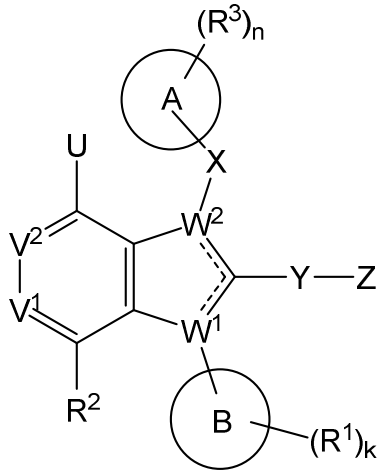
CLAIMS

1. A compound represented by the following structural formula:



(I)

a tautomer thereof, a deuterated derivative of that compound or tautomer, or a pharmaceutically acceptable salt of the foregoing, wherein:

------, for each of the two occurrences, is a single bond or a double bond, provided that one is a single bond and the other is a double bond;

V^1 and **V^2** are each independently N or -C**R^2**;

W^1 and **W^2** are each independently N or C, provided that one of W^1 and W^2 is N and the other is C;

U is ~~hydrogen, -OH, -CH_3, -NH_2, or halogen~~;

X is absent or a bond, -(C**R^a****R^b**)**$_p$**-, or -SO_2-;

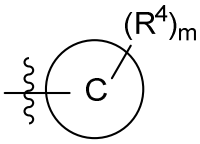
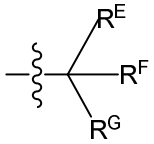
Y is absent or a bond, -(C**R^c****R^d**)**$_q$**-, -C(=O)-, or -SO_2-;

R^a and **R^b**, for each occurrence, are each independently hydrogen, halogen, -OH, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_1-C_6 haloalkyl, C_1-C_6 alkoxy, or C_1-C_6 haloalkoxy;

R^c and **R^d**, for each occurrence, are each independently hydrogen, halogen, -OH, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_1-C_6 haloalkyl, C_1-C_6 alkoxy, or C_1-C_6 haloalkoxy;

Ring A is C_3-C_{12} carbocyclyl, 3 to 12-membered heterocyclyl, C_6 or C_{10} aryl, or 5 to 10-membered heteroaryl; provided that when **W^1** is N and **W^2** is C, **Ring A** is not 1,5,6,7-tetrahydro-4*H*-indol-4-onyl or a tautomer thereof;

Ring B is C_4-C_{12} cycloalkyl, C_6 or C_{10} aryl, 5 to 10-membered heteroaryl, or benzyl;

Z is  or  ; wherein:

Ring C is C_3-C_{12} cycloalkyl, 3 to 12-membered heterocyclyl, C_6 or C_{10} aryl, or 5 to 10-membered heteroaryl;

provided that when **Ring C** is phenyl, the phenyl is substituted with $\mathbf{R^4}$; provided that when **Ring C** is phenyl, **Y** cannot be -SO_2-; and

provided that when **Ring B** is benzyl, **Ring C** cannot be pyridinyl or indolyl;

$\mathbf{R^E}$, $\mathbf{R^F}$, and $\mathbf{R^G}$ are each independently hydrogen, halogen, cyano, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_1-C_6 alkoxy, C_1-C_6 haloalkyl, C_1-C_6 haloalkoxy, -C(=O)$\mathbf{R^s}$, -C(=O)O$\mathbf{R^s}$, -C(=O)N$\mathbf{R^p}\mathbf{R^q}$, -C$\mathbf{R^p}$(=N)O$\mathbf{R^s}$, -N$\mathbf{R^p}$C(=O)$\mathbf{R^s}$, -N$\mathbf{R^p}$C(=O)O$\mathbf{R^s}$, -N$\mathbf{R^p}$C(=O)N$\mathbf{R^q}\mathbf{R^r}$, -O$\mathbf{R^s}$, -OC(=O)$\mathbf{R^s}$, or -OC(=O)N$\mathbf{R^p}\mathbf{R^q}$; wherein:

the C_1-C_6 alkyl or the C_2-C_6 alkenyl of any one of $\mathbf{R^E}$, $\mathbf{R^F}$, and $\mathbf{R^G}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from cyano,

-C(=O)$\mathbf{R^s}$, -C(=O)O$\mathbf{R^s}$, -C(=O)N$\mathbf{R^p}\mathbf{R^q}$, -N$\mathbf{R^p}$C(=O)$\mathbf{R^s}$, -N$\mathbf{R^p}$C(=O)O$\mathbf{R^s}$, -N$\mathbf{R^p}$C(=O)N$\mathbf{R^q}\mathbf{R^r}$, -N$\mathbf{R^p}$S(=O)$_r\mathbf{R^s}$, -O$\mathbf{R^s}$, -OC(=O)$\mathbf{R^s}$, -OC(=O)O$\mathbf{R^s}$, -OC(=O)N$\mathbf{R^p}\mathbf{R^q}$, -S(=O)$_r\mathbf{R^s}$, and -S(=O)$_r$N$\mathbf{R^p}\mathbf{R^q}$; wherein:

$\mathbf{R^p}$, $\mathbf{R^q}$, and $\mathbf{R^r}$, for each occurrence, are each independently hydrogen, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, or 3 to 6-membered heterocyclyl; wherein:

the C_1-C_4 alkyl of any one of $\mathbf{R^p}$, $\mathbf{R^q}$, and $\mathbf{R^r}$ is optionally substituted with 1 to 3 groups selected from halogen, cyano, -OH, C_1-C_3 alkoxy, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$; and

the C_3-C_6 cycloalkyl or the 3 to 6-membered heterocyclyl of any one of $\mathbf{R^p}$, $\mathbf{R^q}$, and $\mathbf{R^r}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkyl, C_1-C_3 haloalkoxy, -C(=O)O(C_1-C_2 alkyl), -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$;

$\mathbf{R^s}$, for each occurrence, is independently hydrogen, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, phenyl, or 5 or 6-membered heteroaryl; wherein:

the C_1-C_4 alkyl of $\mathbf{R^s}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, -

NH_2, -NH(C_1-C_2 alkyl), -N(C_1-C_2 alkyl)$_2$, C_1-C_3 alkoxy, -C(=O)OH, -C(=O)O(C_1-C_2 alkyl), -C(=O)NH_2, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$; and

the C_3-C_6 cycloalkyl, the phenyl, or the 5 or 6-membered heteroaryl of $\mathbf{R^s}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, -OCH_3, -NH_2, -NH(C_1-C_2 alkyl), -N(C_1-C_2 alkyl)$_2$, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkyl, C_1-C_3 haloalkoxy, -C(=O)OH, -C(=O)O(C_1-C_2 alkyl), -C(=O)NH_2, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$;

$\mathbf{R^1}$ is halogen, cyano, C_1-C_3 alkyl, C_1-C_3 haloalkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkoxy, or -O-(C_3-C_6 cycloalkyl);

$\mathbf{R^2}$, for each occurrence, is independently hydrogen, halogen, cyano, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_1-C_6 alkoxy, C_1-C_6 haloalkyl, C_1-C_6 haloalkoxy, C_3-C_6 cycloalkyl, -N$\mathbf{R^h R^i}$, phenyl, or 5 or 6-membered heteroaryl; wherein:

the C_1-C_6 alkyl, the C_2-C_6 alkenyl or the C_3-C_6 cycloalkyl of $\mathbf{R^2}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from cyano, -C(=O)$\mathbf{R^k}$, -C(=O)O$\mathbf{R^k}$, -C(=O)N$\mathbf{R^h R^i}$, -N$\mathbf{R^h R^i}$, -N$\mathbf{R^h}$C(=O)$\mathbf{R^k}$, -N$\mathbf{R^h}$C(=O)O$\mathbf{R^k}$, -N$\mathbf{R^h}$C(=O)N$\mathbf{R^i R^j}$, -N$\mathbf{R^h}$S(=O)$_s\mathbf{R^k}$, -O$\mathbf{R^k}$, -OC(=O)$\mathbf{R^k}$, -OC(=O)O$\mathbf{R^k}$, -OC(=O)N$\mathbf{R^h R^i}$, -S(=O)$_s\mathbf{R^k}$, and S(=O)$_s$N$\mathbf{R^h R^i}$; wherein:

$\mathbf{R^h}$, $\mathbf{R^i}$, and $\mathbf{R^j}$, for each occurrence, are each independently hydrogen, C_1-C_4 alkyl, or C_3-C_6 cycloalkyl; wherein:

the C_1-C_4 alkyl of any one of $\mathbf{R^h}$, $\mathbf{R^i}$, and $\mathbf{R^j}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from from halogen, cyano, -OH, -NH_2, -NH(C_1-C_2 alkyl), -N(C_1-C_2 alkyl)$_2$, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkyl, C_1-C_3 haloalkoxy, -C(=O)OH, -C(=O)O(C_1-C_2 alkyl), -C(=O)NH_2, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$; and

the C_3-C_6 cycloalkyl of any one of $\mathbf{R^h}$, $\mathbf{R^i}$, and $\mathbf{R^j}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, -NH_2, -NH(C_1-C_2 alkyl), -N(C_1-C_2 alkyl)$_2$, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkyl, C_1-C_3 haloalkoxy, -

C(=O)OH, -C(=O)O(C_1-C_2 alkyl), -C(=O)NH_2, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$;

$\mathbf{R^k}$, for each occurrence, is independently hydrogen, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, phenyl, or 5 or 6-membered heteroaryl; wherein:

-O$\mathbf{R^k}$ cannot be -OH;

the C_1-C_4 alkyl of $\mathbf{R^k}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, -NH_2, -NH(C_1-C_2 alkyl), -N(C_1-C_2 alkyl)$_2$, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkyl, C_1-C_3 haloalkoxy, -C(=O)OH, -C(=O)O(C_1-C_2 alkyl), -C(=O)NH_2, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$; and

the C_3-C_6 cycloalkyl of $\mathbf{R^k}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, -NH_2, -NH(C_1-C_2 alkyl), -N(C_1-C_2 alkyl)$_2$, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkyl, C_1-C_3 haloalkoxy, -C(=O)OH, -C(=O)O(C_1-C_2 alkyl),

-C(=O)NH_2, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1- C_2 alkyl)$_2$;

$\mathbf{R^3}$ and $\mathbf{R^4}$, for each occurrence, are each independently halogen, cyano, =O, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_1-C_6 alkoxy, C_1-C_6 haloalkyl, C_1-C_6 haloalkoxy, C_3-C_6 cycloalkyl, -C(=O)$\mathbf{R^y}$, -C(=O)O$\mathbf{R^y}$, -C(=O)N$\mathbf{R^v R^w}$, -C(=O)N$\mathbf{R^v}$O$\mathbf{R^y}$, -C(=O)N$\mathbf{R^v}$S(=O)$_t\mathbf{R^y}$, -N$\mathbf{R^v R^w}$, -N$\mathbf{R^v}$C(=O)$\mathbf{R^y}$, -N$\mathbf{R^v}$C(=O)O$\mathbf{R^y}$, -N$\mathbf{R^v}$C(=O)N$\mathbf{R^w R^x}$, -N$\mathbf{R^v}$S(=O)$_t\mathbf{R^y}$, -O$\mathbf{R^y}$, -OC(=O)$\mathbf{R^y}$, -OC(=O)O$\mathbf{R^y}$, -OC(=O)N$\mathbf{R^v R^w}$, -S(=O)$_t\mathbf{R^y}$, -S(=O)$_t$N$\mathbf{R^v R^w}$, -S(=O)$_t$N$\mathbf{R^v}$C(=O)$\mathbf{R^y}$, -P(=O)$\mathbf{R^z R^z}$, phenyl, or a 5 or 6-membered heteroaryl; wherein:

the C_1-C_6 alkyl, the C_2-C_6 alkenyl, or the C_3-C_6 cycloalkyl of any one of $\mathbf{R^3}$ and $\mathbf{R^4}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from cyano, -C(=O)$\mathbf{R^y}$, -C(=O)O$\mathbf{R^y}$, -C(=O)N$\mathbf{R^v R^w}$, -N$\mathbf{R^v R^w}$, -N$\mathbf{R^v}$C(=O)$\mathbf{R^y}$,

-N$\mathbf{R^v}$C(=O)O$\mathbf{R^y}$, -N$\mathbf{R^v}$C(=O)N$\mathbf{R^w R^x}$, ~~-~~-N$\mathbf{R^v}$S(=O)$_r\mathbf{R^y}$, -O$\mathbf{R^y}$, -OC(=O)$\mathbf{R^y}$, -OC(=O)O$\mathbf{R^y}$, -OC(=O)N$\mathbf{R^v R^w}$, -S(=O)$_t\mathbf{R^y}$, and

-S(=O)$_t$N$\mathbf{R^v R^w}$; wherein:

$\mathbf{R^v}$, $\mathbf{R^w}$, and $\mathbf{R^x}$, for each occurrence, are each independently hydrogen, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, 5 or 6-membered heterocyclyl, or 5 or 6-membered heteroaryl; wherein:

the C_1-C_4 alkyl of any one of $\mathbf{R^v}$, $\mathbf{R^w}$, and $\mathbf{R^x}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano -OH, -NH_2, -$NH(C_1$-C_2 alkyl), -$N(C_1$-C_2 alkyl)$_2$, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkyl, C_1-C_3 haloalkoxy, -C(=O)OH, -C(=O)O(C_1-C_2 alkyl), -$C(=O)NH_2$, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$; and

the C_3-C_6 cycloalkyl, the 5 or 6-membered heterocyclyl, or the 5 or 6-membered heteroaryl of any one of $\mathbf{R^v}$, $\mathbf{R^w}$, and $\mathbf{R^x}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, -NH_2, -$NH(C_1$-C_2 alkyl), -$N(C_1$-C_2 alkyl)$_2$, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkyl, C_1-C_3 haloalkoxy, -C(=O)OH, -C(=O)O(C_1-C_2 alkyl), -$C(=O)NH_2$, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$;

