-412,

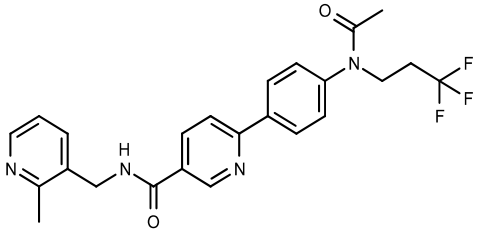
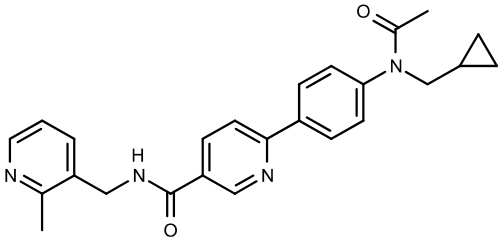
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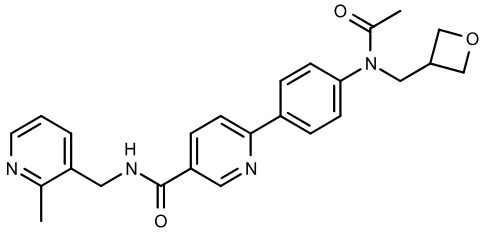
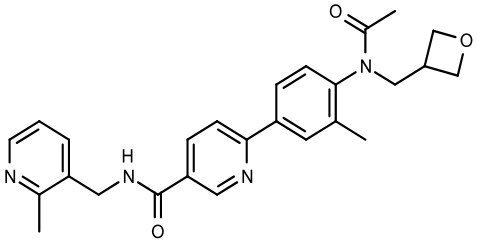
 I-482, and  I -449, and

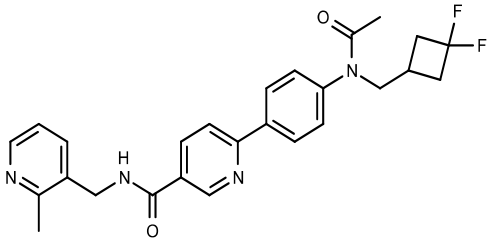
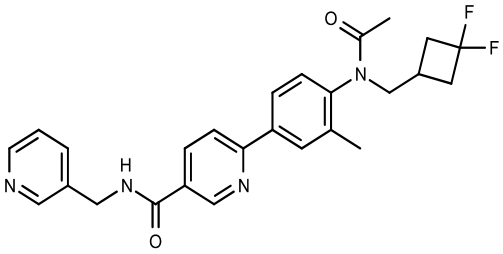
pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof;

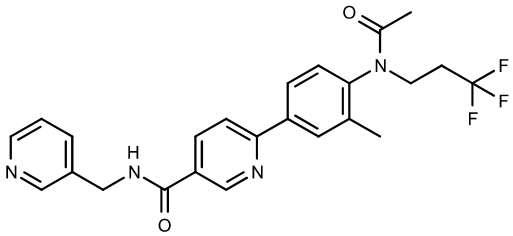
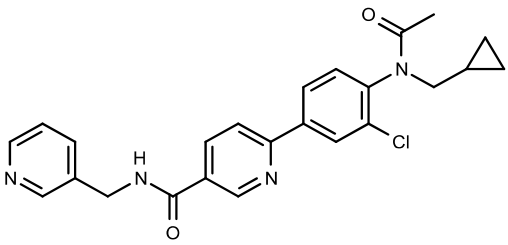
(b)  I-482,  I-485,

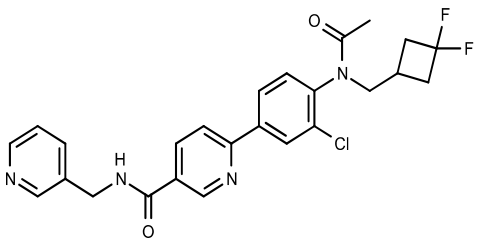
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 I-499,  I-500,

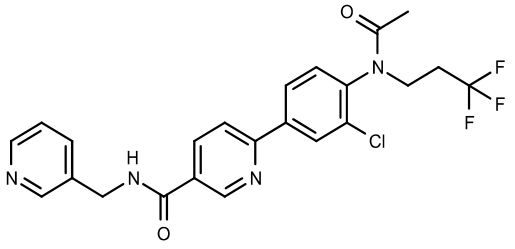
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 I-517,  I-600,