$\mathbf{R^y}$, for each occurrence, is independently hydrogen, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, phenyl, a 5 or 6-membered heterocyclyl, or a 5 or 6-membered heteroaryl; wherein

the C_1-C_4 alkyl of $\mathbf{R^y}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, -NH_2, -$NH(C_1$-C_2 alkyl), -$N(C_1$-C_2 alkyl)$_2$, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkyl, C_1-C_3 haloalkoxy, -C(=O)OH, -C(=O)O(C_1-C_2 alkyl), -$C(=O)NH_2$, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$; and

the C_3-C_6 cycloalkyl, the phenyl, the 5 or 6-membered heterocyclyl, or the 5 or 6-membered heteroaryl of $\mathbf{R^y}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, -NH_2, NH(C_1-C_2 alkyl), -$N(C_1$-C_2 alkyl)$_2$, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkyl, C_1-C_3 haloalkoxy, -C(=O)OH, -C(=O)O(C_1-C_2 alkyl), -$C(=O)NH_2$, -C(=O)NH(C_1-C_2 alkyl), and -C(=O)N(C_1-C_2 alkyl)$_2$;

R^z, for each occurrence, is independently C_1-C_2 alkyl, -OH, or -O(C_1-C_2 alkyl);

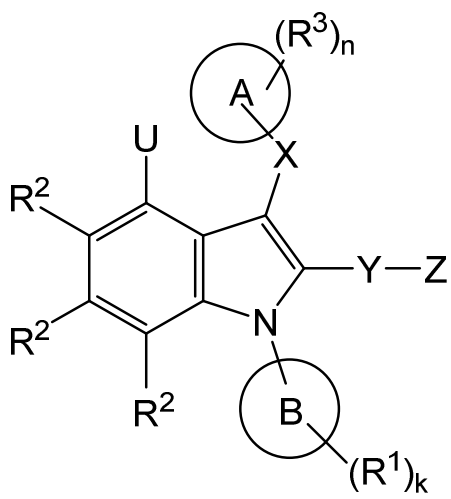
k is an integer selected from 1, 2, and 3;

m and **n** a are each independently an integer selected from 0, 1, 2, and 3;

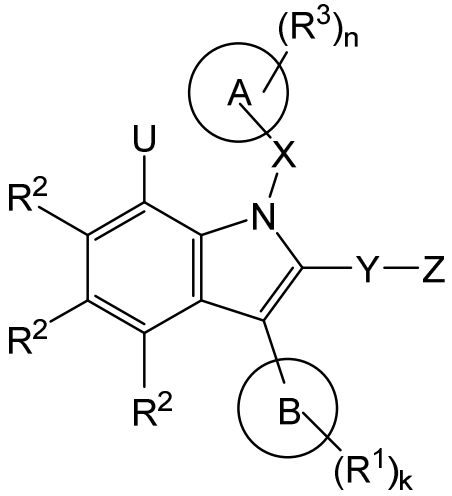
p, **r**, **s**, and **t** are each independently an integer selected from 1 and 2; and

q is an integer selected from 1, 2, and 3.

2. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to claim 1 represented by one of the following structural formulae:



(IIa)



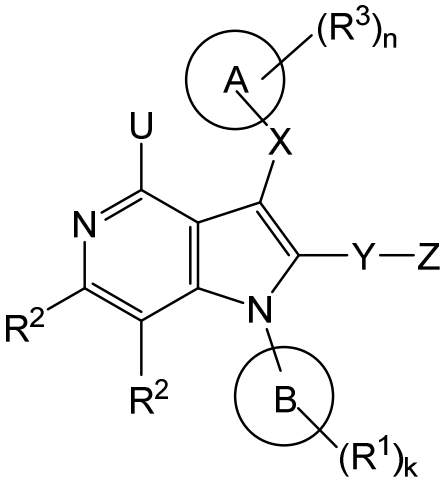
(IIb) .

~~wherein:~~

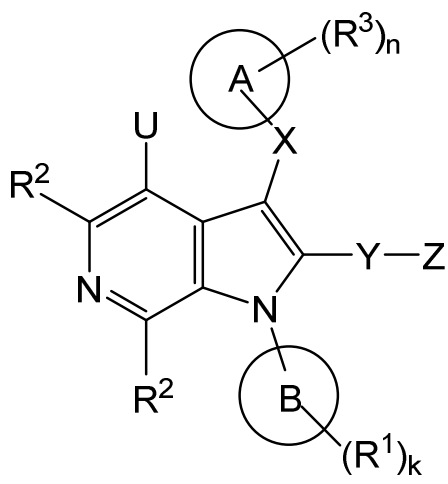
~~**U** is -OH, -CH_3, -NH_2, F, or Cl;~~

~~and wherein all other variables not specifically defined herein are as defined in claim 1.~~

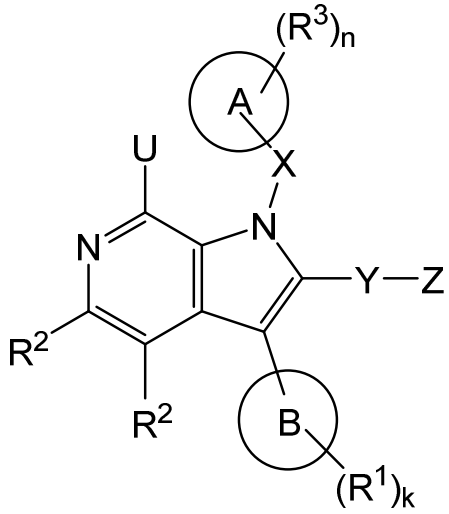
3. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to claim 1 represented by one of the following structural formulae:



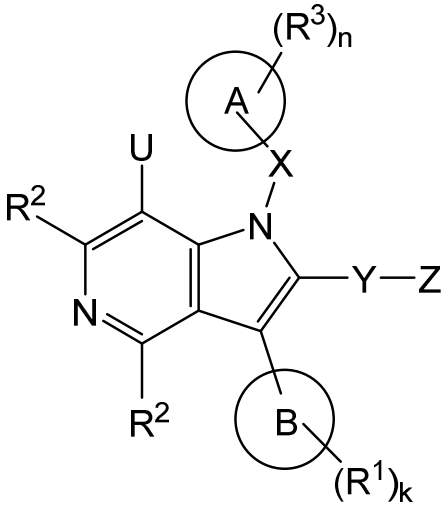
(IIc)



(IId)



(IIe)



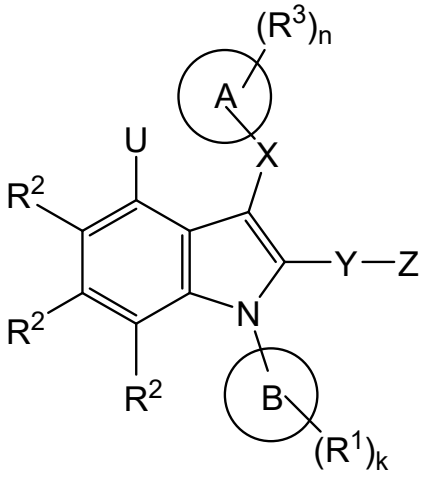
(IIf)_____.

~~wherein:~~

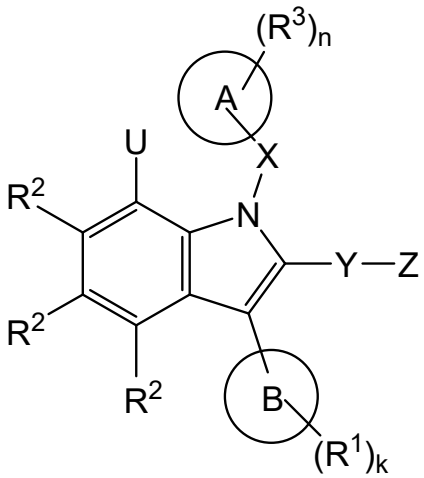
~~**U** is -OH, -CH_3, -NH_2, F, or Cl;~~

~~and wherein all other variables not specifically defined herein are as defined in claim 1.~~

4. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to claim 1 or claim 2 represented by one of the following structural formulae:



(IIIa)



(IIIb)

wherein:

~~**U** is -OH or -NH_2;~~

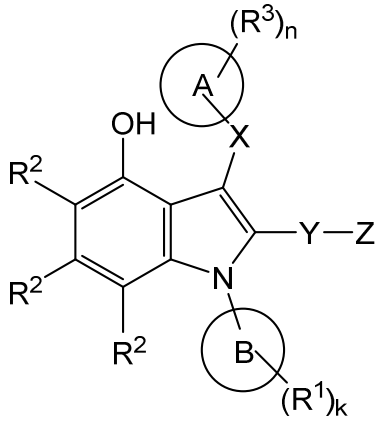
~~——~~**Ring A** is optionally substituted with $\mathbf{R^3}$ and **Ring A** is C_3-C_7 carbocyclyl, 6 to 9-membered heterocyclyl, phenyl, or 5 to 9-membered heteroaryl;

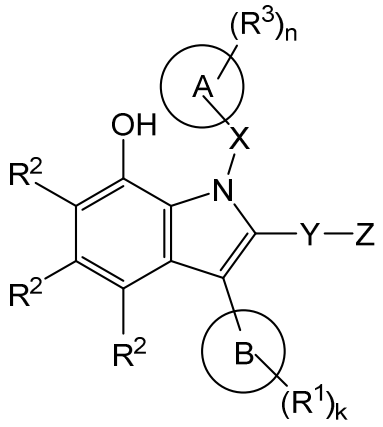
Ring B is substituted with $\mathbf{R^1}$ and **Ring B** is C_4-C_6 cycloalkyl, phenyl, 5 to 6-membered heteroaryl, or benzyl; and

when **Z** is **Ring C** optionally substituted with $\mathbf{R^4}$, **Ring C** is C_4-C_8 cycloalkyl, 4 to 8-membered heterocyclyl, phenyl, or 5 or 6-membered heteroaryl~~;~~

~~and wherein all other variables not specifically defined herein are as defined in claim 1 or claim 2~~.

5. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1, 2, and 4 represented by one of the following structural formulae:



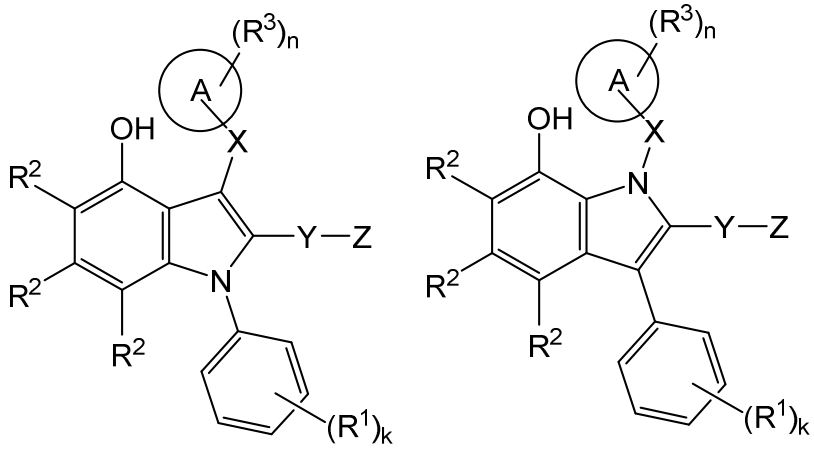


(IVa) (IVb)

wherein:

Ring B is substituted with $\mathbf{R^1}$ and **Ring B** is cyclohexyl, phenyl, pyridinyl, or benzyl~~;~~ ~~and wherein all other variables not specifically defined herein are as defined in any one of claims 1, 2, and 4~~.

6. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1, 2, 4, and 5 represented by the following structural formula:



(Va) (Vb)

wherein:

$\mathbf{R^1}$ is halogen, cyano, C_1-C_2 alkyl, C_1-C_2 haloalkyl, or C_1-C_2 alkoxy; and

k is an integer selected from 1 and 2~~;~~

~~and wherein all other variables not specifically defined herein are as defined in any one of claims 1, 2, 4, and 5~~.

7. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 6, wherein $\mathbf{R^1}$ is cyano, F, Cl, $-CH_3$, $-CHF_2$, $-CF_3$, $-OCH_3$, or $-OCH(CH_3)_2$~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

8. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 7, wherein at least one $\mathbf{R^1}$ is F~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

9. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 8, wherein:

X is absent or a bond, -(C**R**^{a}**R**^{b})-, or -SO_2-;

R^{a} and **R**^{b}, for each occurrence, are each independently hydrogen, C_1-C_3 alkyl, C_1-C_3 haloalkyl, or C_1-C_3 alkoxy~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

10. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 9, wherein **X** is absent or a bond, -CH_2-, or -SO_2-~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

11. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 10, wherein:

Y is absent or a bond, -(C**R**^{c}**R**^{d})$_q$-, -C(=O)-, or -SO_2-;

R^{c} and **R**^{d}, for each occurrence, are each independently hydrogen, C_1-C_3 alkyl, C_1-C_3 haloalkyl, or C_1-C_3 alkoxy~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

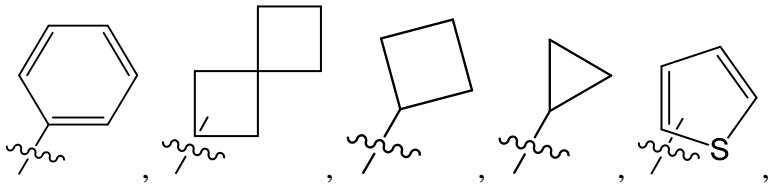
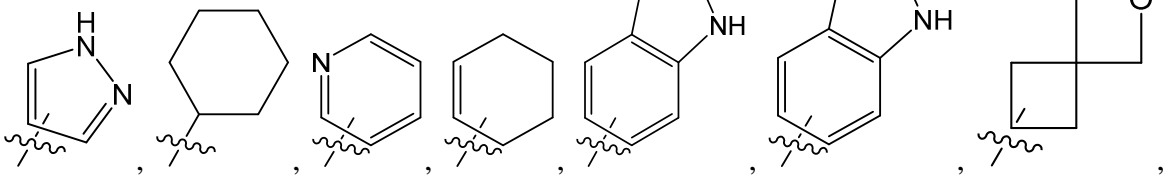
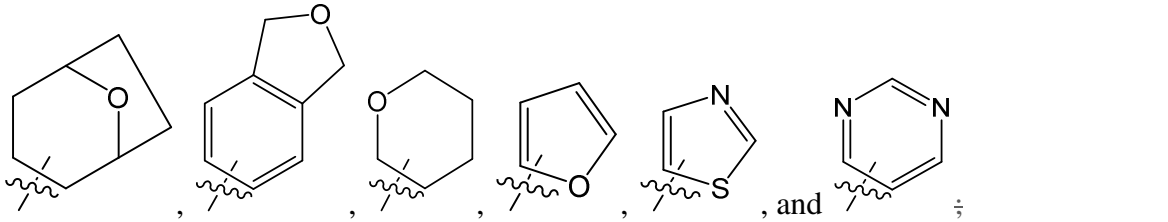
12. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 11, wherein **q** is an integer selected from 1 and 2~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

13. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 12, wherein **Y** is absent or a bond, -CH_2-, -$CHCH_3$-, -$C(CH_3)_2$-, -C(=O)-, or -SO_2-~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

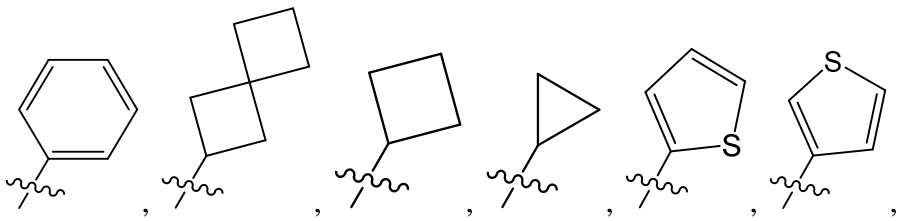
14. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 13, wherein **Ring A** is optionally substituted with **R**^{3} and **Ring A** is C_3-C_7 carbocyclyl, 6 to 9-membered heterocyclyl containing 1 to 3 oxygen atoms, phenyl, or 5 to 9-membered heteroaryl containing 1 to 3 heteroatoms selected from O and N~~;~~

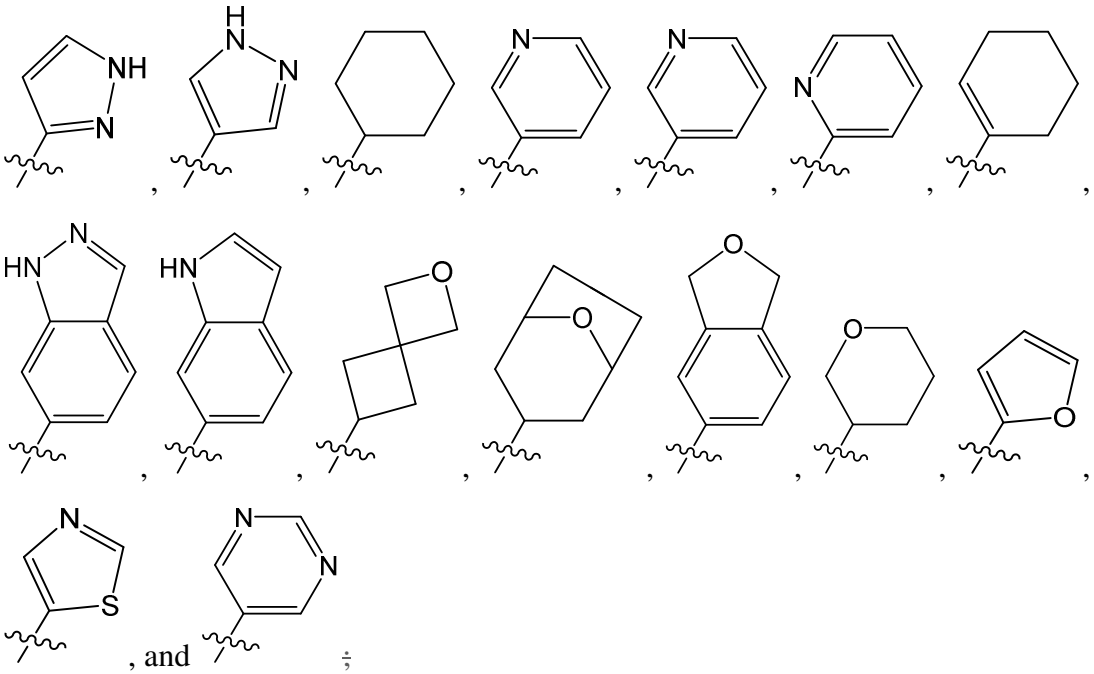
~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

15. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 14, wherein **Ring A** is optionally substituted with $\mathbf{R^3}$ and **Ring A** is C_3-C_7 carbocyclyl, 6 to 9-membered heterocyclyl containing one or two oxygen atoms, phenyl, or 5 to 9-membered heteroaryl containing one or two nitrogen atoms or one or two oxygen atoms~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

16. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 15, wherein **Ring A** is optionally substituted with $\mathbf{R^3}$ and **Ring A** is selected from , , , and ;

~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

17. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 16, wherein **Ring A** is optionally substituted with $\mathbf{R^3}$ and **Ring A** is selected from ,

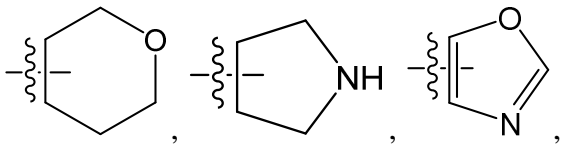


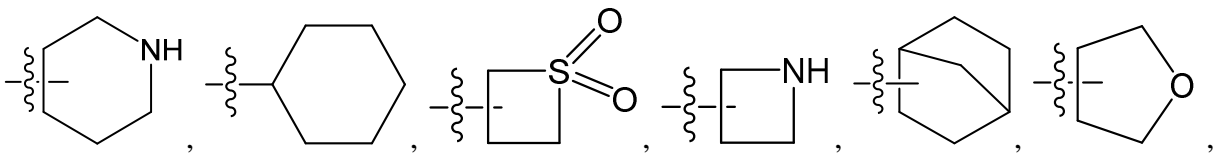
, and ;

~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

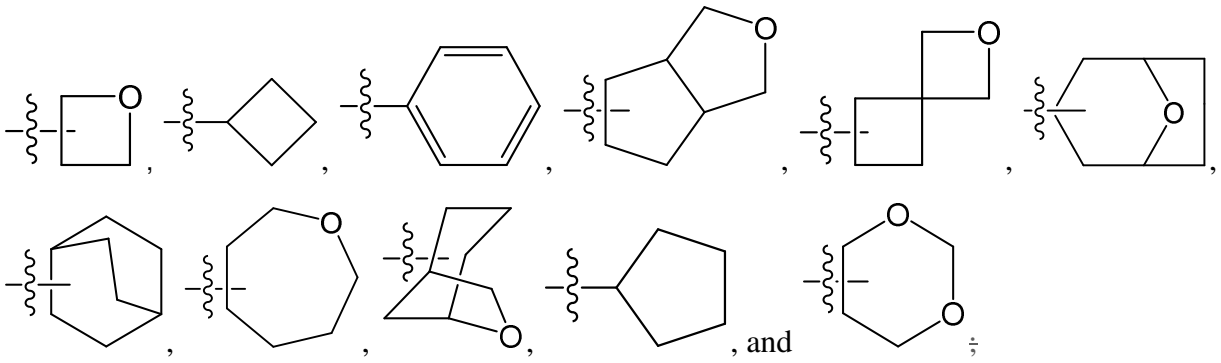
18. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 17, wherein **Z** is **Ring C**, **Ring C** is optionally substituted with $\mathbf{R^4}$, and **Ring C** is C_4-C_8 cycloalkyl; 4 to 8-membered heterocyclyl containing one or two heteroatoms selected from O, N, and S; phenyl; or 5-membered heteroaryl containing one or two heteroatoms selected from O and N;

~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

19. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 18, wherein **Z** is **Ring C**, **Ring C** is optionally substituted with $\mathbf{R^4}$, and **Ring C** is selected from 

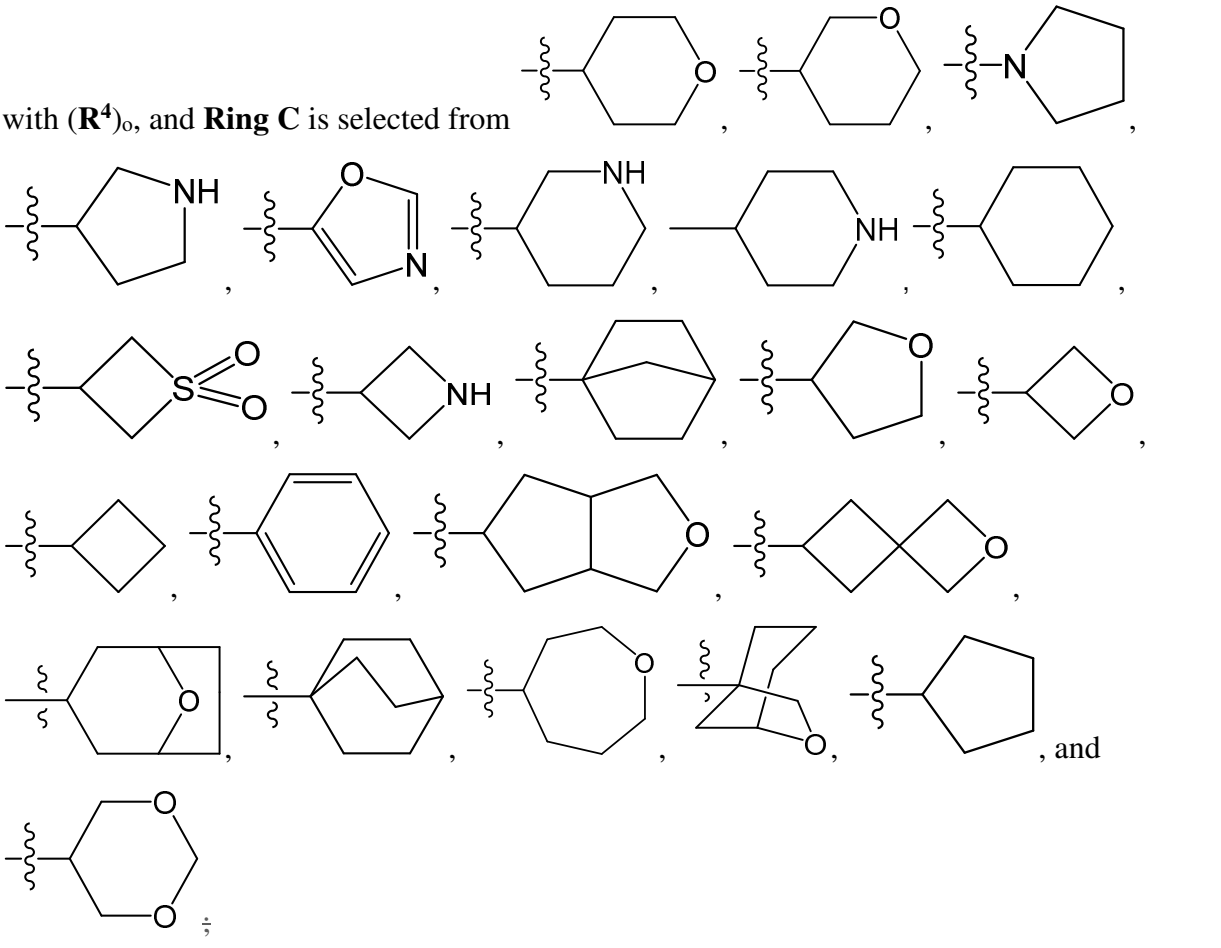
, 

,



and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.

20. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 19, wherein **Z** is **Ring C**, **Ring C** is optionally substituted with $(\mathbf{R^4})_o$, and **Ring C** is selected from



and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.

21. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 20, wherein $\mathbf{R^E}$, $\mathbf{R^F}$, and $\mathbf{R^G}$ are each independently hydrogen, halogen, cyano (-C≡N), C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkyl, -C(=O)O$\mathbf{R^s}$, -C(=O)N$\mathbf{R^pR^q}$, -C$\mathbf{R^p}$(=N)O$\mathbf{R^s}$, or -O$\mathbf{R^s}$; wherein:

the C_1-C_4 alkyl of any one of $\mathbf{R^E}$, $\mathbf{R^F}$, and $\mathbf{R^G}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from cyano, -C(=O)$\mathbf{R^s}$, -C(=O)O$\mathbf{R^s}$, -C(=O)N$\mathbf{R^pR^q}$,
-O$\mathbf{R^s}$, -OC(=O)$\mathbf{R^s}$, -OC(=O)O$\mathbf{R^s}$, -OC(=O)N$\mathbf{R^pR^q}$, and -S(=O)$_2$$\mathbf{R^s}$; wherein:

$\mathbf{R^p}$ and $\mathbf{R^q}$, for each occurrence, are each independently hydrogen, C_1-C_2 alkyl, C_3-C_5 cycloalkyl, or 5 or 6-membered heterocyclyl; wherein:

the C_1-C_2 alkyl of any one of $\mathbf{R^p}$ and $\mathbf{R^q}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, and -OH;

the C_3-C_5 cycloalkyl or the 5 or 6-membered heteroaryl of $\mathbf{R^p}$ and $\mathbf{R^q}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, and -OH;

$\mathbf{R^s}$, for each occurrence, is independently hydrogen, C_1-C_2 alkyl, or 5 or 6-membered heteroaryl; wherein the C_1-C_2 alkyl of $\mathbf{R^s}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, and
-NH_2; wherein:

the 5 or 6-membered heteroaryl of $\mathbf{R^s}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from halogen, cyano, -OH, and -NH_2~~,~~;

~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

22. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 21, wherein $\mathbf{R^E}$, $\mathbf{R^F}$, and $\mathbf{R^G}$ are each independently hydrogen, F, Cl, C_1-C_2 alkyl, C_1-C_2 haloalkyl, -C(=O)N$\mathbf{R^pR^q}$, -C$\mathbf{R^p}$(=N)O$\mathbf{R^s}$, or -O$\mathbf{R^s}$; wherein:

the C_1-C_2 alkyl of any one of $\mathbf{R^E}$, $\mathbf{R^F}$, and $\mathbf{R^G}$ is optionally substituted with 1 to 3 groups ~~selected~~ independently chosen from cyano, -C(=O)N$\mathbf{R^pR^q}$, -O$\mathbf{R^s}$, -

OC(=O)N$\mathbf{R^pR^q}$, and

-S(=O)$_2\mathbf{R^s}$; wherein:

$\mathbf{R^p}$ and $\mathbf{R^q}$, for each occurrence, are each independently hydrogen, C_1-C_2 alkyl, cyclopentyl, or tetrahydrofuranyl; wherein:

the C_1-C_2 alkyl of any one of $\mathbf{R^p}$ and $\mathbf{R^q}$ is optionally substituted with 1 to 3 halogen groups ~~selected~~ independently chosen from F and Cl;

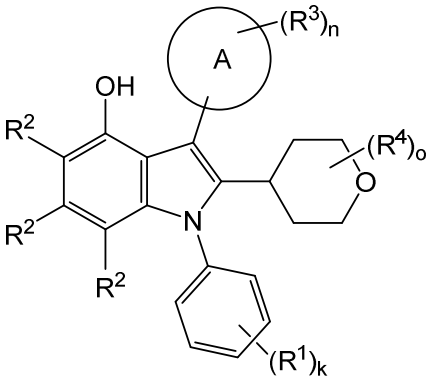
$\mathbf{R^s}$, for each occurrence, is independently hydrogen, C_1-C_2 alkyl, pyridinyl, or pyrimidinyl; wherein:

the C_1-C_2 alkyl of $\mathbf{R^s}$ is optionally substituted with 1 to 3 halogen groups independently chosen~~selected~~ from F and Cl.~~;~~ ~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

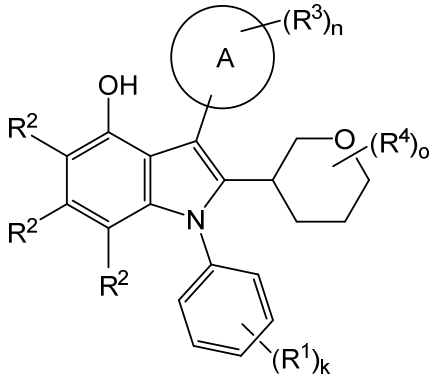
23. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 22, wherein $\mathbf{R^E}$, $\mathbf{R^F}$, and $\mathbf{R^G}$ are each independently hydrogen, F, -OH, -CH(OH)CH_3, -C(=O)NHCH_3, -C(=N)OCH_3, -CH_3, -CF_3, -CH_2F, -CH_2CN, -$(CH_2)_2$CN, -CH_2OH, -C_2H_5, -$(CH_2)_2$OH, -CH_2OCH_3, -$CH_2OC_2H_5$, -$(CH_2)_2OCH_3$, -CH_2OCHF_2, -$(CH_2)_2OCHF_2$, -CH_2C(=O)NH_2, -CH_2C(=O)N$(CH_3)_2$, -CH_2S(=O)$_2CH_3$, -$(CH_2)_2$S(=O)$_2CH_3$, -CH_2(O)C(=O)NHCH_3, -CH_2(O)C(=O)N$(CH_3)C_2H_5$,-CH_2(O)C(=O)N$(CH_3)_2$, -CH_2(O)C(=O)N$(C_2H_5)_2$, -CH_2(O)C(=O)NH(cyclopentyl), -CH_2(O)C(=O)NH(tetrahydrofuranyl), -CH_2(O)(pyridin-2-yl), or -CH_2(O)(pyrimidin-2-yl)~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

24. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 23, wherein $\mathbf{R^E}$, $\mathbf{R^F}$, and $\mathbf{R^G}$ are each independently hydrogen, F, -CH(OH)CH_3, -CH_3, -CH_2CN, -CH_2OH, or -CH_2OCH_3~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

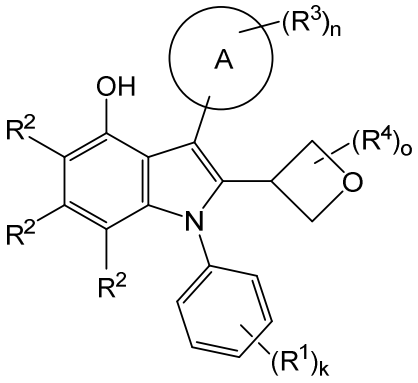
25. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 24 represented by one of the following structural formulae:



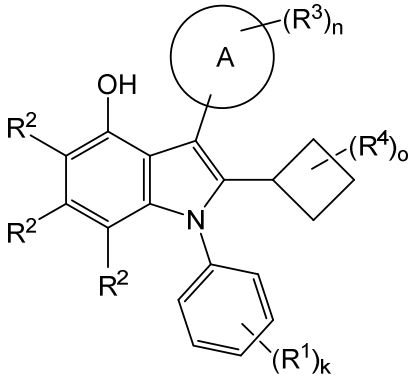
(VIa)



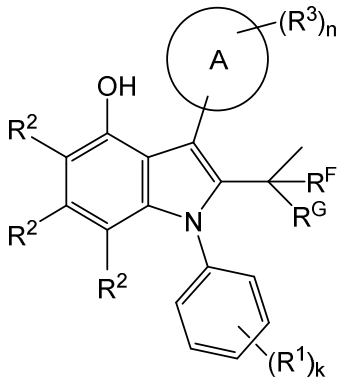
(VIb)



(VIc)



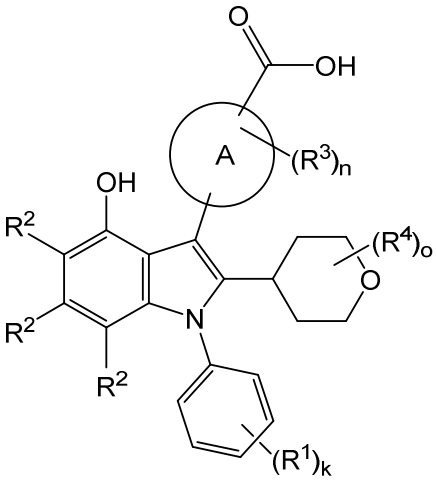
(VId)



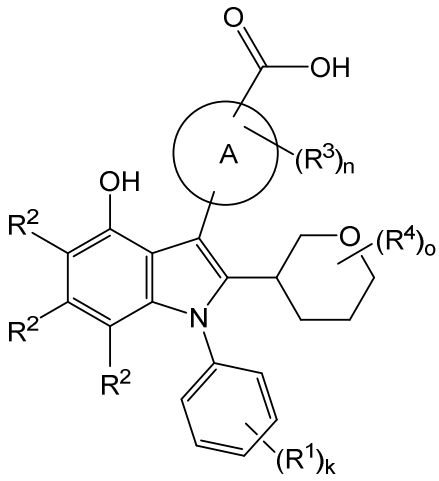
(VIe)~~,~~

~~wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

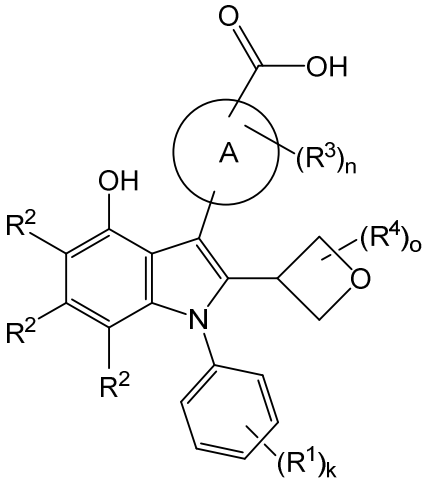
26. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 25 represented by one of the following structural formulae:



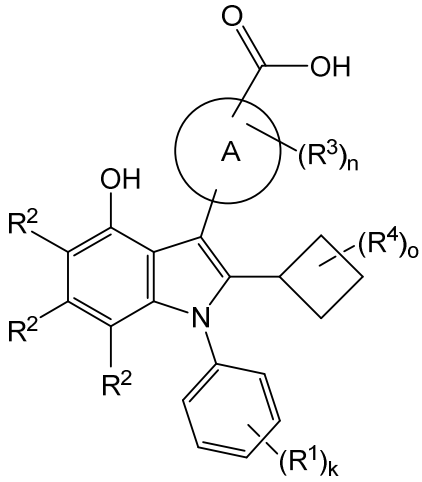
(VIIa)



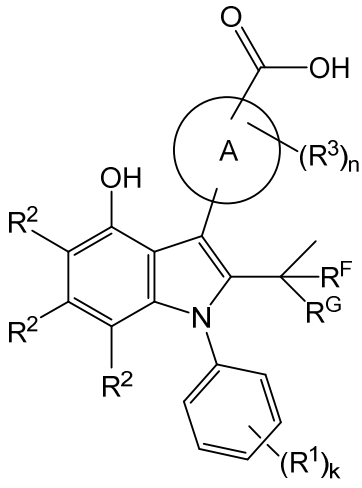
(VIIb)



(VIIc)



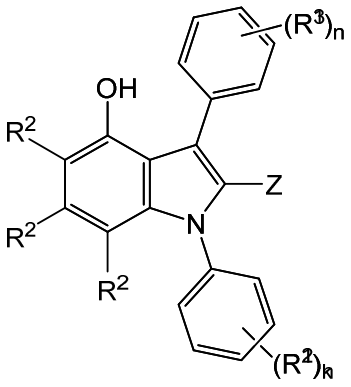
(VIId)



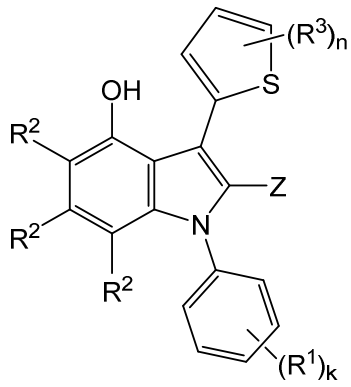
(VIIe);

wherein **n** is an integer selected from 0, 1, and 2~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

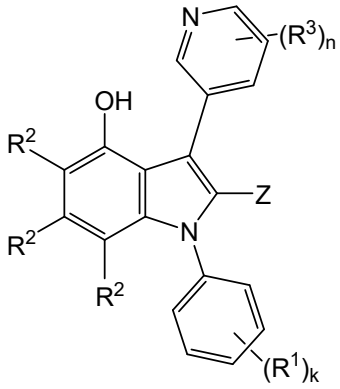
27. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 26 represented by one of the following structural formulae:



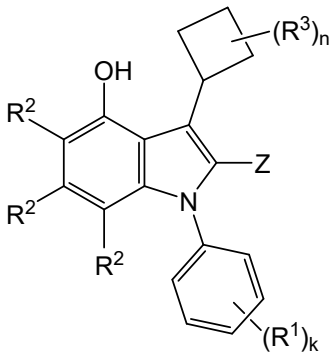
(VIIIa)



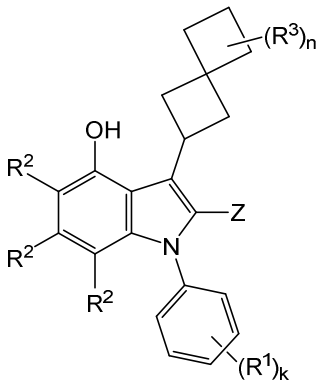
(VIIIb)



(VIIIc)



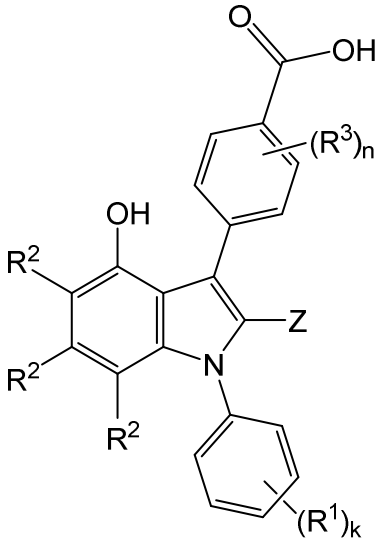
(VIIId)