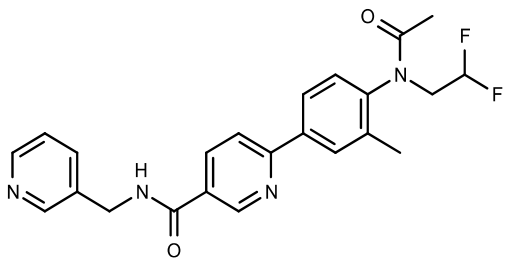
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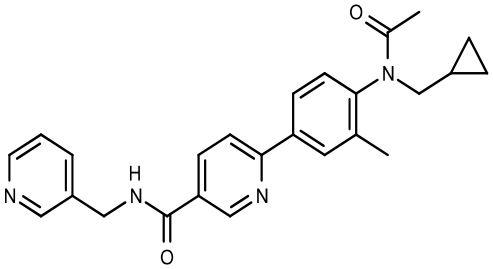
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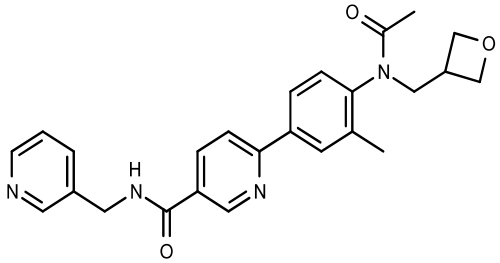
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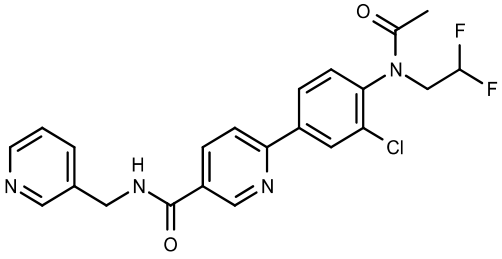
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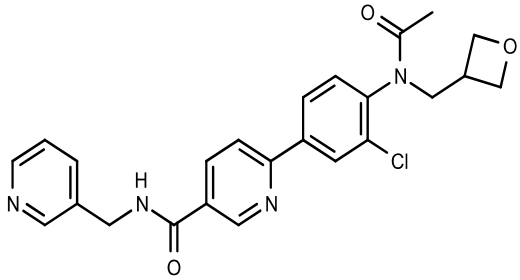
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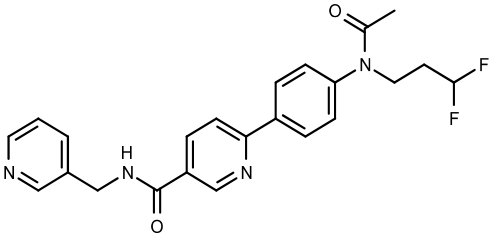
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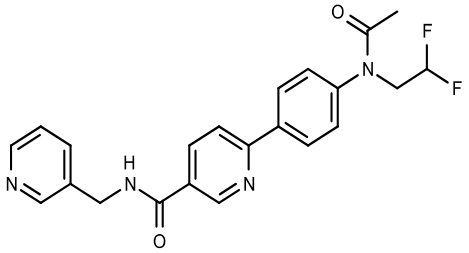
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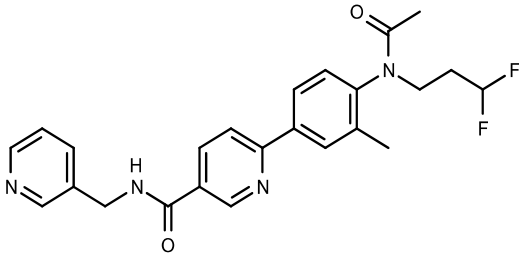
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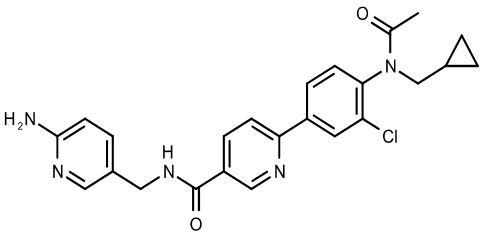
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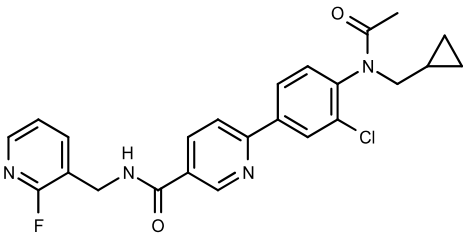
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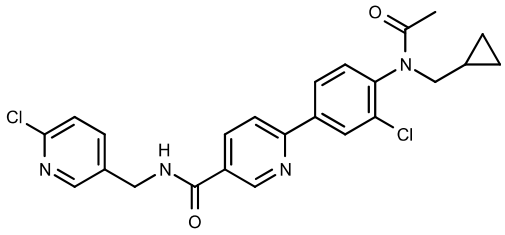
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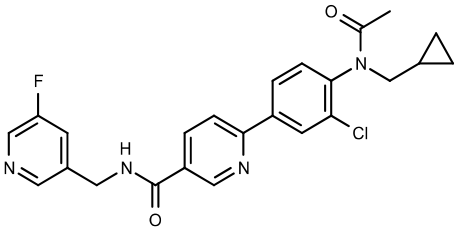
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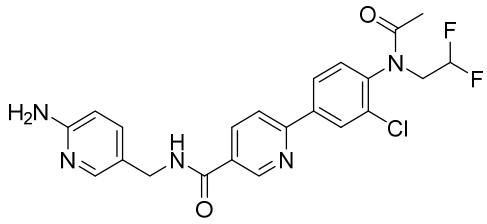
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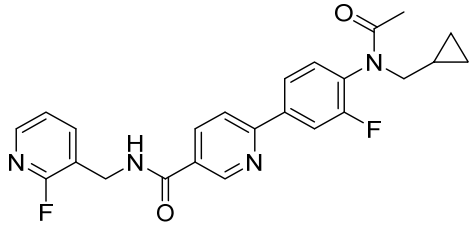
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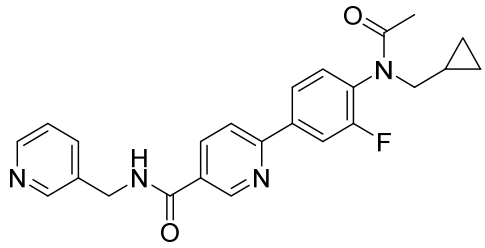
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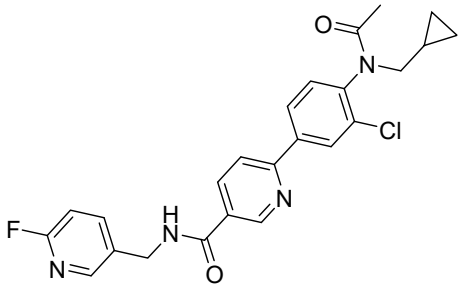
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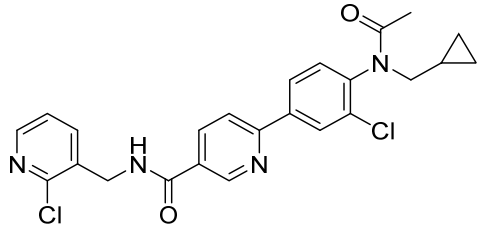
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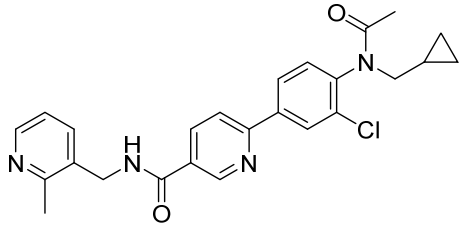
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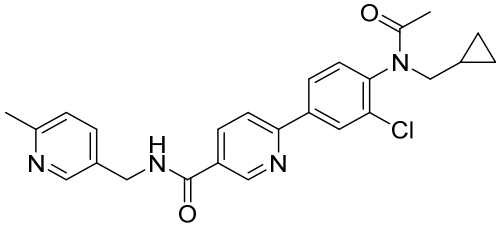
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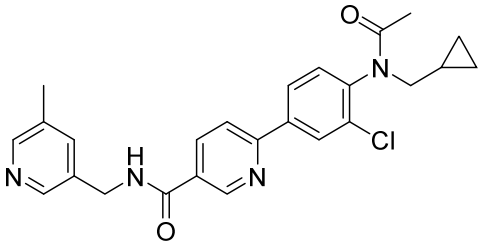
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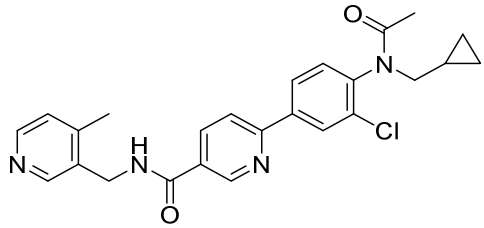
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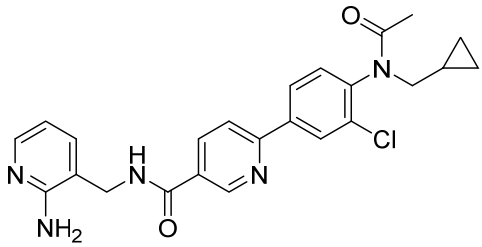
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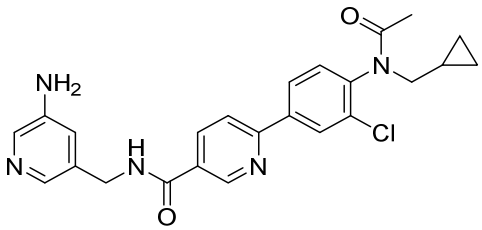
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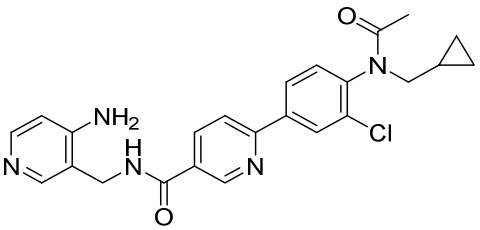
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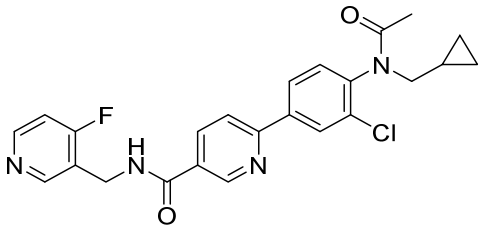
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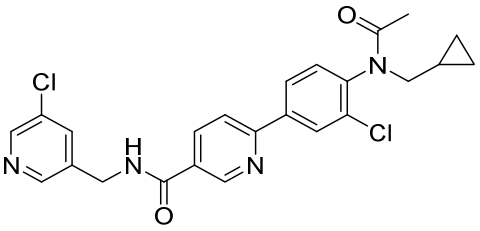
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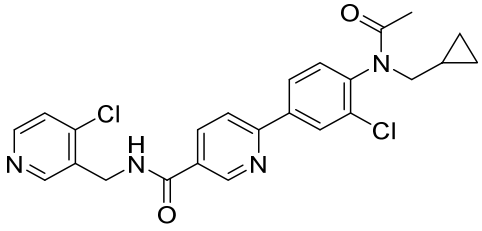
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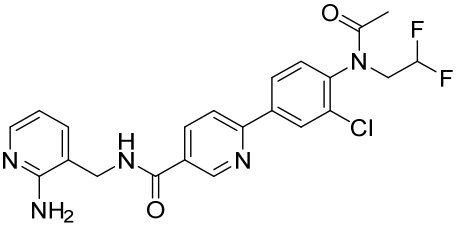
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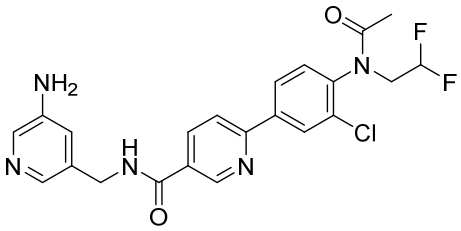
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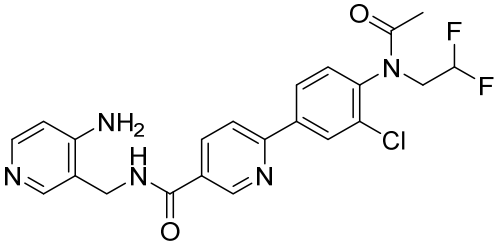
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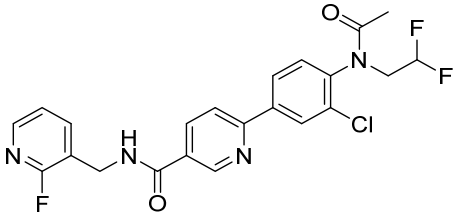
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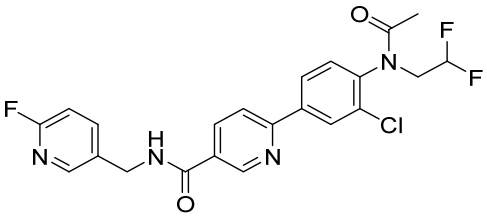
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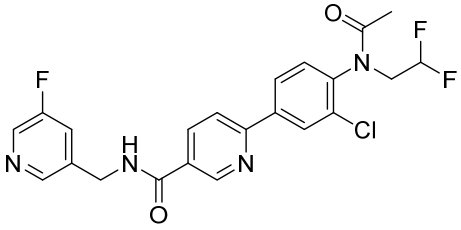
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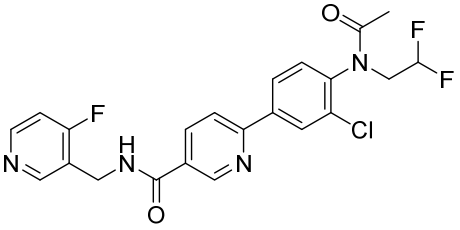
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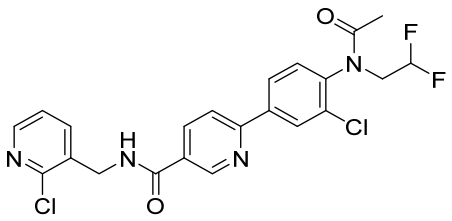
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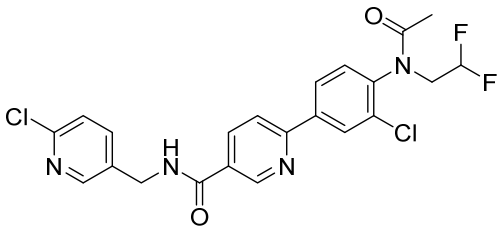
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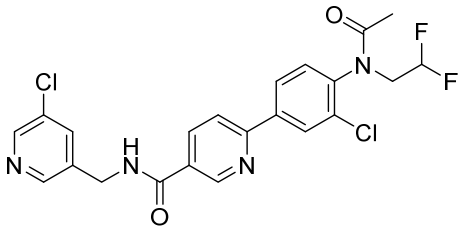
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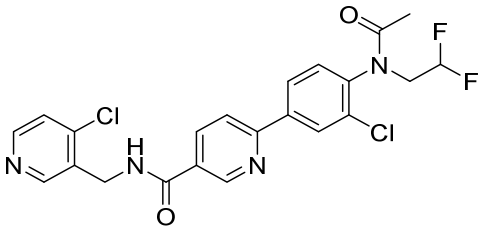
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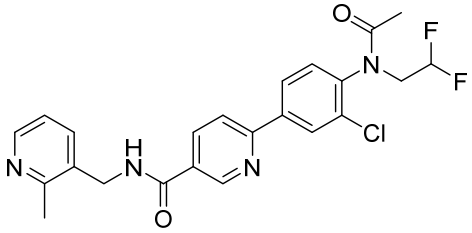
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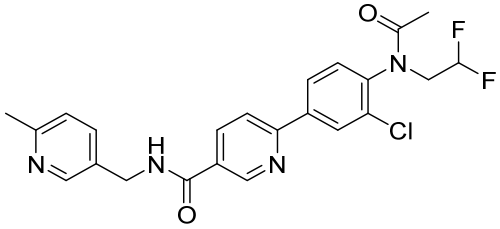
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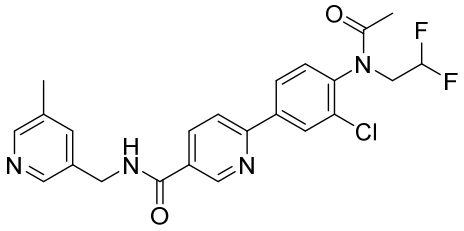
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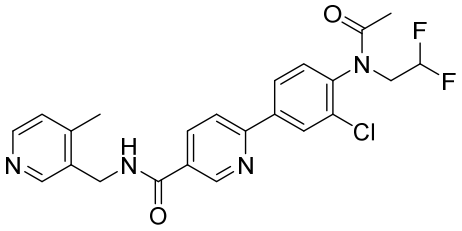
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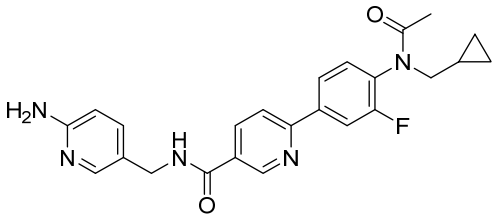
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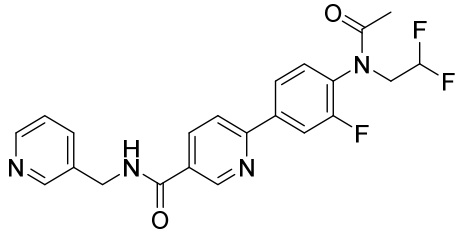
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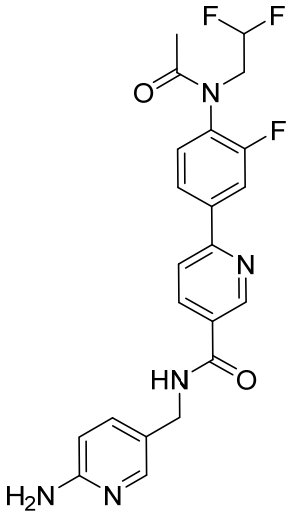
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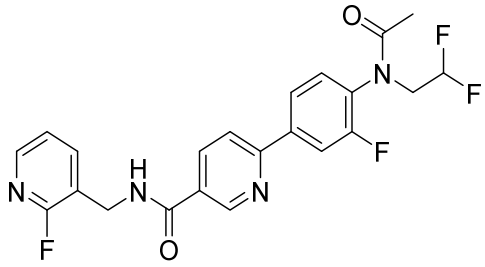
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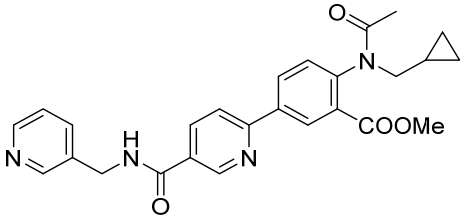
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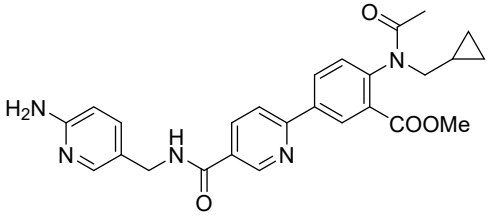
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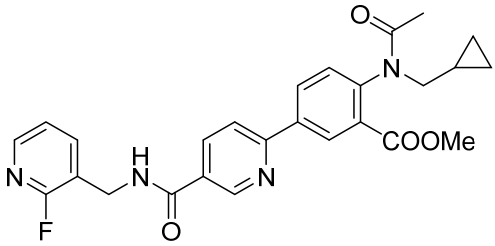
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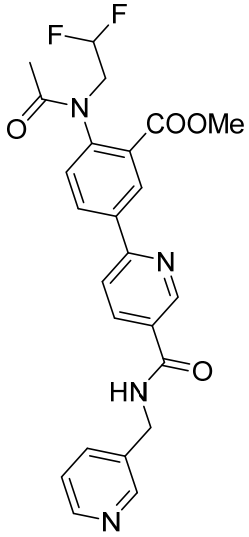
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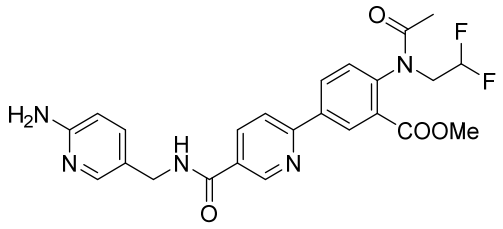
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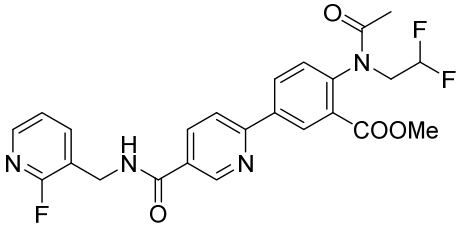
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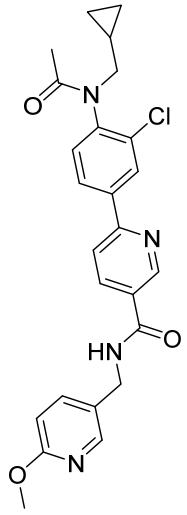
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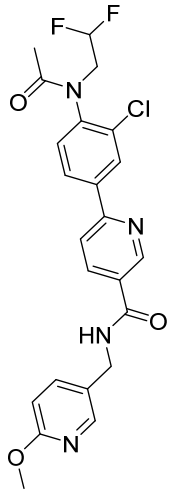
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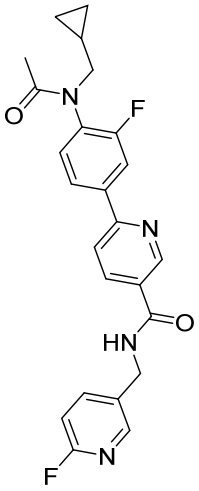
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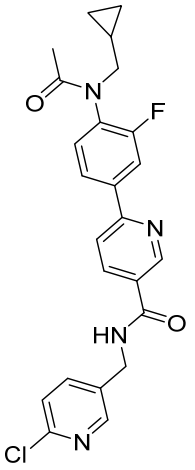
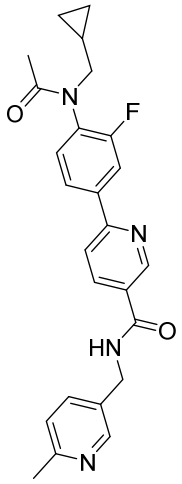
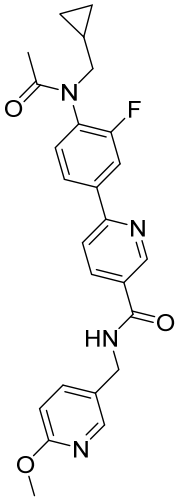
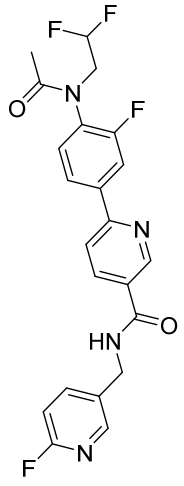
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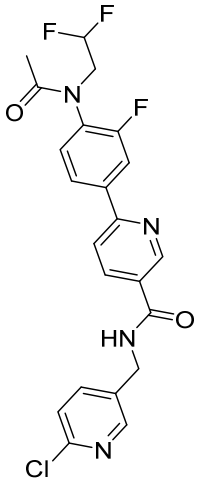
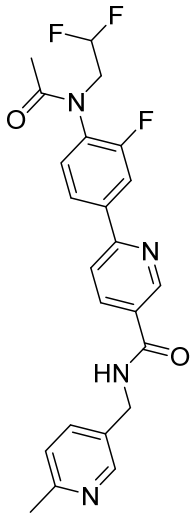
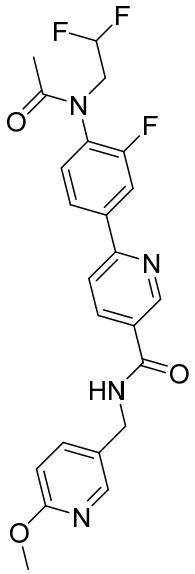