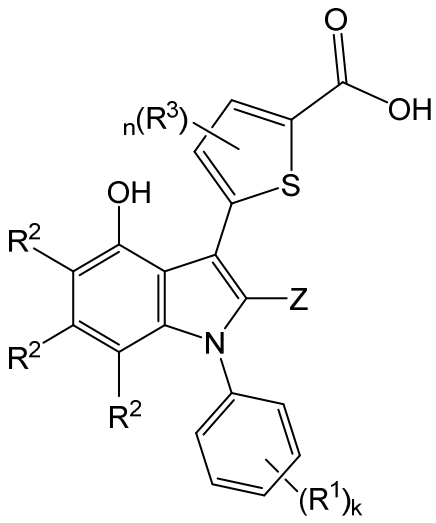
(VIIIe)~~;~~

~~wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

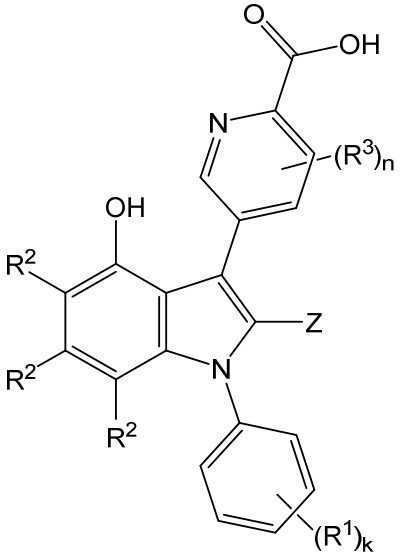
28. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 27 represented by one of the following structural formulae:



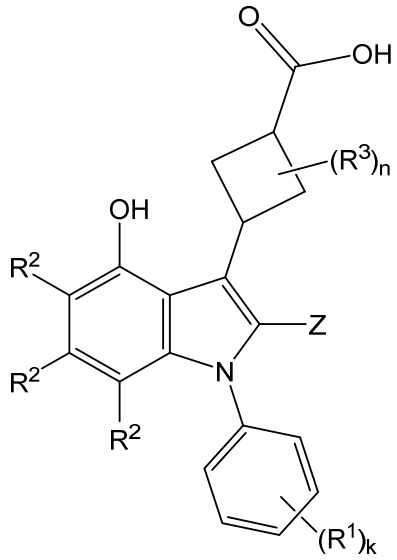
(IXa)



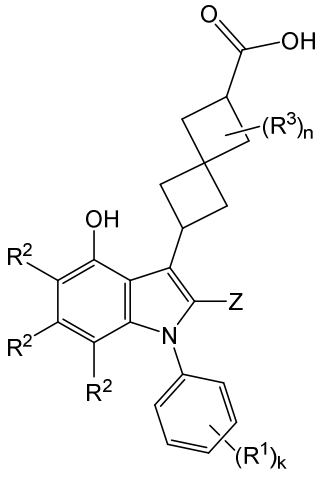
(IXb)



(IXc)



(IXd)



(IXe);

wherein **n** is an integer selected from 0, 1, and 2~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

29. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 28, wherein $\mathbf{R^2}$, for each occurrence, is independently hydrogen, halogen, cyano, C_1-C_6 alkyl (optionally substituted with 1 to 3 groups selected from cyano, -OH, -OCH_3, and -NH_2), C_1-C_6 alkoxy, C_1-C_6 haloalkyl, -N$\mathbf{R^h R^i}$, or C_3-C_6 cycloalkyl; wherein $\mathbf{R^h}$ and $\mathbf{R^i}$, for each occurrence, are each independently hydrogen or C_1-C_4 alkyl~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

30. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 29, wherein $\mathbf{R^2}$, for each occurrence, is independently hydrogen, halogen, cyano, C_1-C_4 alkyl (optionally substituted with 1 to 3 groups independently chosen~~selected~~ from cyano, -OH, -OCH_3, and -NH_2), C_1-C_4 alkoxy, C_1-C_4 haloalkyl, -N$\mathbf{R^h R^i}$, or C_3-C_5 cycloalkyl; wherein $\mathbf{R^h}$ and $\mathbf{R^i}$, for each occurrence, are each independently hydrogen or C_1-C_4 alkyl~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

31. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 30, wherein $\mathbf{R^2}$, for each occurrence, is independently hydrogen, halogen, cyano, C_1-C_2 alkyl (optionally substituted with 1 to 3 groups independently chosen~~selected~~ from cyano, -OH, -OCH_3, and -NH_2), C_1-C_2 haloalkyl, -N$\mathbf{R^h R^i}$, or C_3-C_4 cycloalkyl; wherein $\mathbf{R^h}$ and $\mathbf{R^i}$, for each occurrence, are each independently hydrogen or -CH_3~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

32. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 31, wherein $\mathbf{R^2}$, for each occurrence, is independently hydrogen, F, Cl, cyano, -CH_3, -CHF_2, -CF_3, -NH_2, or cyclopropyl~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

33. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 32, wherein $\mathbf{R^3}$, for each occurrence, is independently halogen, cyano, =O, C_1-C_6 alkyl, C_1-C_6 alkoxy, C_1-C_6 haloalkyl, -C(=O)$\mathbf{R^y}$, -C(=O)O$\mathbf{R^y}$, -C(=O)N$\mathbf{R^v R^w}$, -C(=O)N$\mathbf{R^v}$O$\mathbf{R^y}$,-C(=O)N$\mathbf{R^v}$S(=O)$_2\mathbf{R^y}$, -N$\mathbf{R^v R^w}$, -O$\mathbf{R^y}$, -S(=O)$_2\mathbf{R^y}$, -S(=O)$_2$N$\mathbf{R^v R^w}$, -S(=O)$_2$N$\mathbf{R^v}$C(=O)$\mathbf{R^y}$, or -P(=O)$\mathbf{R^z R^z}$; wherein:

the C_1-C_4 alkyl of $\mathbf{R^3}$ is optionally substituted with 1 to 3 groups independently chosen~~selected~~ from cyano, -O$\mathbf{R^y}$, -C(=O)O$\mathbf{R^y}$, and -N$\mathbf{R^v R^w}$; wherein:

$\mathbf{R^v}$, $\mathbf{R^w}$, and $\mathbf{R^x}$, for each occurrence, are each independently hydrogen or C_1-C_2 alkyl; wherein the C_1-C_2 alkyl of any one of $\mathbf{R^v}$, $\mathbf{R^w}$, and $\mathbf{R^x}$ is optionally substituted with 1 to 3 groups independently chosen~~selected~~ from halogen, cyano, -OH, and -NH_2; and

$\mathbf{R^y}$, for each occurrence, is independently hydrogen, C_1-C_4 alkyl, or 5 or 6-membered heterocyclyl; wherein:

the C_1-C_4 alkyl of $\mathbf{R^y}$ is optionally substituted with 1 to 3 groups independently chosen~~selected~~ from halogen, cyano, -OH, -NH_2, and -C(=O)OH; and

the 5 or 6-membered heterocyclyl of $\mathbf{R^y}$ is optionally substituted with 1 to 3 groups independently chosen~~selected~~ from halogen, cyano, -OH, -NH_2, and -C(=O)OH~~.~~;

~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

34. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 33, wherein $\mathbf{R^3}$, for each occurrence, is independently halogen, cyano, =O, C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkyl, -C(=O)$\mathbf{R^y}$, -C(=O)O$\mathbf{R^y}$, -C(=O)N$\mathbf{R^v R^w}$,-C(=O)N$\mathbf{R^v}$O$\mathbf{R^y}$, -C(=O)N$\mathbf{R^v}$S(=O)$_2\mathbf{R^y}$, -N$\mathbf{R^v R^w}$, -O$\mathbf{R^y}$, -S(=O)$_2\mathbf{R^y}$, -S(=O)$_2$N$\mathbf{R^v R^w}$, -S(=O)$_2$N$\mathbf{R^v}$C(=O)$\mathbf{R^y}$, or -P(=O)$\mathbf{R^z R^z}$; wherein:

the C_1-C_4 alkyl of $\mathbf{R^3}$ is optionally substituted with 1 to 3 groups independently chosen~~selected~~ from cyano, -O$\mathbf{R^y}$ and -C(=O)O$\mathbf{R^y}$; wherein:

$\mathbf{R^v}$, $\mathbf{R^w}$, and $\mathbf{R^x}$, for each occurrence, are each independently hydrogen or C_1-C_4 alkyl; wherein the C_1-C_4 alkyl of any one of $\mathbf{R^v}$, $\mathbf{R^w}$, and $\mathbf{R^x}$ is optionally substituted with -OH; and

$\mathbf{R^y}$, for each occurrence, is independently hydrogen, C_1-C_2 alkyl, or 6-membered heterocyclyl; wherein:

the C_1-C_2 alkyl of $\mathbf{R^y}$ is optionally substituted with 1 to 3 groups independently chosen~~selected~~ from -OH and -C(=O)OH; and

the 6-membered heterocyclyl of $\mathbf{R^y}$ is optionally substituted with 1 to 3 groups independently chosen ~~selected~~ from -OH and -C(=O)OH;

$\mathbf{R^z}$, for each occurrence, is independently $-CH_3$, -OH, or $-OCH_3$.~~;~~

~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

35. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 34, wherein $\mathbf{R^3}$, for each occurrence, is independently halogen, cyano, =O, C_1-C_2 alkyl, C_1-C_2 alkoxy, C_1-C_4 haloalkyl, $-C(=O)\mathbf{R^y}$, $-C(=O)O\mathbf{R^y}$, $-C(=O)N\mathbf{R^v}\mathbf{R^w}$,$-C(=O)N\mathbf{R^v}O\mathbf{R^y}$, $-C(=O)N\mathbf{R^v}S(=O)_2\mathbf{R^y}$, $-N\mathbf{R^v}\mathbf{R^w}$, $-O\mathbf{R^y}$, $-S(=O)_2\mathbf{R^y}$, $-S(=O)_2N\mathbf{R^v}\mathbf{R^w}$, $-S(=O)_2N\mathbf{R^v}C(=O)\mathbf{R^y}$, or $-P(=O)\mathbf{R^z}\mathbf{R^z}$; wherein:

the C_1-C_2 alkyl of $\mathbf{R^3}$ is optionally substituted with 1 to 3 groups independently chosen ~~selected~~ from -OH and $-C(=O)O\mathbf{R^y}$; wherein:

$\mathbf{R^v}$, $\mathbf{R^w}$, and $\mathbf{R^x}$, for each occurrence, are each independently hydrogen or C_1-C_2 alkyl; wherein the C_1-C_2 alkyl of any one of $\mathbf{R^v}$, $\mathbf{R^w}$, and $\mathbf{R^x}$ is optionally substituted with -OH; and

$\mathbf{R^y}$, for each occurrence, is independently hydrogen, C_1-C_2 alkyl, or tetrahydro-2H-pyranyl; wherein:

the C_1-C_2 alkyl of $\mathbf{R^y}$ is optionally substituted with -C(=O)OH; and

the tetrahydro-2H-pyranyl of $\mathbf{R^y}$ is optionally substituted with 1 to 3 groups independently chosen~~selected~~ from -OH and -C(=O)OH;

$\mathbf{R^z}$, for each occurrence, is independently $-CH_3$ or -OH.~~;~~

~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

36. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 35, wherein $\mathbf{R^3}$, for each occurrence, is independently F, Cl, cyano, -OH, =O, $-CH_3$, $-OCH_3$, $-CF_3$, $-CH_3CN$, $-C(CH_3)_2CH_2OH$, $-CH_2COOH$, $-CH_2OCH_3$, $-C(=O)CHCH_3OH$, -COOH, $-C(=O)O$(2-tetrahydro-2H-pyranyl), $-C(=O)NH_2$, $-C(=O)NH(CH_2)_2OH$, -C(=O)NHOH, $-C(=O)NHS(=O)_2CH_3$, $-NH_2$, $-NHCH_3$, $-OCH_2COOH$, $NHS(=O)_2CH_3$,$-S(=O)_2CH_3$, $-S(=O)_2NH_2$, $-S(=O)_2NHC(=O)CH_3$, or $-P(=O)(CH_3)_2$; wherein the 2-tetrahydro-2H-pyranyl in $-C(=O)O$(2-tetrahydro-2H-pyranyl) is substituted with 1 to 3 groups independently chosen~~selected~~ from -OH and $-C(=O)OH$.~~; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

37. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 36, wherein $\mathbf{R^4}$, for each occurrence, is independently halogen, cyano, C_1-C_6 alkyl, C_1-C_6 alkoxy, C_1-C_6 haloalkyl, $-C(=O)\mathbf{R^y}$, $-C(=O)O\mathbf{R^y}$, $-O\mathbf{R^y}$, or $-S(=O)_2\mathbf{R^y}$; wherein:

the C_1-C_6 alkyl of $\mathbf{R^4}$ is optionally substituted with 1 to 3 groups independently chosen~~selected~~ from cyano, $-O\mathbf{R^y}$, $-C(=O)O\mathbf{R^y}$, and $-N\mathbf{R^v}\mathbf{R^w}$; wherein:

$\mathbf{R^v}$ and $\mathbf{R^w}$, for each occurrence, are each independently hydrogen or C_1-C_4 alkyl; and

$\mathbf{R^y}$, for each occurrence, is independently hydrogen and C_1-C_4 alkyl; wherein:

the C_1-C_4 alkyl of $\mathbf{R^y}$ is optionally substituted with 1 to 3 groups independently chosen~~selected~~ from halogen, cyano, -OH, $-OCH_3$, and $-NH_2$.~~;~~