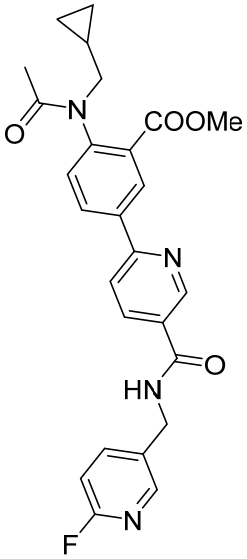
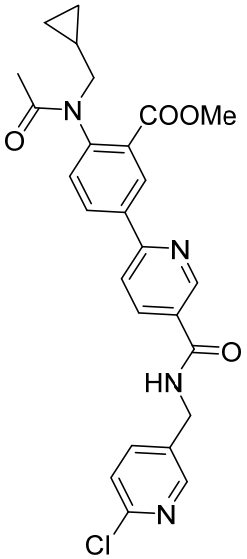
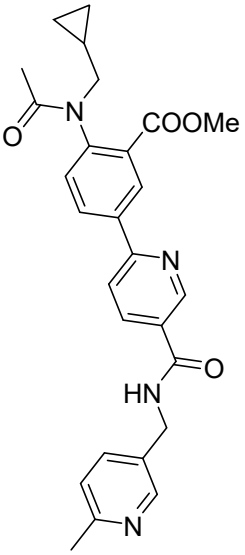
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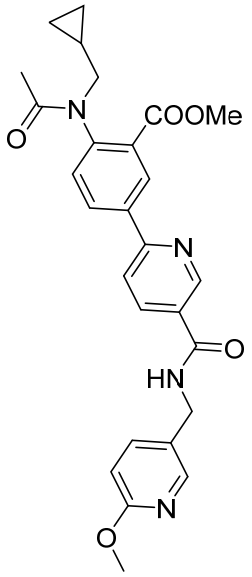


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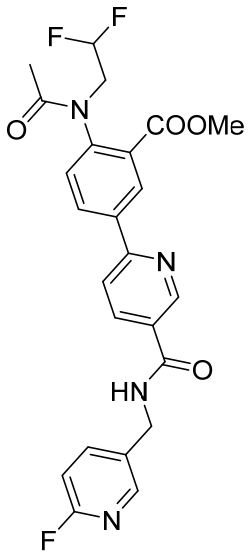

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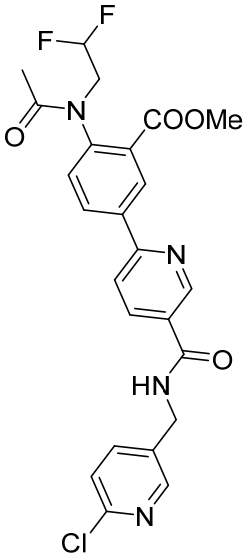

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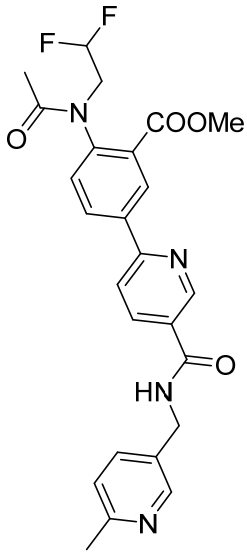
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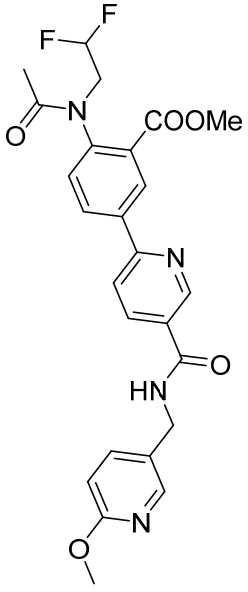
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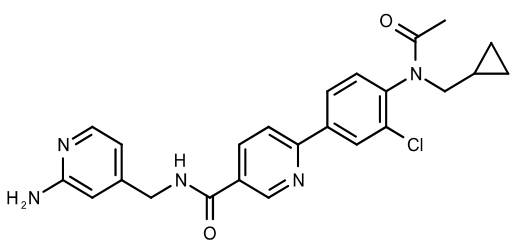
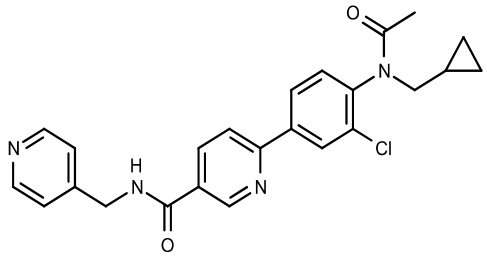
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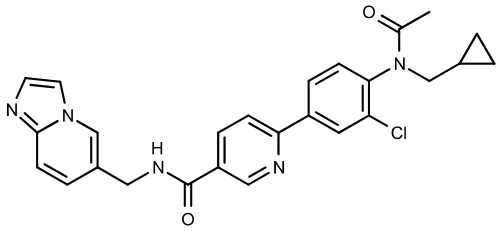
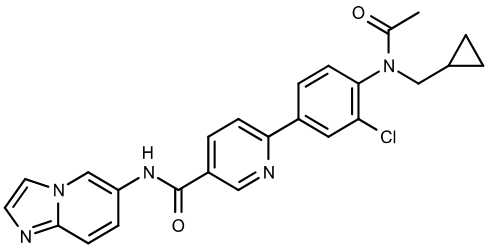


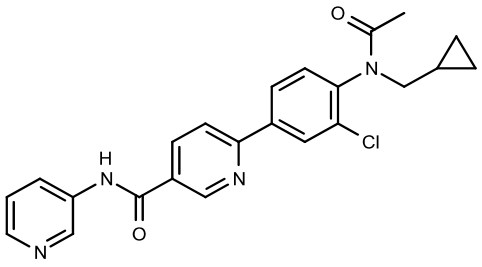
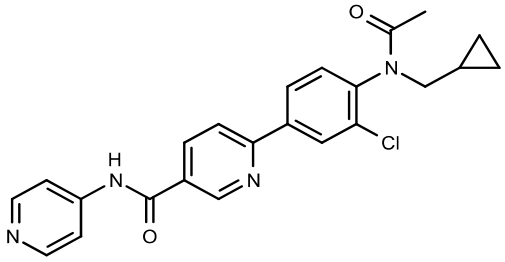
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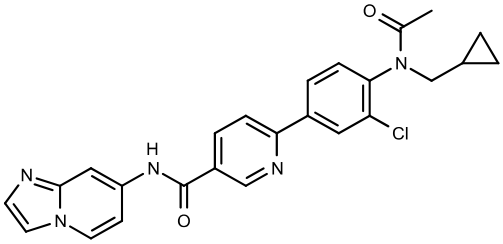
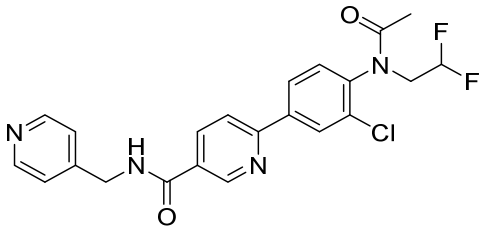


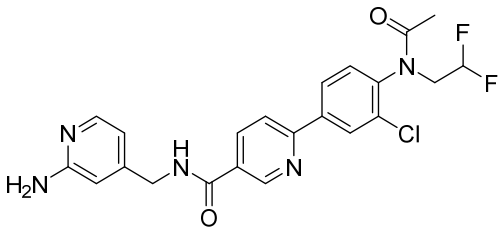
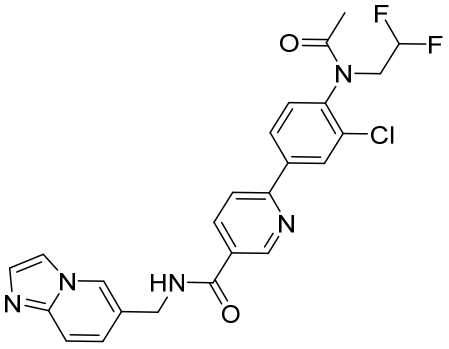
I-T2258, and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof;

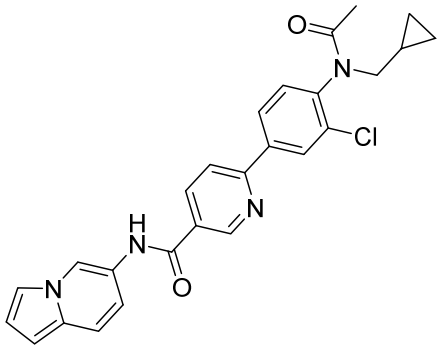
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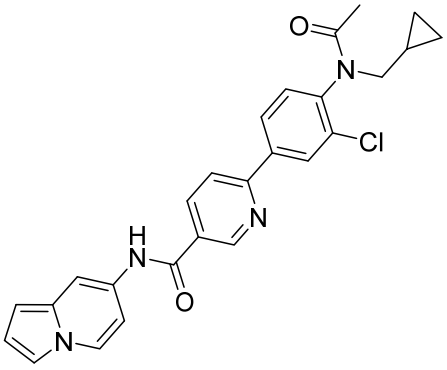
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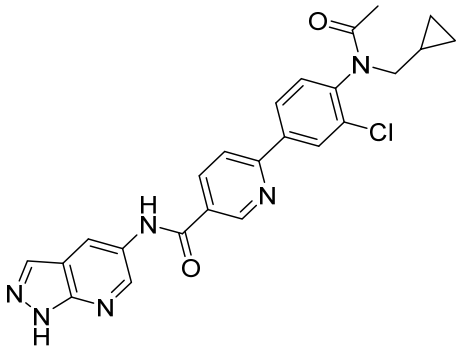
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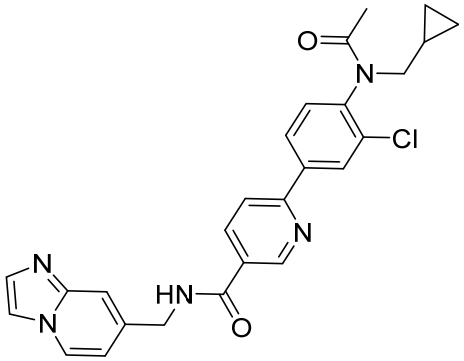
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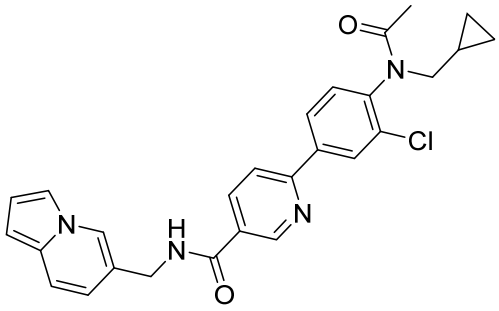
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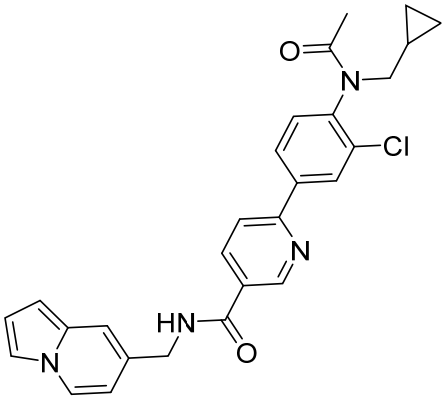
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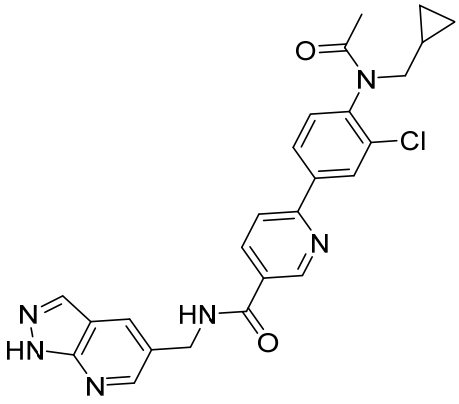
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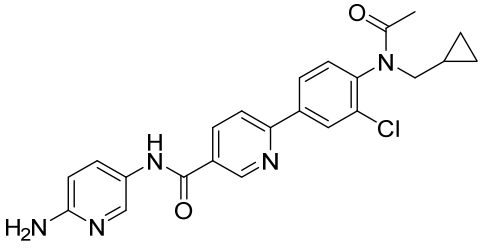
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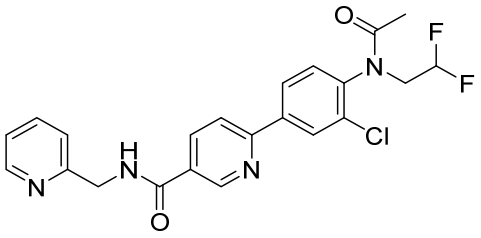
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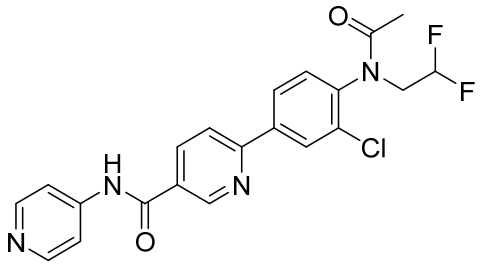
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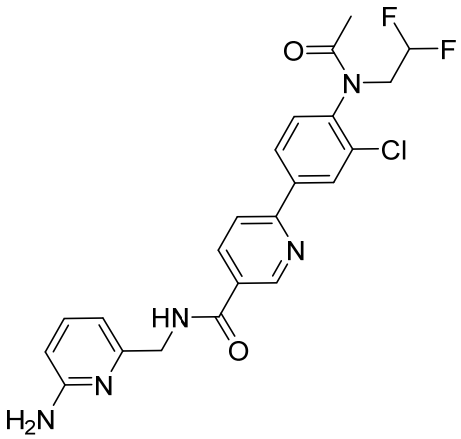
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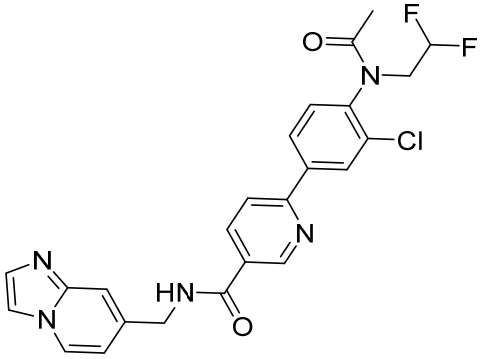
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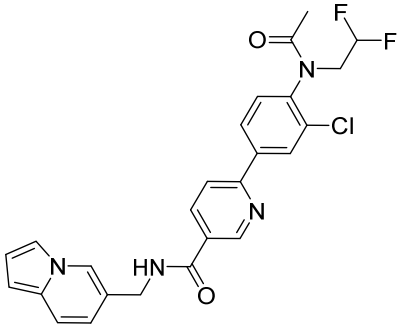
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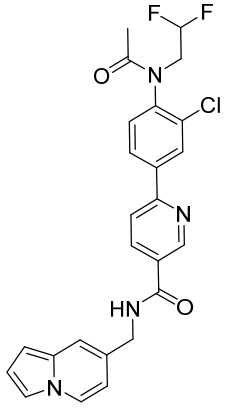
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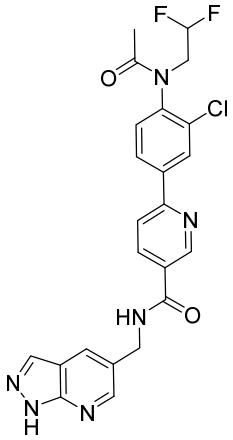
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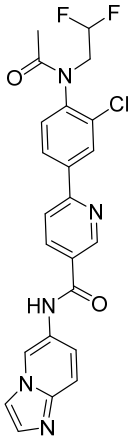
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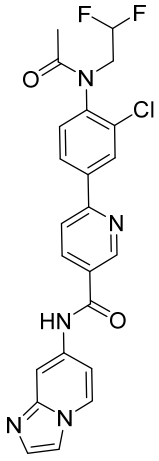
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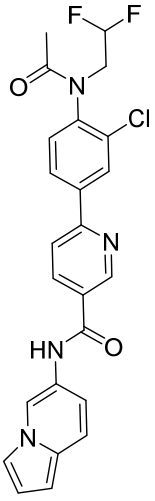
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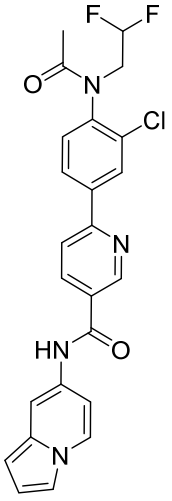
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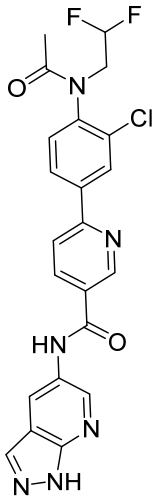
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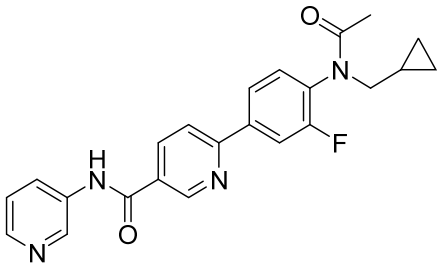
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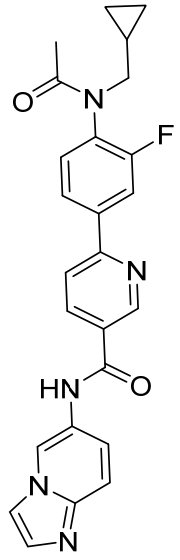


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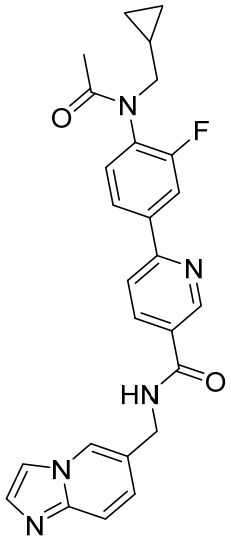
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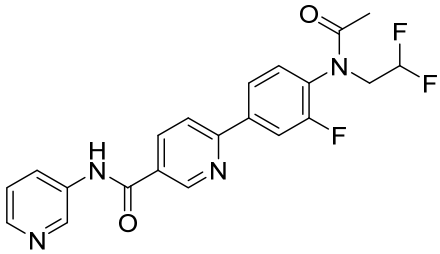


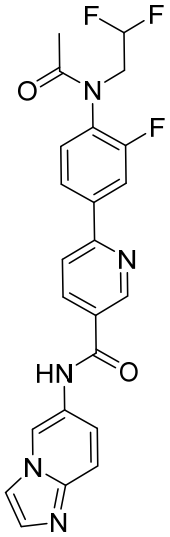
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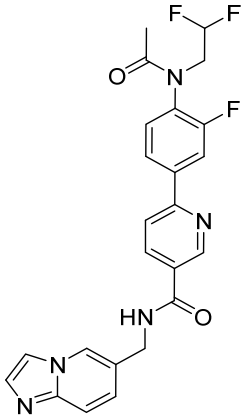
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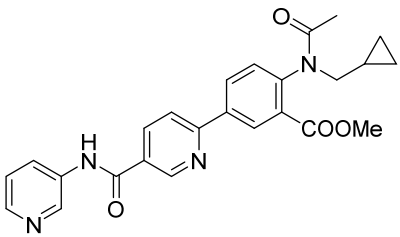


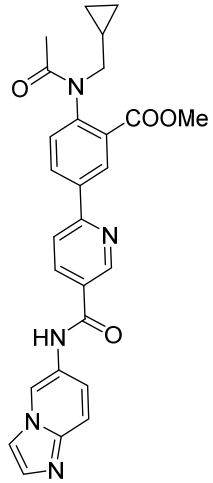
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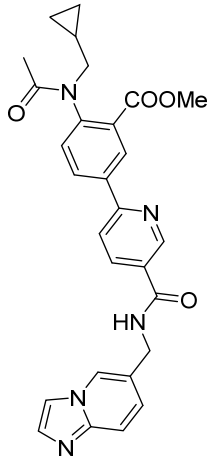
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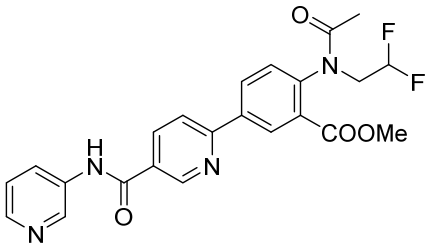


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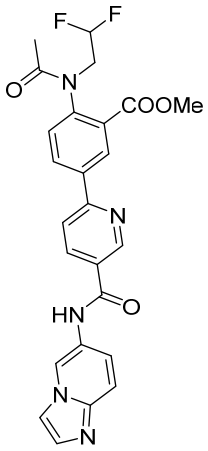
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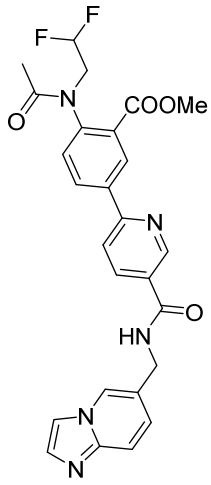
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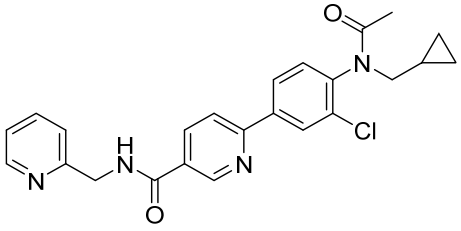
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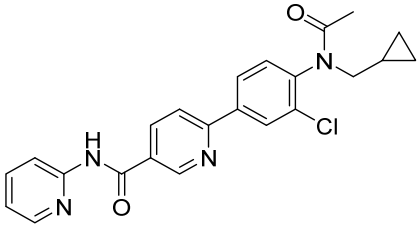
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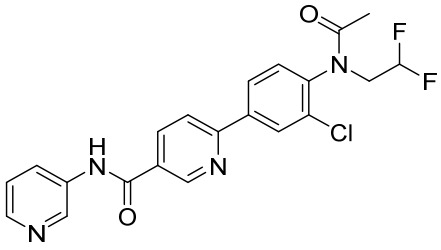
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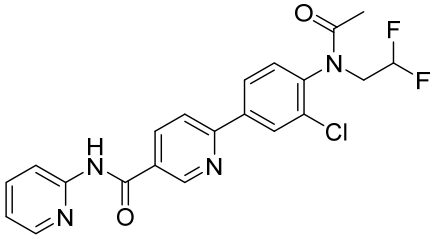
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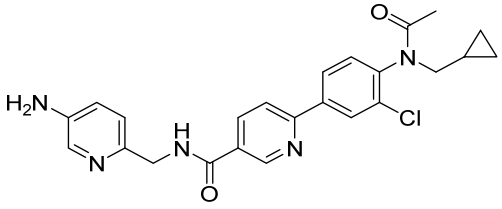
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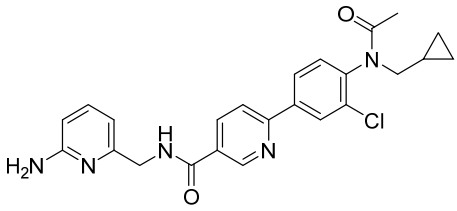
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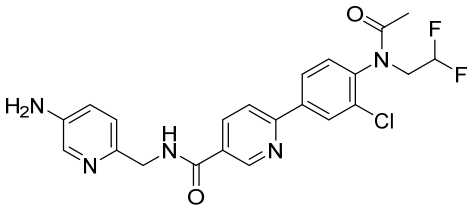
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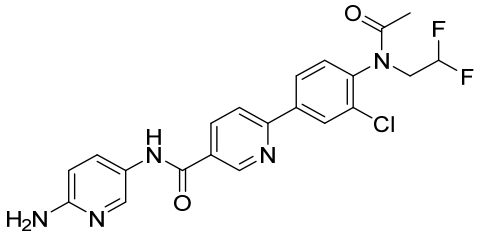
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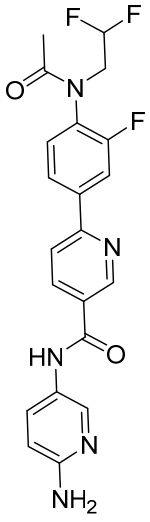
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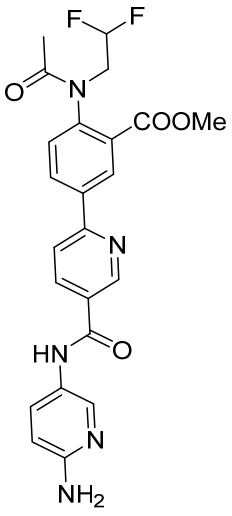
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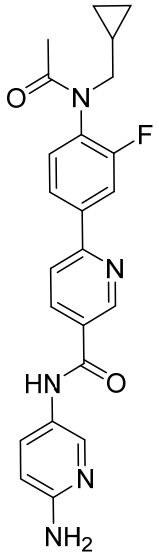
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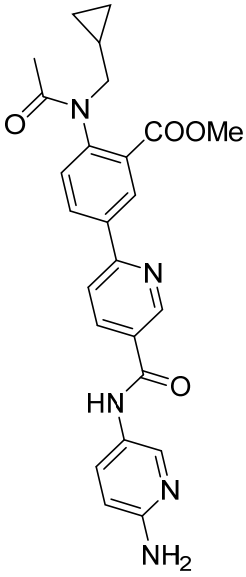
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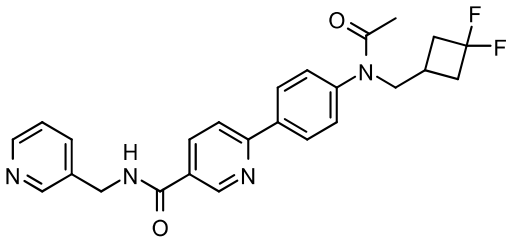
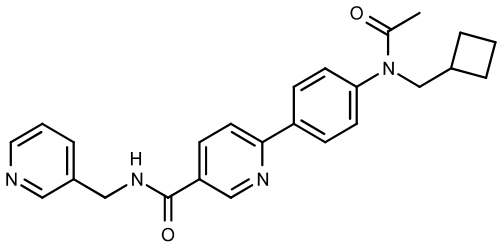
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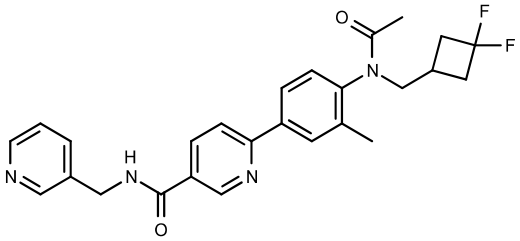
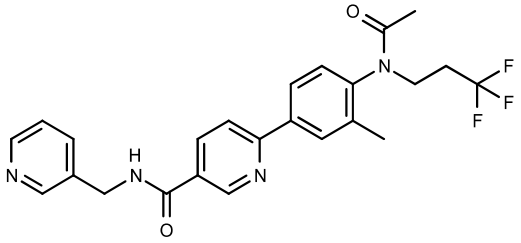