~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

38. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 37, wherein $\mathbf{R^4}$, for each occurrence, is independently halogen, cyano, C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkyl, $-C(=O)\mathbf{R^y}$, $-C(=O)O\mathbf{R^y}$, $-O\mathbf{R^y}$, or $-S(=O)_2\mathbf{R^y}$; wherein:

the C_1-C_4 alkyl of $\mathbf{R^4}$ is optionally substituted with 1 to 3 groups independently chosen ~~selected~~ from cyano, -O$\mathbf{R^y}$, -C(=O)O$\mathbf{R^y}$, and -N$\mathbf{R^v R^w}$;

wherein:

$\mathbf{R^v}$ and $\mathbf{R^w}$, for each occurrence, are each independently hydrogen or C_1-C_4 alkyl;

$\mathbf{R^y}$, for each occurrence, is independently hydrogen or C_1-C_2 alkyl;

wherein:

the C_1-C_2 alkyl of any one of $\mathbf{R^y}$ is optionally substituted with 1 to 3 groups independently chosen~~selected~~ from halogen, cyano, -OH, -OCH_3, and -NH_2; and

wherein **o** is an integer selected from 0, 1, and 2.~~; and~~

~~wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

39. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 38, wherein $\mathbf{R^4}$, for each occurrence, is independently cyano, C_1-C_2 alkyl, C_1-C_2 alkoxy, C_1-C_2 haloalkyl, -C(=O)R^y, -C(=O)O$\mathbf{R^y}$, -O$\mathbf{R^y}$, or -$S(=O)_2\mathbf{R^y}$; wherein:

the C_1-C_2 alkyl of $\mathbf{R^4}$ is optionally substituted with cyano, -OH, or -OCH_3;

$\mathbf{R^y}$, for each occurrence, is independently hydrogen or C_1-C_2 alkyl;

wherein:

the C_1-C_2 alkyl of $\mathbf{R^y}$ is optionally substituted with -OCH_3;

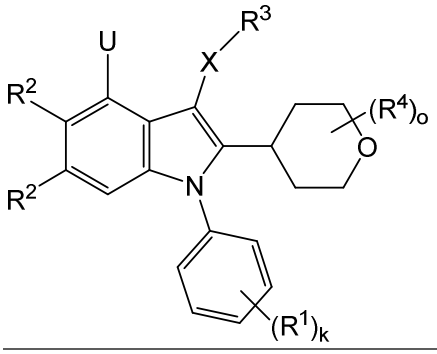
wherein **o** is an integer selected from 0 and 1.~~;~~

~~and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

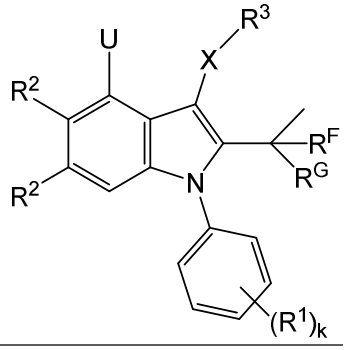
40. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 39, wherein $\mathbf{R^4}$, for each occurrence, is independently cyano, -OH, -OCH_3, -CH_3, -C_2H_5, -CF_3, -CH_2CN, -CH_2OH, -CH_2OCH_3, -COOH, -C(=O)CH_3, -C(=O)OCH_3, -C(=O)CH_2OCH_3, -$S(=O)_2CH_3$, $S(=O)_2C_2H_5$, or $S(=O)_2CF_3$.~~; and~~

~~wherein all other variables not specifically defined herein are as defined in any one of the preceding claims~~.

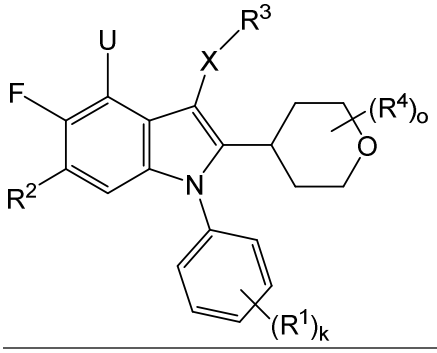
41. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1- to 11 represented by one of the following structural formulae:



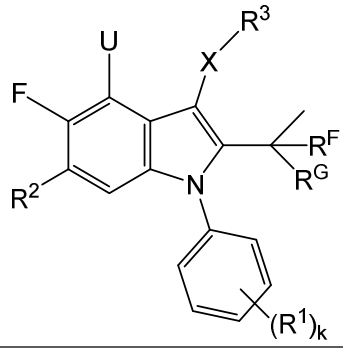
(XIa)



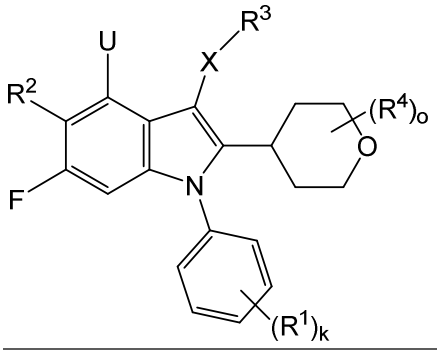
(XIb);



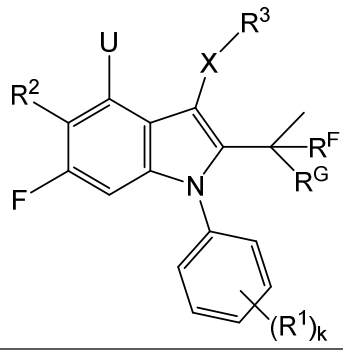
(XIc)



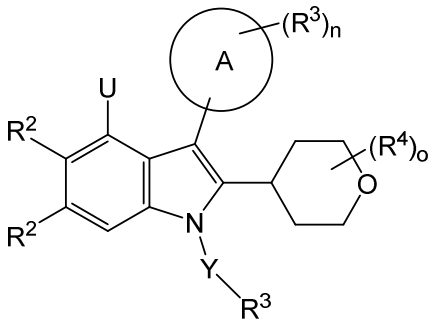
(XId);

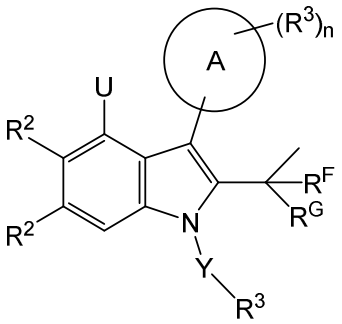


(XIe)

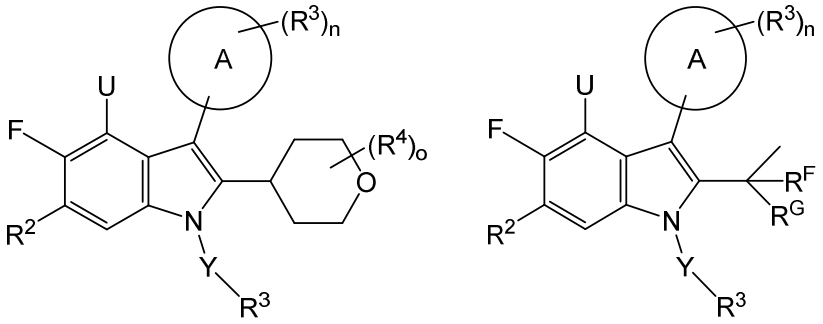


(XIf);

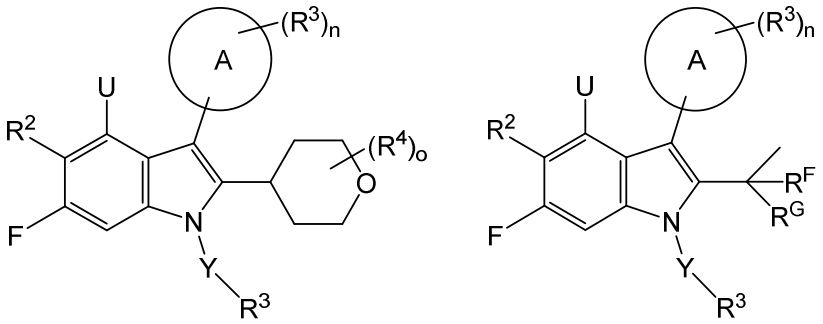




(XIIa) (XIIb)



(XIIc) (XIId)



(XIIe) (XIIf),

wherein **o** is an integer selected from 1, and 2.

41. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 40, wherein **U** is -OH, $-CH_3$, $-NH_2$, or halogen; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.

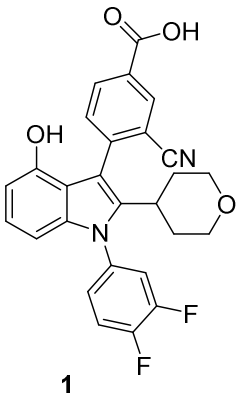
42. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 40, wherein **U** is -OH; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.

43. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 40, wherein **U** is halogen; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.

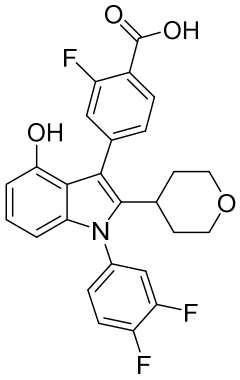
~~44. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 40, wherein **U** is fluoro; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

~~45. The compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 40, wherein **U** is hydrogen; and wherein all other variables not specifically defined herein are as defined in any one of the preceding claims.~~

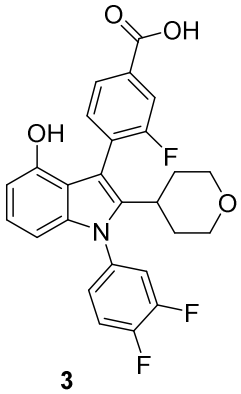
42~~46~~. A compound selected from:



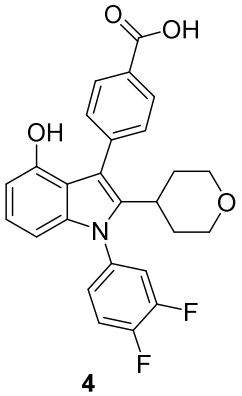
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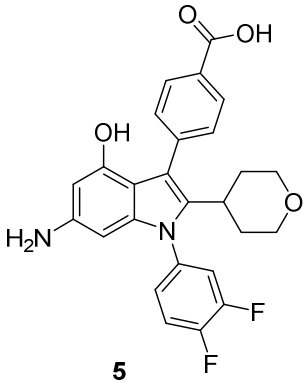
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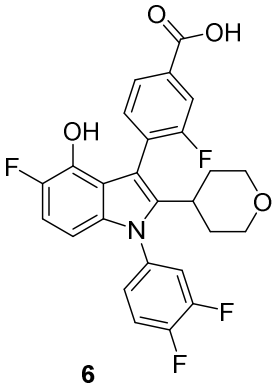
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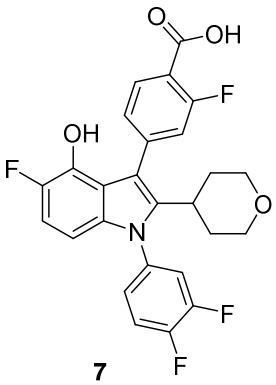
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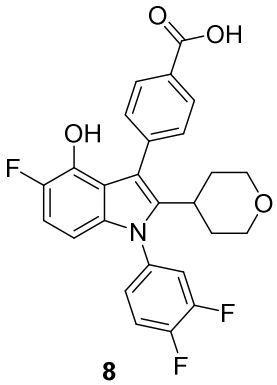
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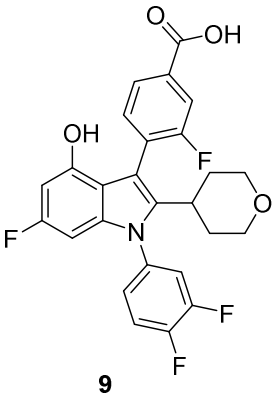
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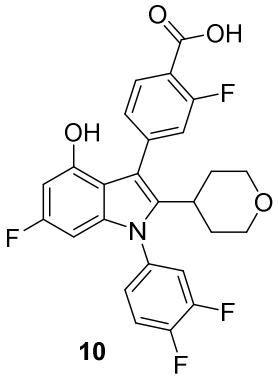
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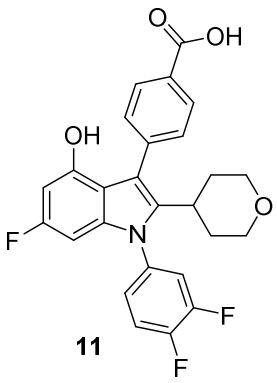
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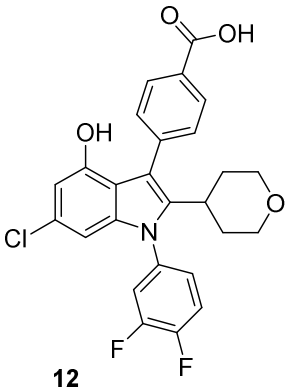
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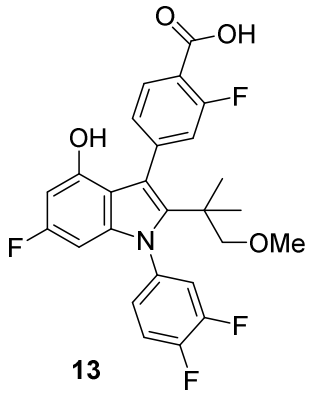
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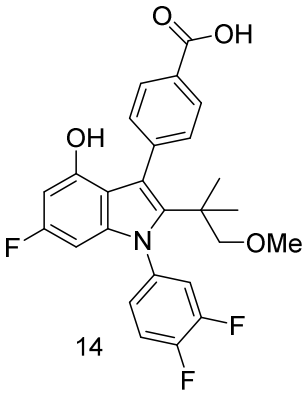
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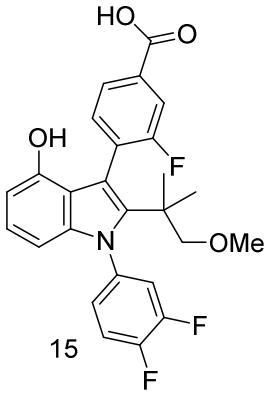
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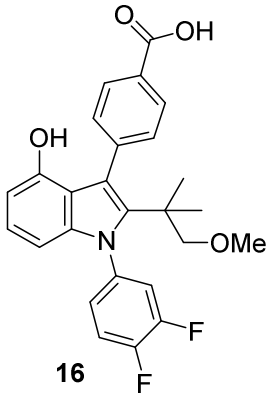
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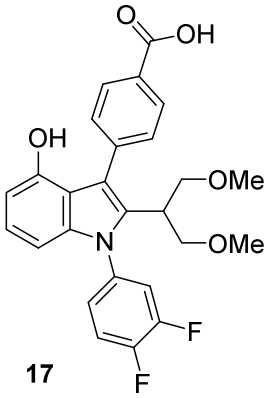
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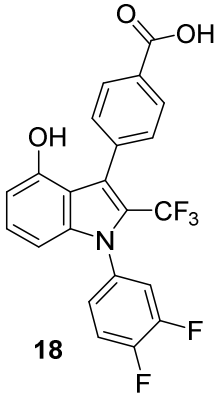
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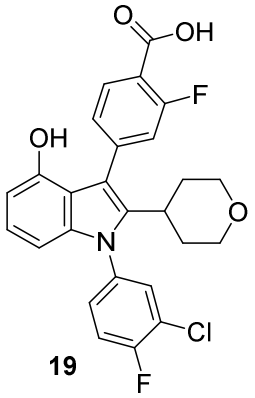
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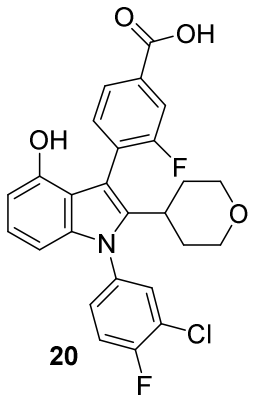
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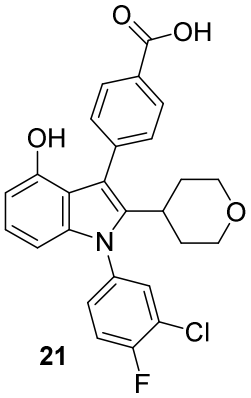
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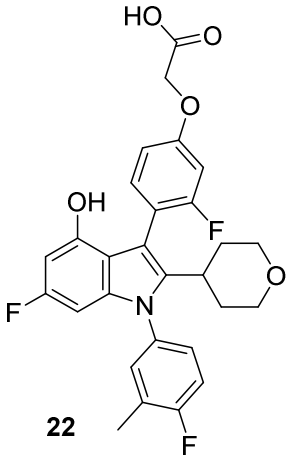
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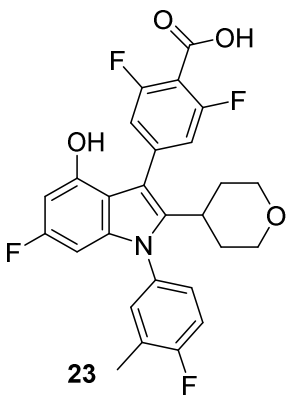
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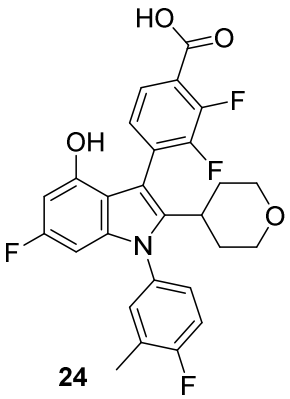
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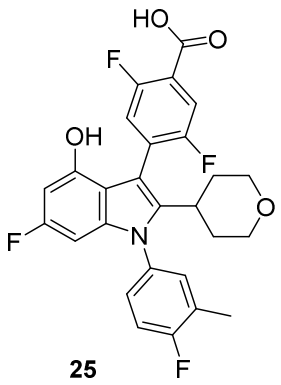
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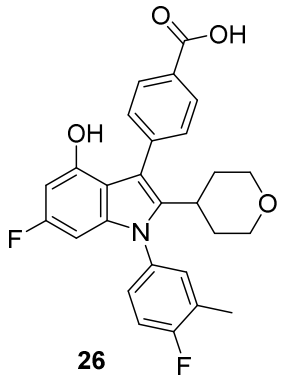
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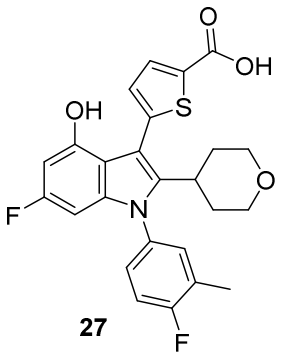
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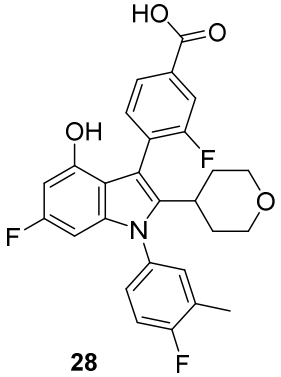
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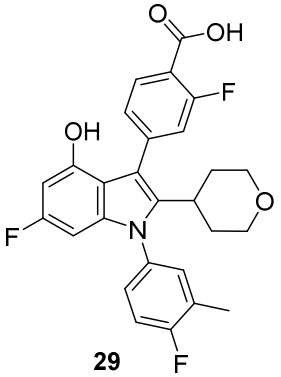
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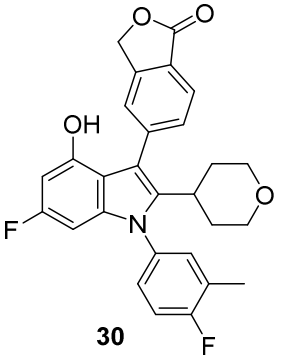
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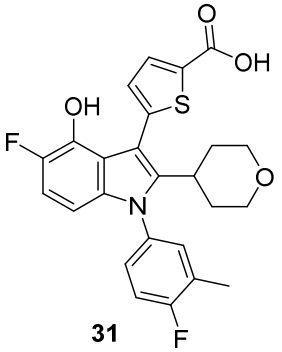
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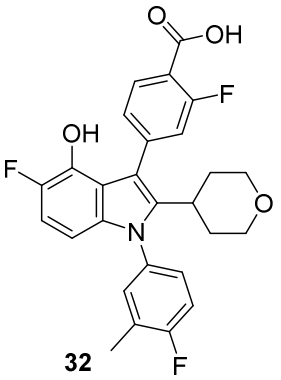
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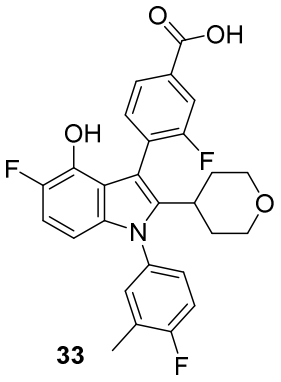
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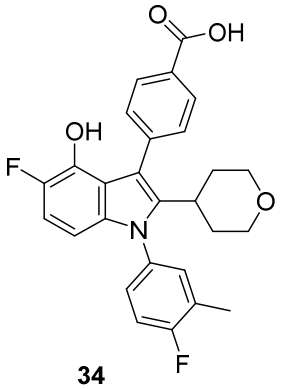
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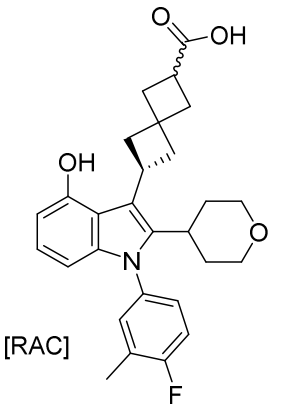
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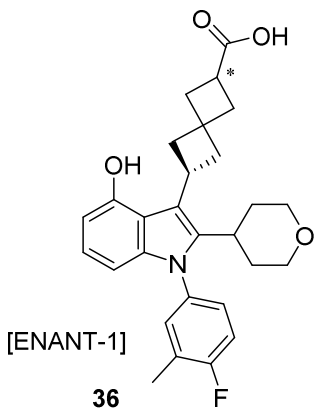


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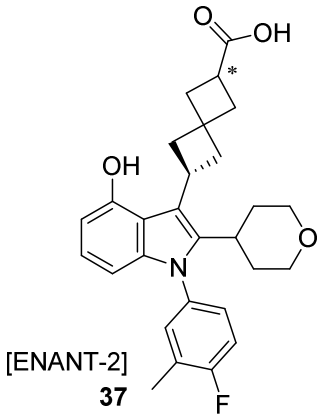
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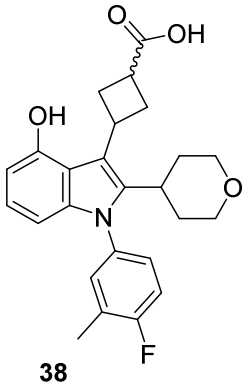


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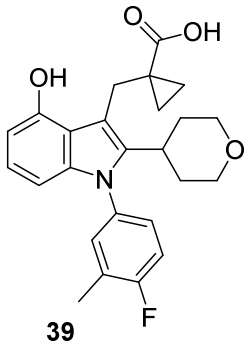
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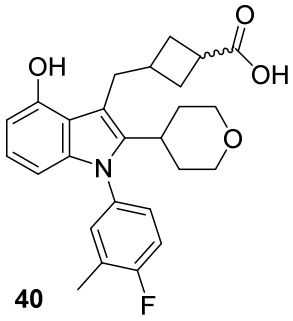
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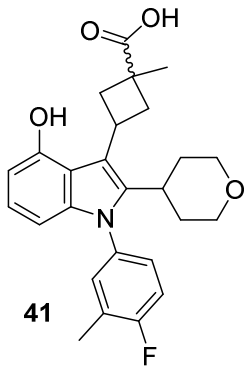
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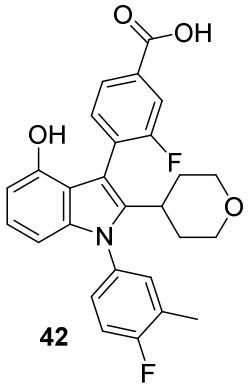
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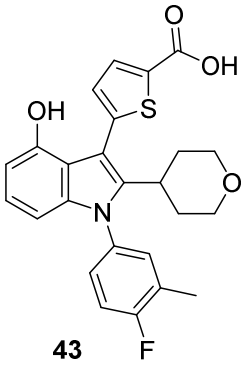
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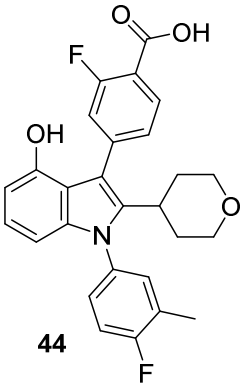
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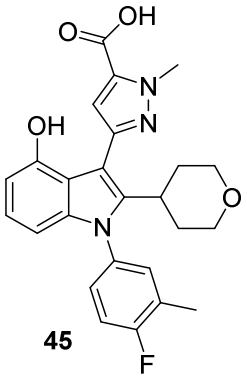
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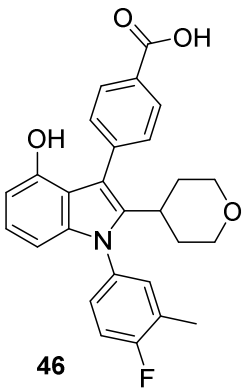
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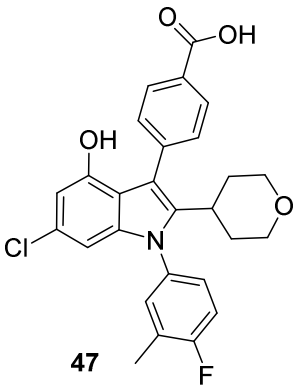
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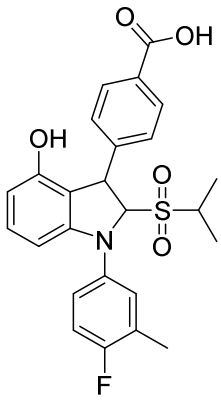
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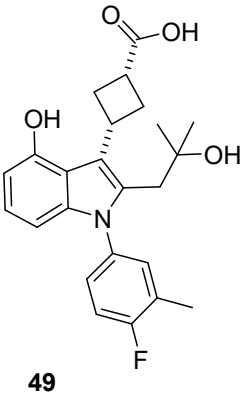
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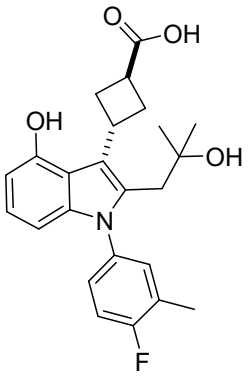
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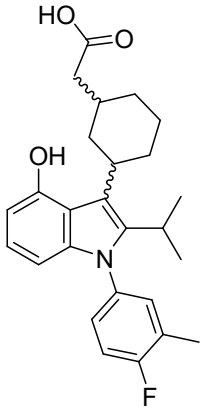
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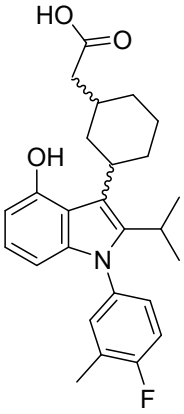
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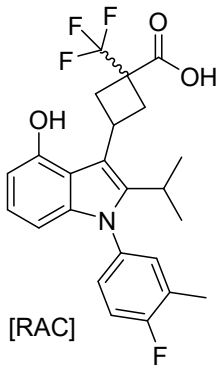
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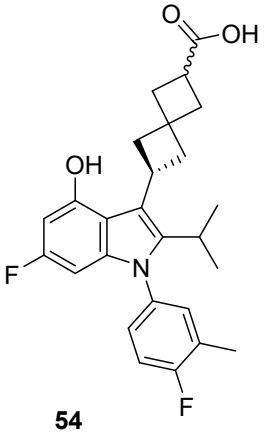