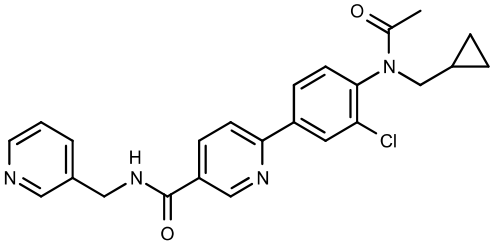
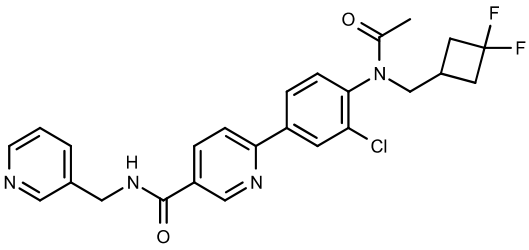
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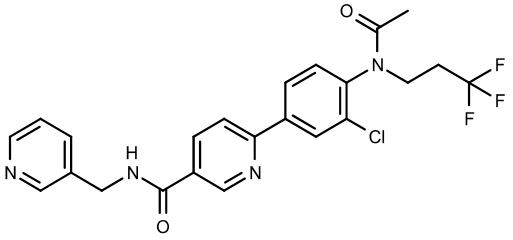
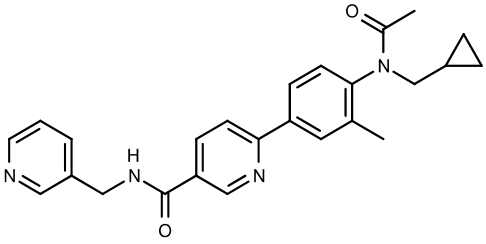


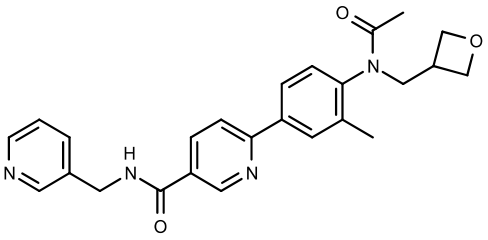
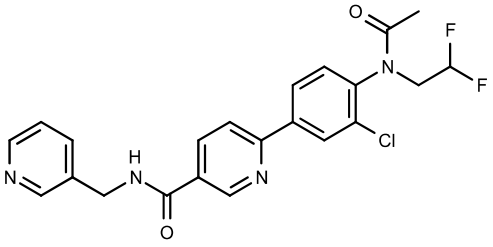
I-T2240, and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof; or

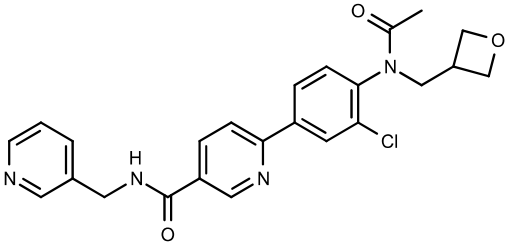
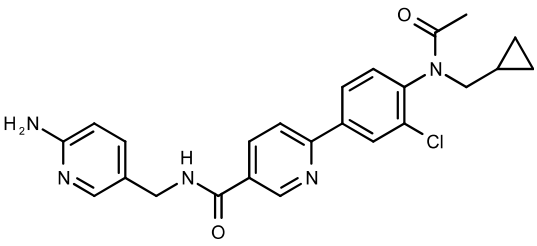
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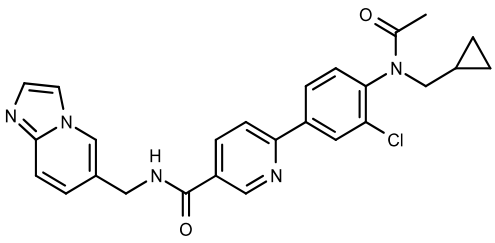
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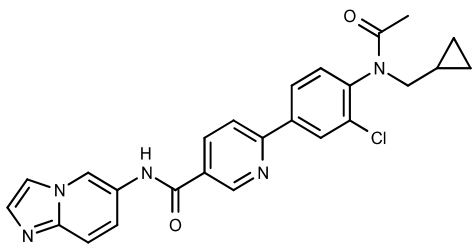
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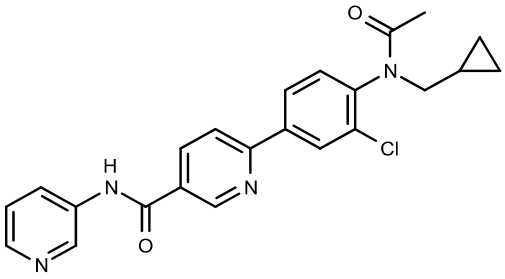
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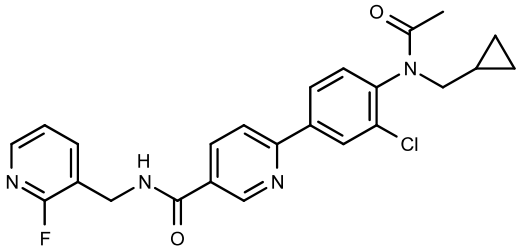
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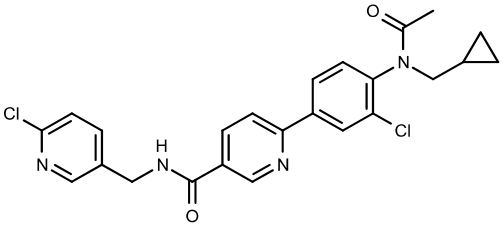
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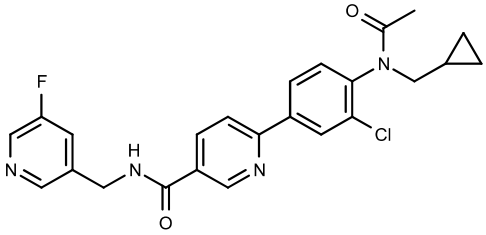
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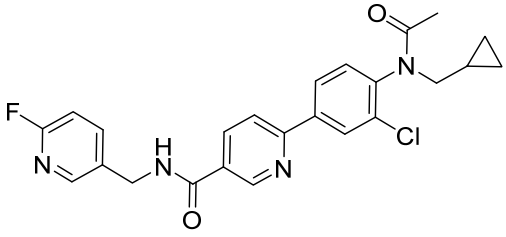
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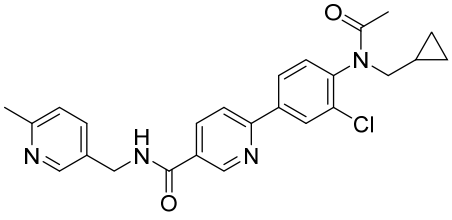
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I-690,



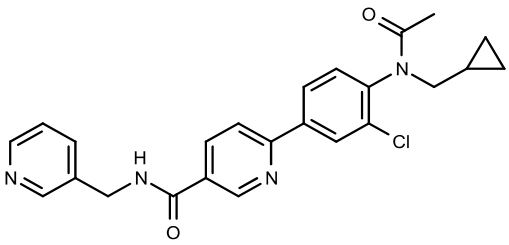
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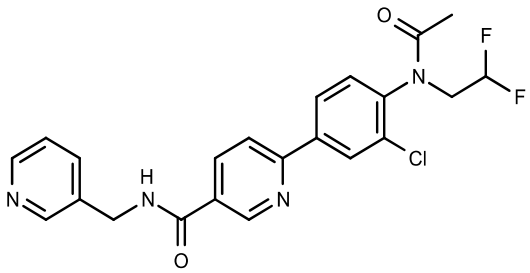
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and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof.

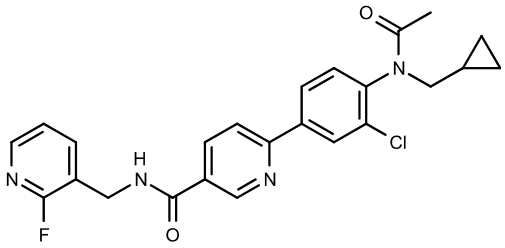
10. The compound as claimed in claim 1, wherein the compound is selected from the group consisting of:



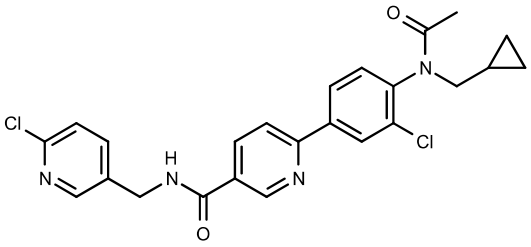
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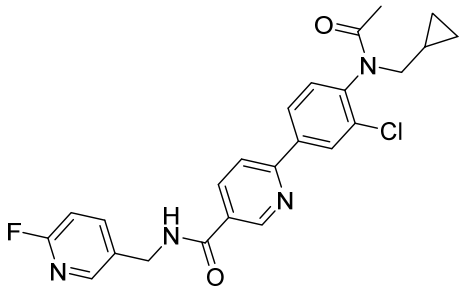
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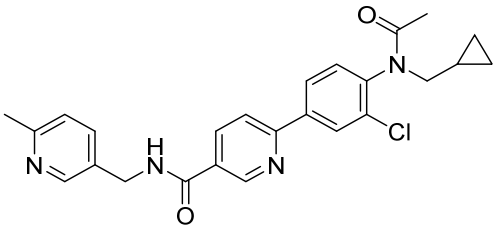
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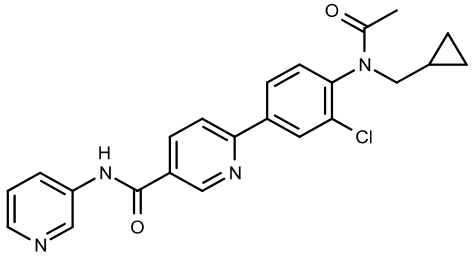
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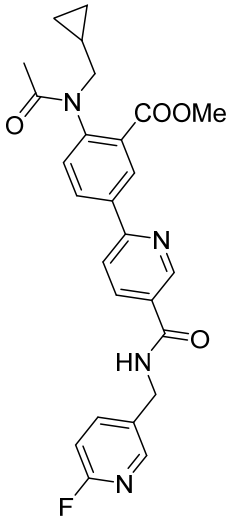
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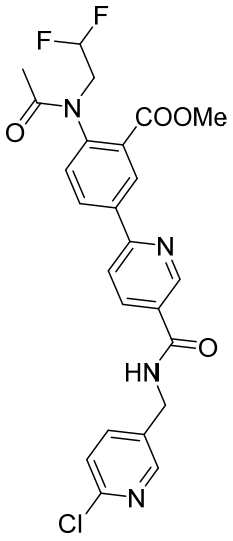
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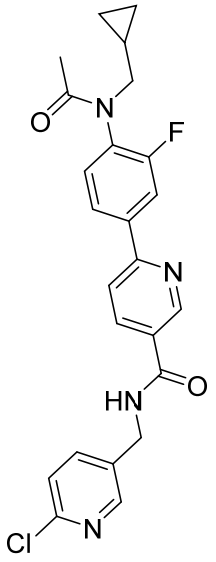
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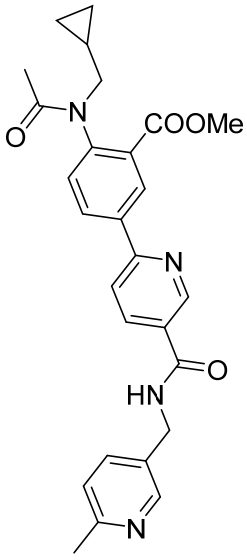
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I-T2256,

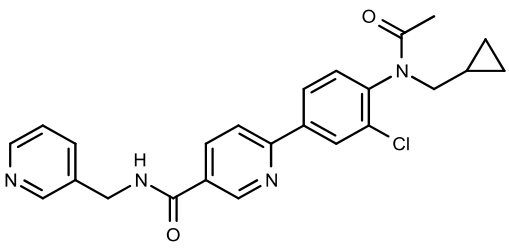


I-T2244, and

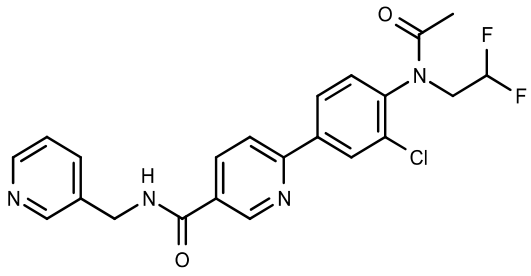


I-T2253; and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof.

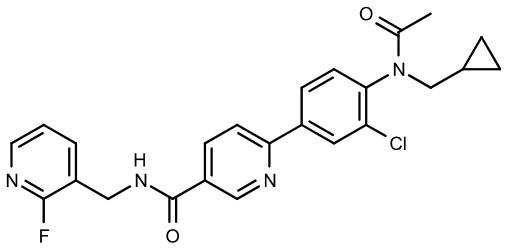
11. The compound as claimed in claim 1, wherein the compound is selected from the group consisting of:



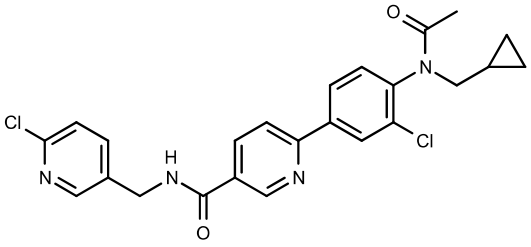
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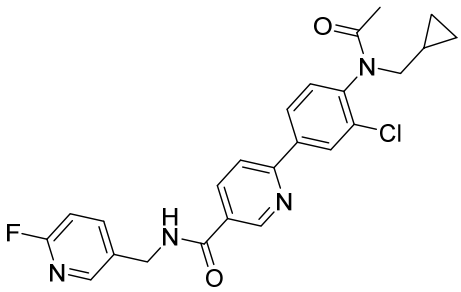
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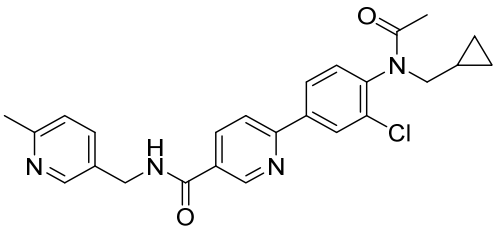
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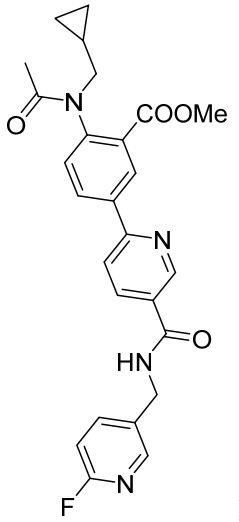
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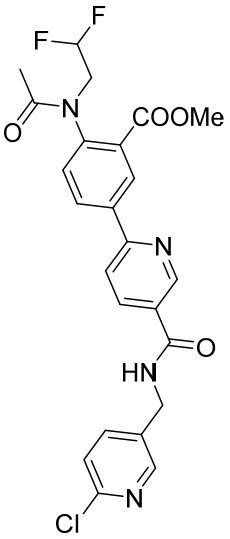
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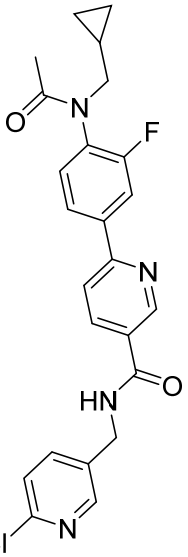
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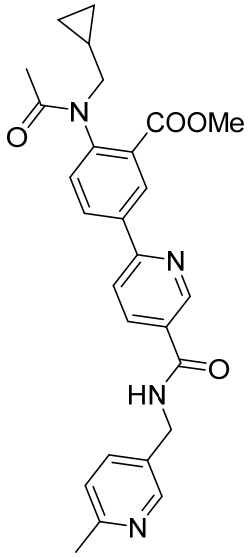
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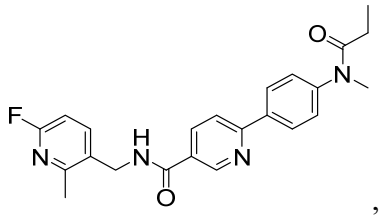
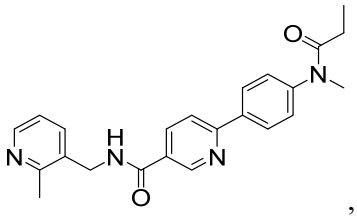
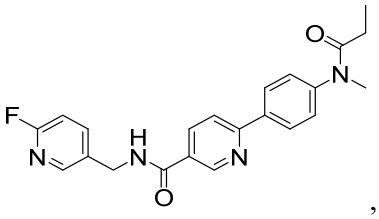
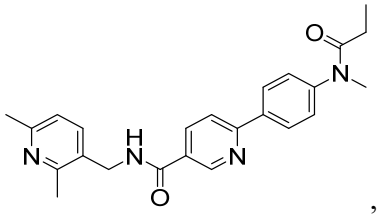
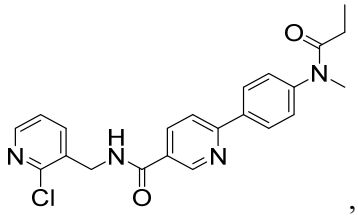
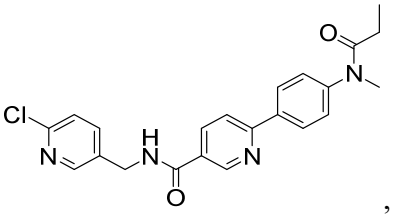
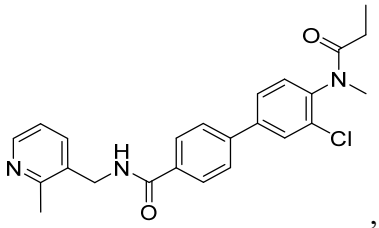
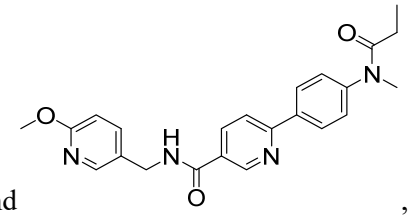


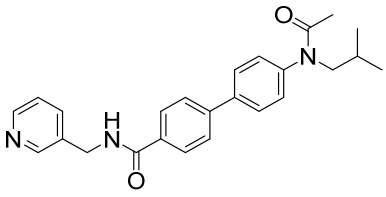
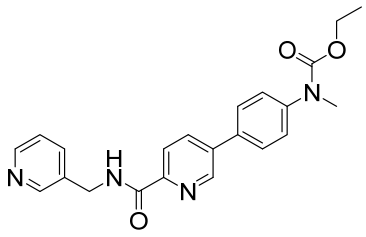
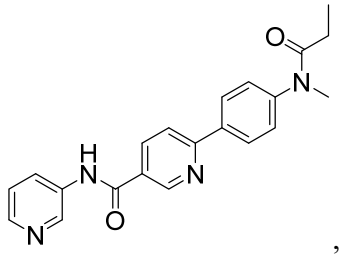
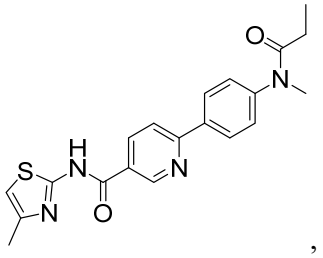
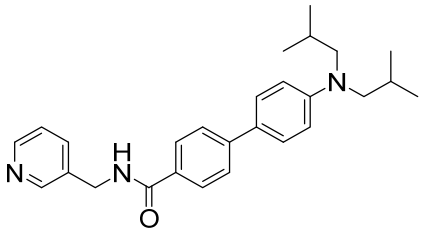
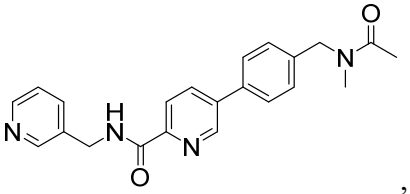
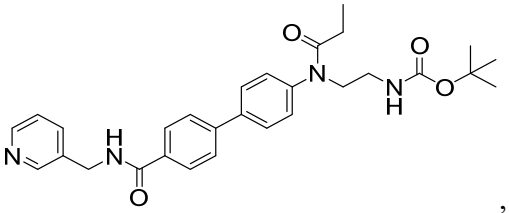
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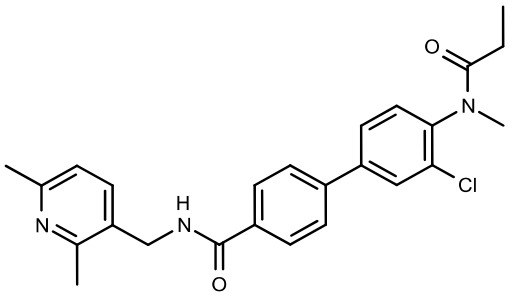
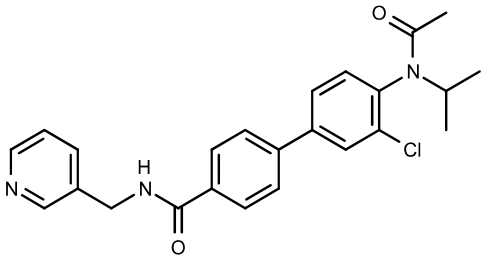
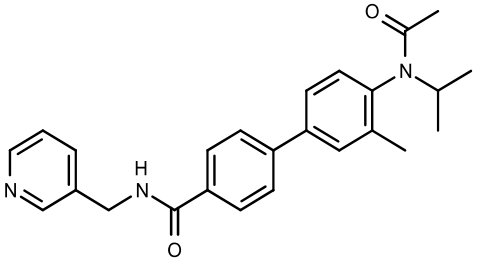
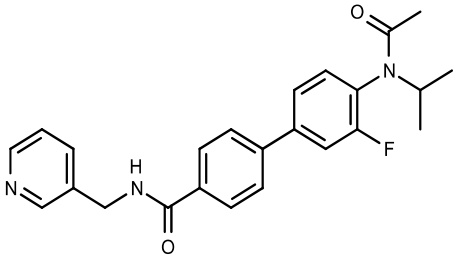
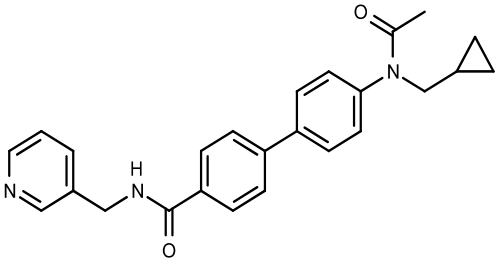
I-T2253; and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof.

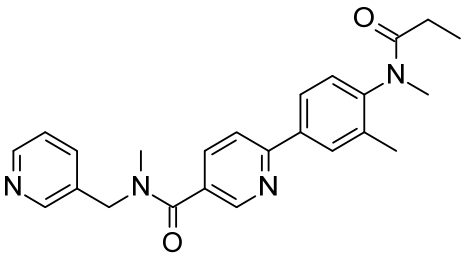
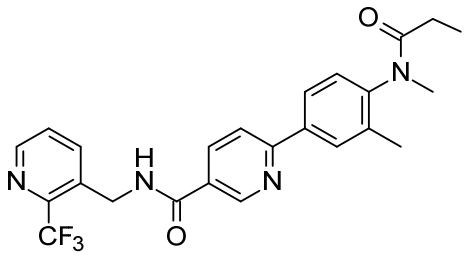
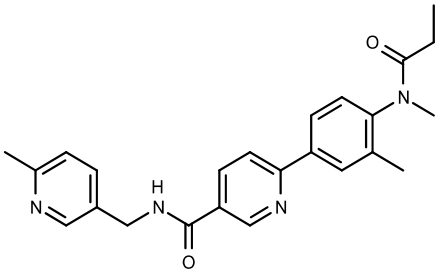
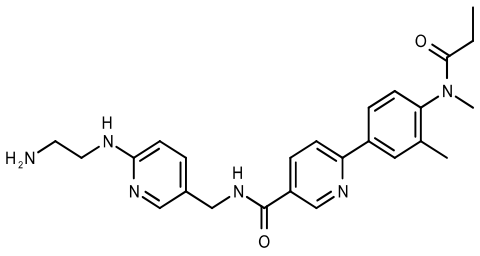
12. A compound selected from the group consisting of:

(a) , , , , , , , and , and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof;

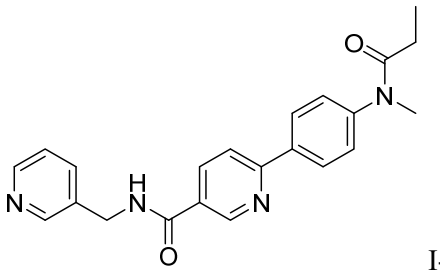
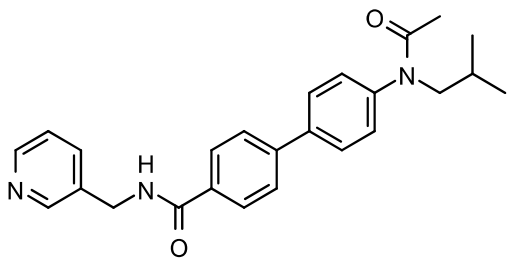
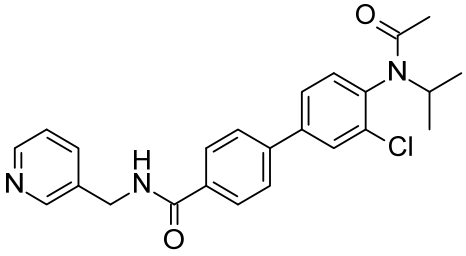
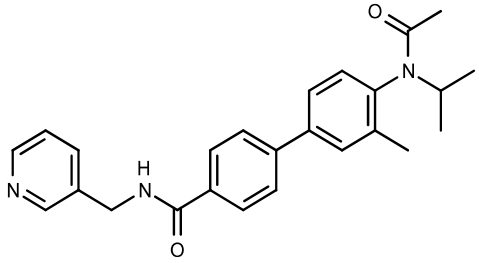
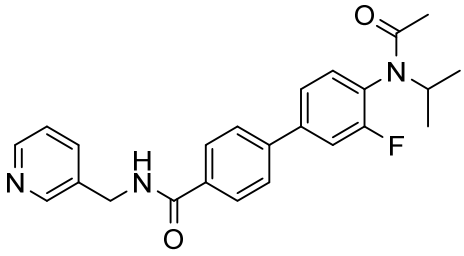
(b) , , , , , , and , and pharmaceutically acceptable salts, solvates,

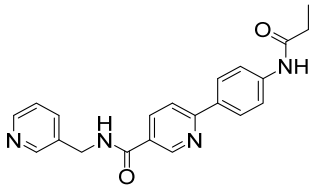
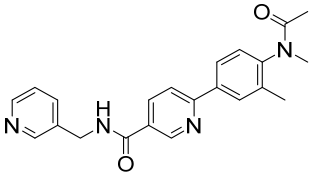
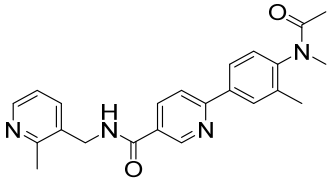
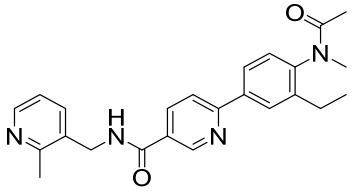
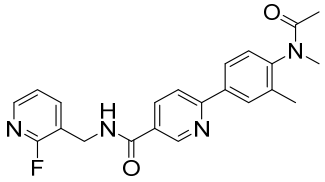
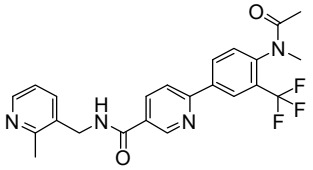
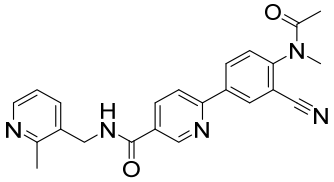
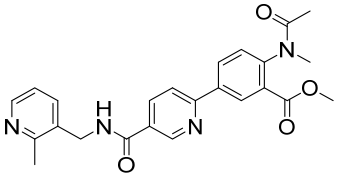
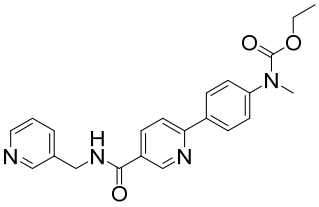
hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof;

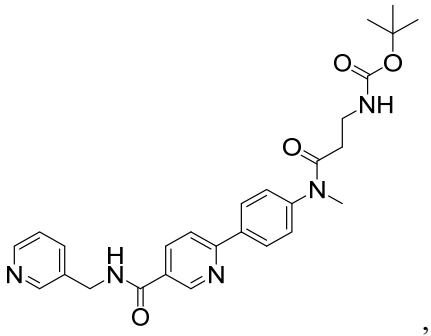
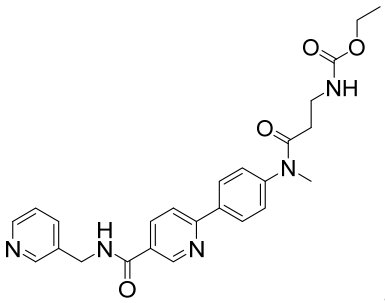
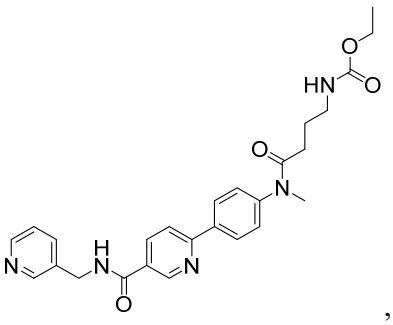
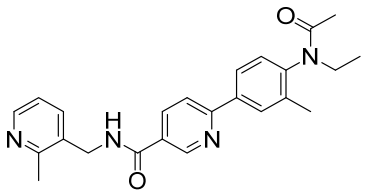
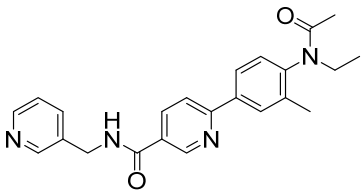
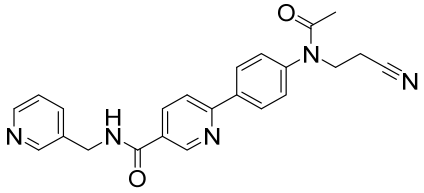
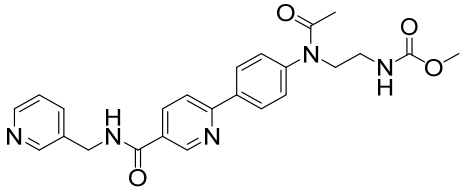
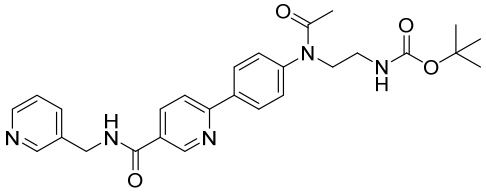
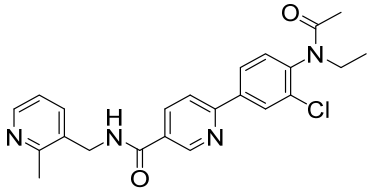
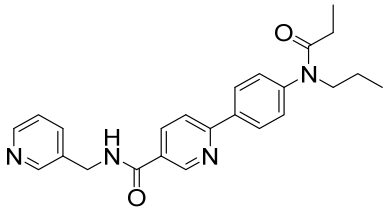
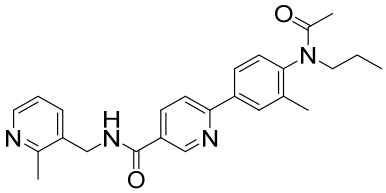
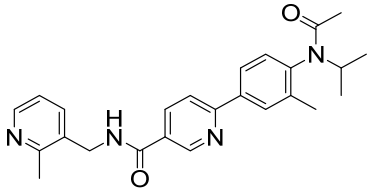
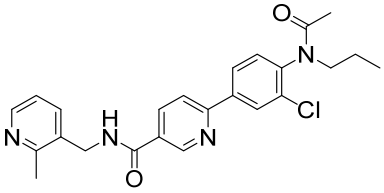
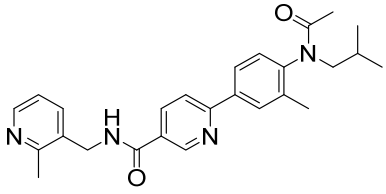
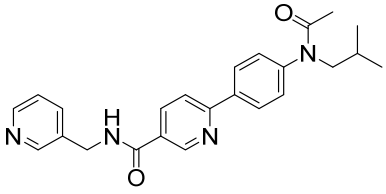
(c)  I-481,  I-597,  I-624,  I-630, and  I-675, and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof;

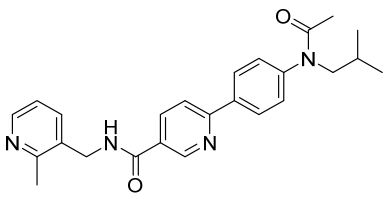
(d)  I-496,  I-511,  I-450, and  I-527,

and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof;

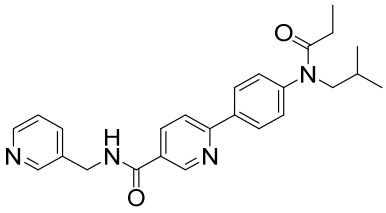
(e)  I-331,  I-402,  I-597,  I-624, and  I-630, and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof; or

(f)  I-354,  I-425,  I-428,  I-445,  I-436,  I-455,  I-456,  I-457,  I-389,

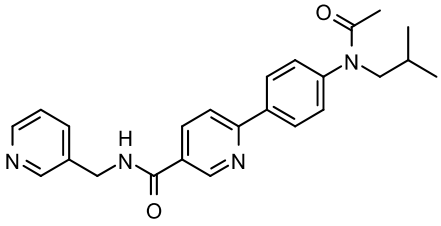

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I-429,

I-430,

I-484,

I-466,

I-448,

I-444,

I-410,

I-446,

I-512,

I-458,

I-454,

I-402,



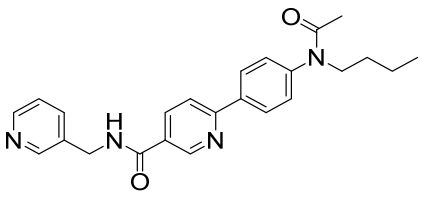
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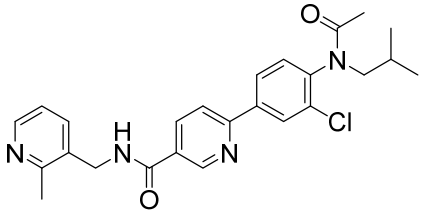
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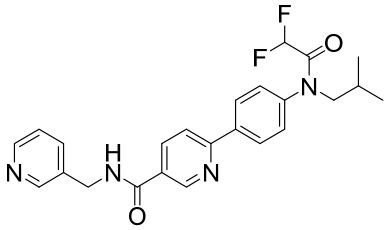
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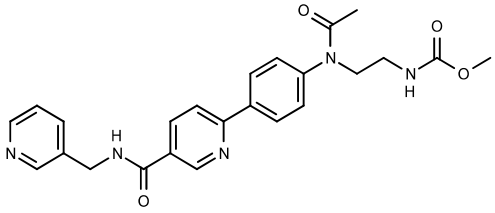
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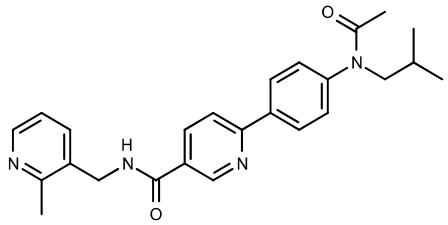
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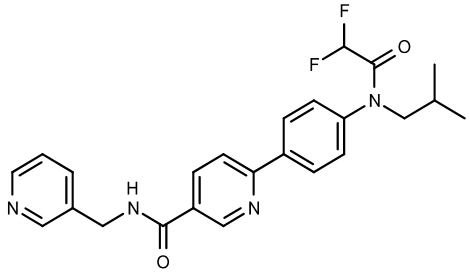
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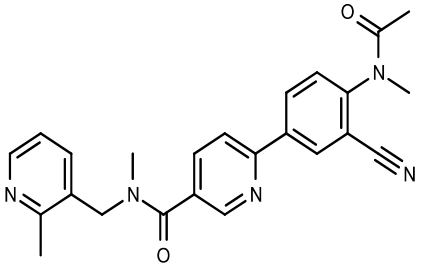
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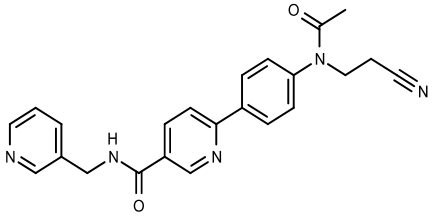
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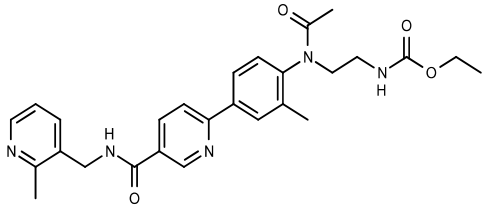
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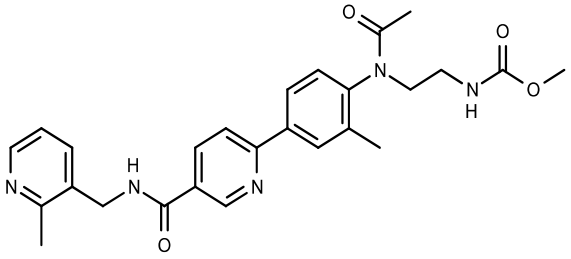
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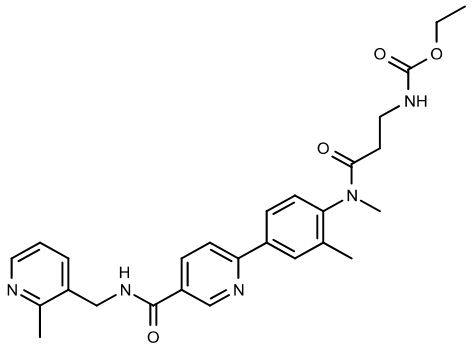
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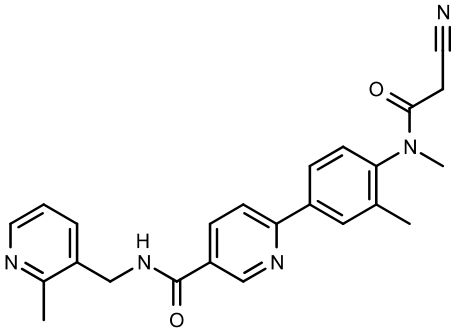
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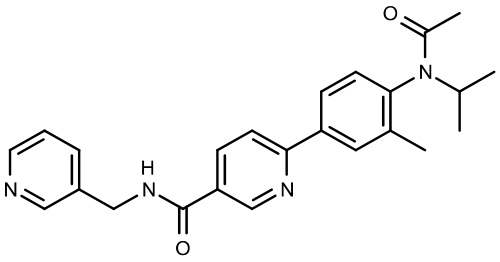
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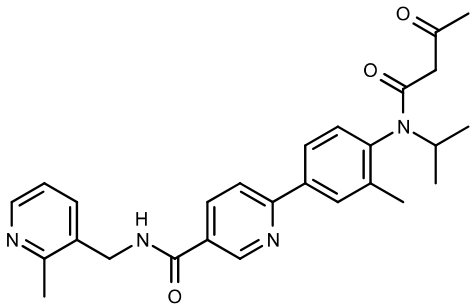
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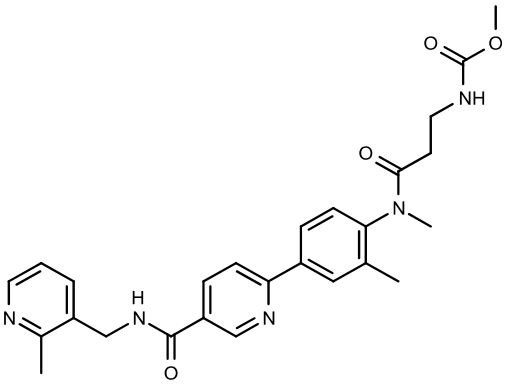
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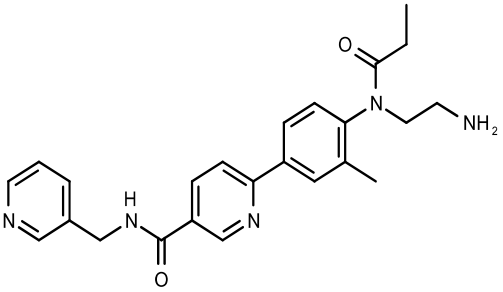
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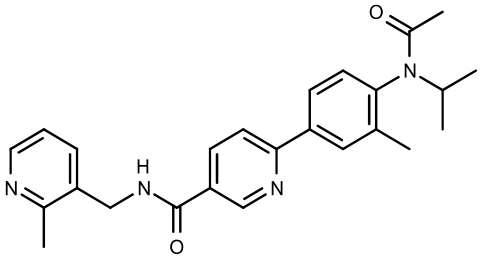
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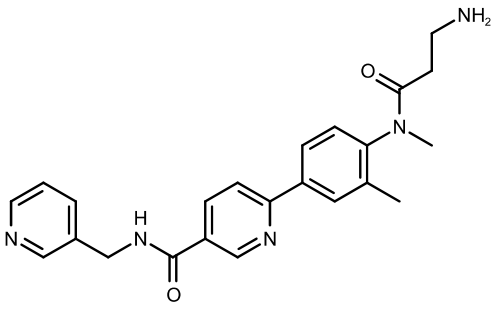
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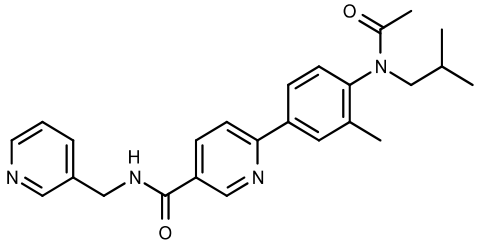
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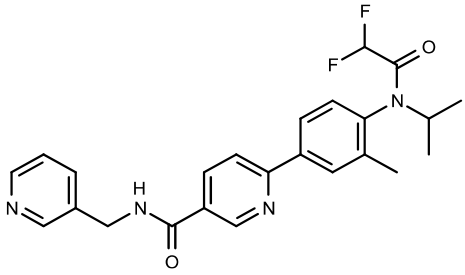
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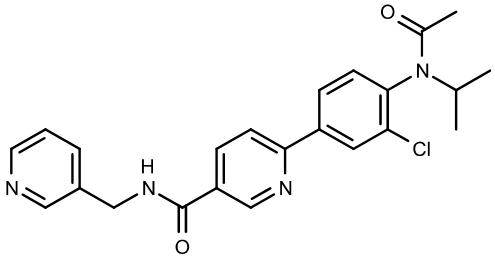
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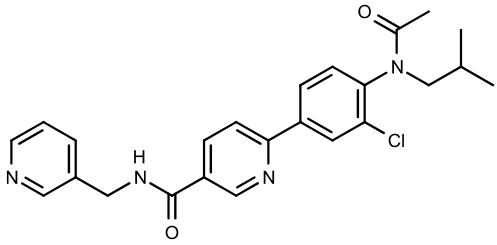
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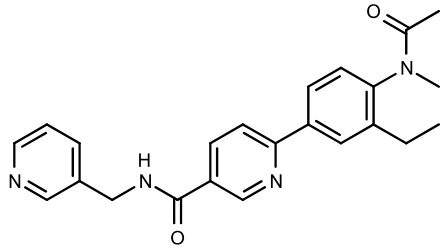
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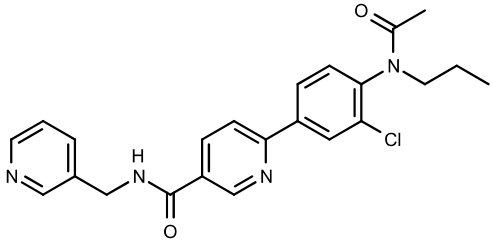
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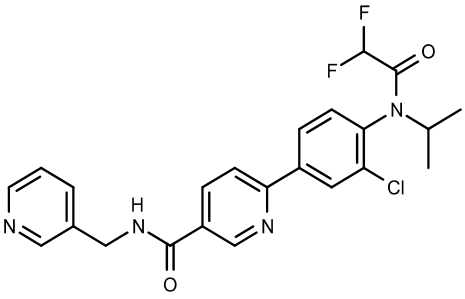
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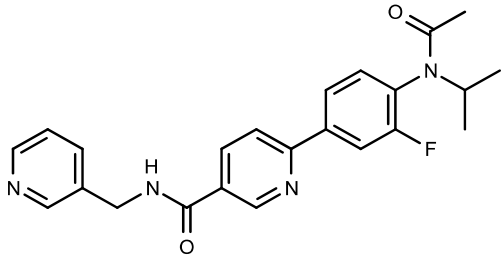
I-605,



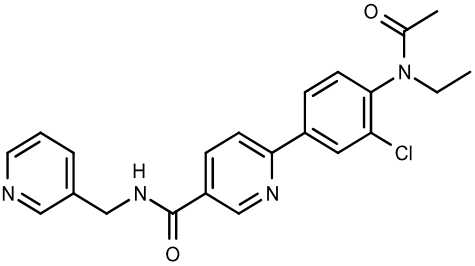
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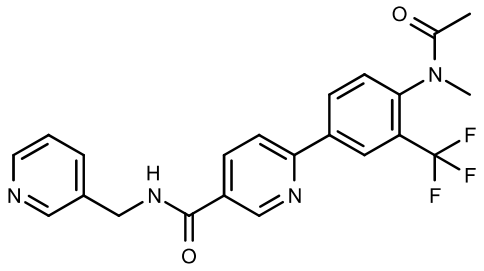
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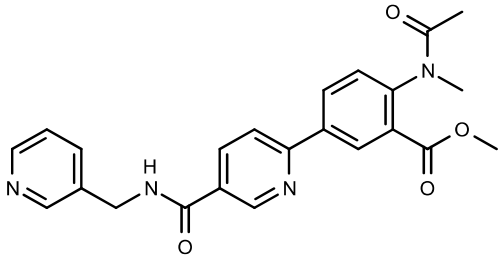
I-626,



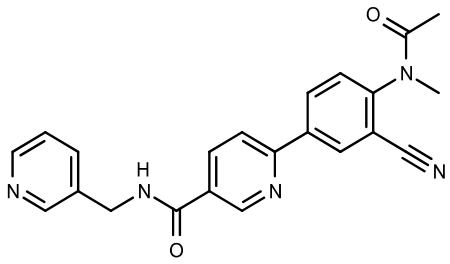
I-652,



I-658,



I-662, and



I-663, and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, and isotopically labeled derivatives thereof.

13. A pharmaceutical composition comprising a compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof; and optionally, a pharmaceutically acceptable excipient;

optionally, wherein the composition further comprises an additional pharmaceutical agent;

optionally, wherein the additional pharmaceutical agent is a chemotherapeutic agent or a differentiation agent.

14. Use of a compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition of claim 13, in the manufacture of a medicament for the treatment of a disease or disorder in a subject, wherein a therapeutically effective amount of the compound, or the pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition is to be administered to the subject;

wherein the disease or disorder is heart failure, dilated cardiomyopathy, pain, inflammation, acute respiratory distress syndrome, ventilator-induced lung injury, graft-versus-host disease (GCDH), pneumonia, pneumonitis, severe acute respiratory distress syndrome, arthritis, acute lung injury, colitis, inflammatory bowel disease (IBD), diabetes, obesity, axon degeneration, a tissue repair disorder, asthma, chronic obstructive pulmonary disease (COPD), osteoarthritis, osteoporosis, fibrotic diseases, dermatosis, psoriasis, atopic dermatitis, ultra-violet induced skin damage, an autoimmune disease, Alzheimer's disease, stroke,

atherosclerosis, restenosis, glomerulonephritis, cachexia, inflammation associated with infection, vascular inflammation, an atherothrombotic disease, Acquired Immune Deficiency Syndrome (AIDS), adult respiratory distress syndrome, ataxia telangiectasia, atherogenic inflammatory disease, a cardiovascular disorder, a cerebrovascular disorder, acute coronary syndrome, polycystic ovary syndrome, preeclampsia, sepsis, septic shock, an intrauterine infection, Crohn's disease (CD), ulcerative colitis (UC), a neurodegenerative disorder, COVID-19, pulmonary inflammation, a coronavirus infection, or a tumor; and

optionally, wherein the disease or disorder is treated:

(a) by inhibiting NAMPT in the subject;

(b) by inhibiting a NAMPT pathway in the subject;

(c) by decreasing NAMPT signaling in the subject;

(d) by inhibiting the production of nicotinamide mononucleotide in the subject;

(e) by inhibiting the production of nicotinamide adenine dinucleotide in the subject;

(f) by decreasing inflammatory activity in the subject;

(g) by reducing inflammatory cell infiltration in the subject;

(h) by reducing cellular metabolic activity or state in the subject; and/or

(i) by reducing cell proliferation in the subject.

15. The use of claim 14, wherein an additional pharmaceutical agent is to be further administered;

optionally, wherein the additional pharmaceutical agent is to be administered before, concurrently with, or after the compound, or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition.

16. Use of a compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition claim 13, in the manufacture of a medicament for treating cancer in a subject in need thereof, wherein a therapeutically effective amount of the compound, the pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition is to be administered to the subject;

optionally, wherein the cancer comprises cancer stem cells; and/or

optionally, wherein the cancer is:

(a) gastric cancer, gastrointestinal stromal tumor, ovarian cancer, lung cancer, breast cancer, pancreatic cancer, or prostate cancer;

(b) gastric cancer; optionally, wherein the gastric cancer is gastric cancer subtype GS or gastric cancer subtype CIN;

(c) colorectal cancer;

optionally, wherein the colorectal cancer is colorectal cancer subtype CMS2 or colorectal cancer subtype CMS4;

(d) testicular cancer;

(e) liver cancer;

(f) uterine cancer;

optionally, wherein the cancer is endometrial cancer;

(g) small cell lung cancer;

(h) lymphoma; optionally, wherein the lymphoma is:

(i) non-Hodgkin's lymphoma;

(ii) B-cell lymphoma;

(iii) large B-cell lymphoma;

(iv) Burkitt's lymphoma;

(v) Burkitt's B-cell lymphoma; or

(vi) large cell immunoblastic lymphoma;

(i) leukemia; optionally, wherein the leukemia is:

(i) acute myeloid leukemia; optionally, wherein the acute myeloid leukemia is:

(I) undifferentiated acute myeloblastic leukemia (M0);

(II) acute myeloblastic leukemia with minimal maturation (M1);

(III) acute myeloblastic leukemia with maturation (M2);

(IV) acute promyelocytic leukemia (APL) (M3);

(V) acute myelomonocytic leukemia (M4);

(VI) acute myelomonocytic leukemia with eosinophilia (M4 eos);

(VII) acute monocytic leukemia (M5);

(VIII) acute erythroid leukemia (M6); or

(IX) acute megakaryoblastic leukemia (M7);

(ii) acute monocytic leukemia;

(iii) acute lymphocytic leukemia;

(iv) B-cell acute lymphocytic leukemia;

(v) chronic myelocytic leukemia (CML);

(vi) chronic lymphocytic leukemia;

(vii) acute lymphoblastic leukemia;

(viii) B-cell acute lymphoblastic leukemia;

(ix) T-cell acute lymphoblastic leukemia; or

(j) multiple myeloma;

optionally, wherein the multiple myeloma is B-cell myeloma;

optionally, wherein the subject has or is undergoing one or more additional cancer therapies, and/or the subject is in need of a regenerative medicine.

17. The use of claim 16, wherein the cancer is acute myeloid leukemia.

18. The use of claim 16, wherein the cancer is acute lymphocytic leukemia.

19. The use of claim 16, wherein the cancer is myelodysplastic syndrome.

20. An *in vitro or ex vivo* method comprising contacting a cell, tissue, or biological sample with an effective amount of a compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition of claim 13;

optionally, wherein the cell is:

(a) characterized by one or more embryonic, pluripotent, or adult stem cell properties; and/or

(b) a cancer stem cell, an embryonic stem cell, an induced pluripotent stem cell, a neural stem cell, a differentiated cancer cell, or an adult stem cell; and/or

optionally, wherein the contacting:

(i) reduces one or more embryonic properties, pluripotent properties, or adult stem cell properties of the cell;

(ii) is *in vitro*;

(iii) reduces cell viability and/or prevents cell proliferation;

(iv) kills the cell;

(v) inhibits tumor growth;

(vi) prevents metastasis;

(vii) differentiates one or more cells; and/or

(viii) regenerates one or more cells.

21. An *in vitro or ex vivo* method comprising killing a cell with an effective amount of a compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition of claim 13;

optionally, wherein the cell is:

(a) characterized by one or more embryonic properties, pluripotent properties, or adult stem cell properties; and/or

(b) a cancer stem cell, an embryonic stem cell, an induced pluripotent stem cell, a neural stem cell, an adult stem cell, or a differentiated cancer cell;

optionally, wherein the contacting is *in vitro*.

22. Use of a compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition of claim 13, in the manufacture of a medicament for:

(a) inhibiting production of nicotinamide mononucleotide in a subject;

(b) inhibiting production of nicotinamide adenine dinucleotide in a subject;

(c) reducing inflammatory cell infiltration in a subject;

(d) decreasing inflammatory activity in a subject;

(e) reducing cell proliferation in a subject; or

(f) reducing cellular metabolic activity or state in a subject;

wherein the compound, or the pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition is to be administered to the subject.

23. An *in vitro or ex vivo* method of:

(a) inhibiting NAMPT in a cell, tissue, or biological sample;

(b) inhibiting a NAMPT pathway in a cell, tissue, or biological sample;

(c) decreasing NAMPT signaling in a cell, tissue, or biological sample;

(d) inhibiting production of nicotinamide adenine dinucleotide in a cell, tissue, or biological sample;

(e) inhibiting production of nicotinamide mononucleotide in a cell, tissue, or biological sample;

(f) decreasing inflammatory activity in a cell, tissue, or biological sample;

(g) reducing inflammatory cell infiltration in a cell, tissue, or biological sample;

(h) reducing cellular metabolic activity or state in a cell, tissue, or biological sample; or

(i) reducing cell proliferation in a cell, tissue, or biological sample;

the method comprising contacting the cell, tissue, or biological sample with a compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition of claim 13;

optionally, wherein the contacting is performed *in vitro*.

24. A kit comprising:

a compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof; or a pharmaceutical composition of claim 13; and

instructions for using the compound, or pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition.

25. A compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, hydrate, polymorph, co-crystal, tautomer, stereoisomer, or isotopically labeled derivative thereof, or pharmaceutical composition of claim 13, for use as a medicament.