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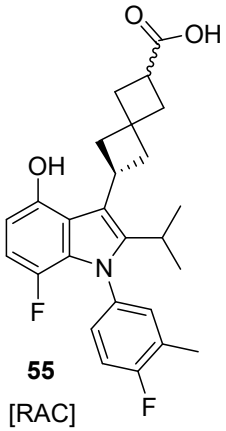


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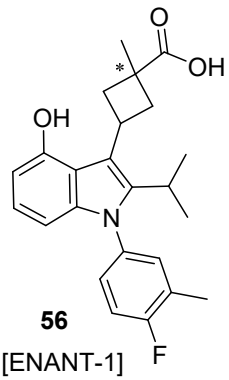


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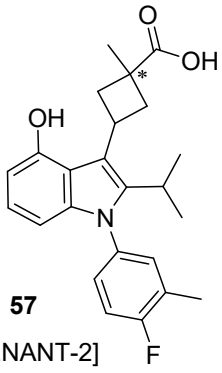
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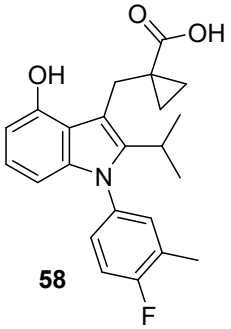
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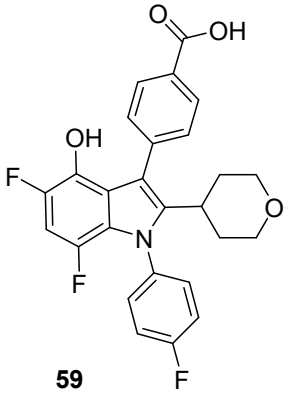


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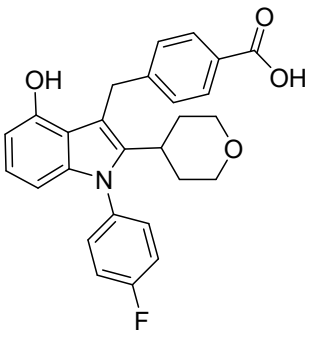
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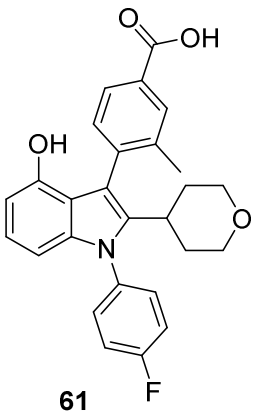
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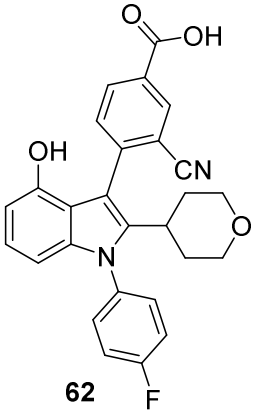
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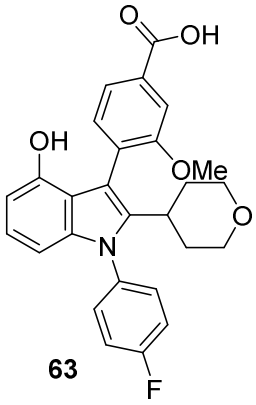
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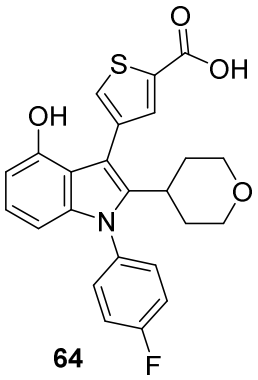
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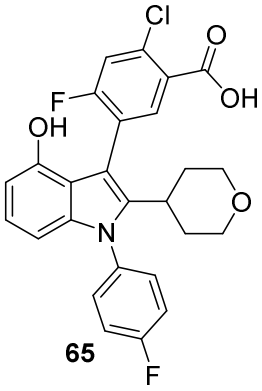
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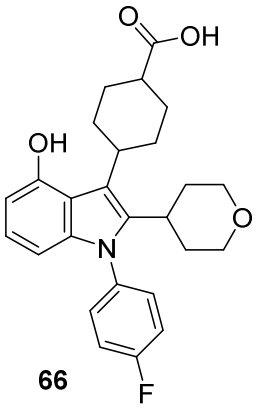
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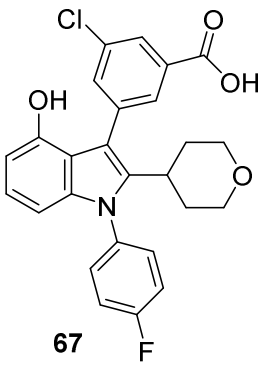
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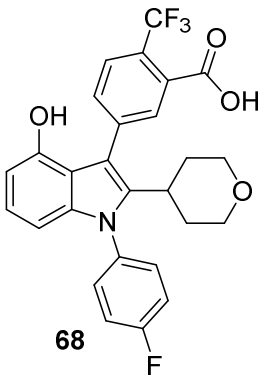
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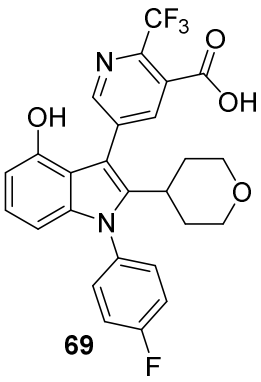
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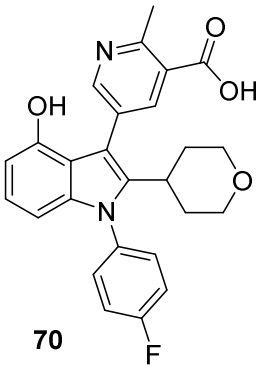
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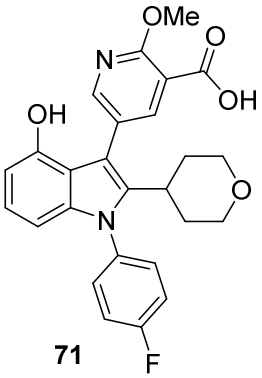
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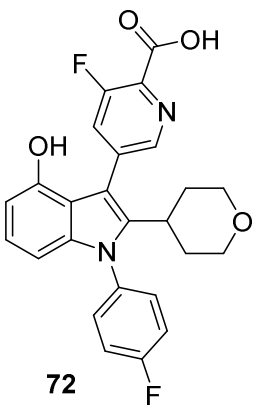
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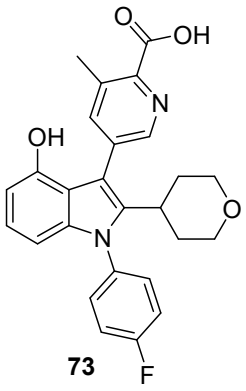
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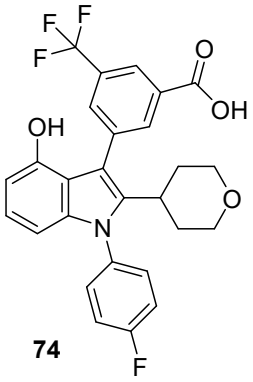
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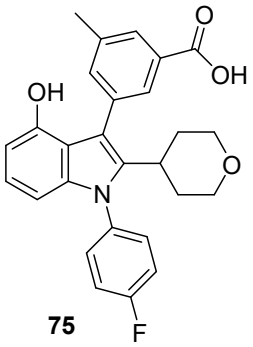
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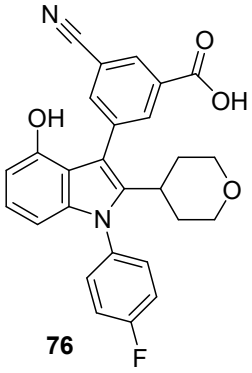
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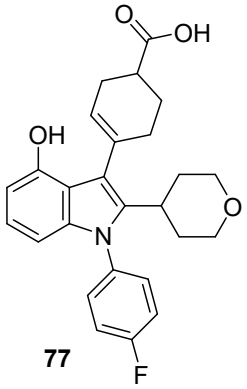
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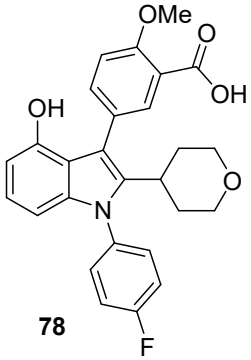
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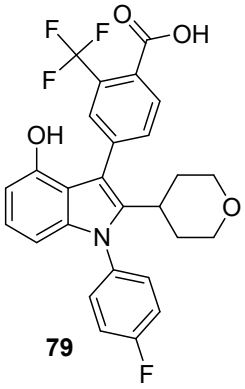
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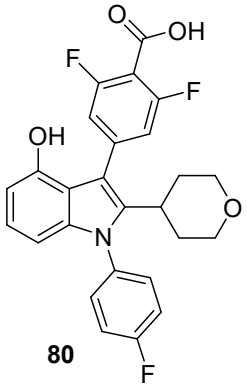
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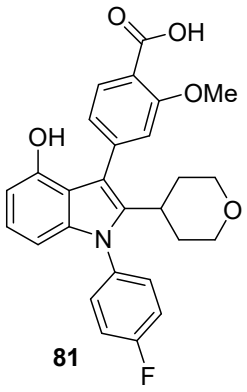
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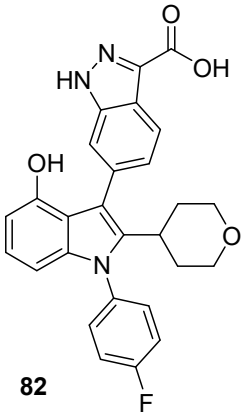
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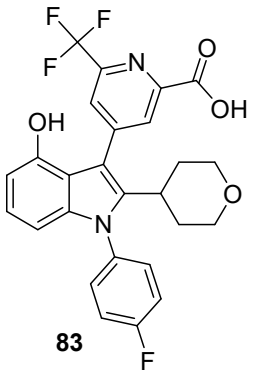
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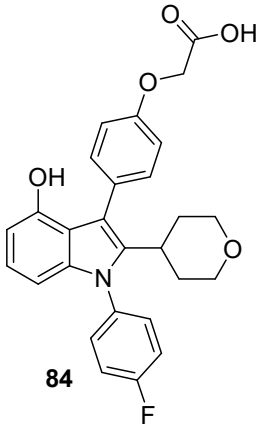
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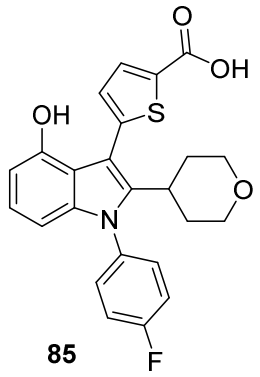
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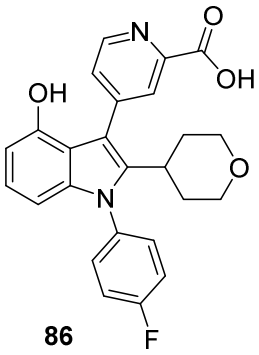
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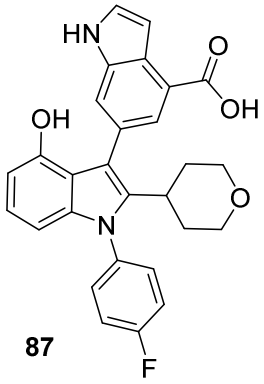
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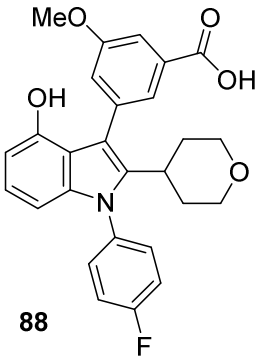
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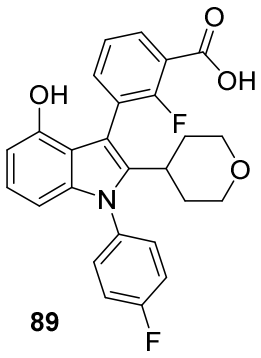
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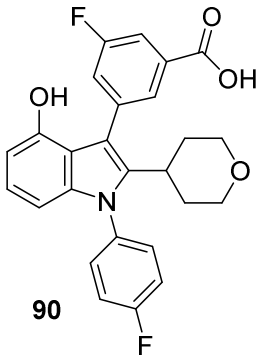
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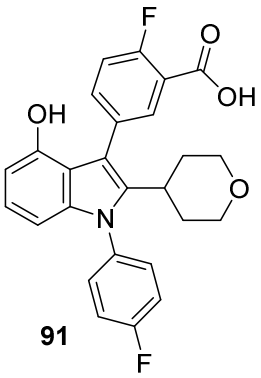
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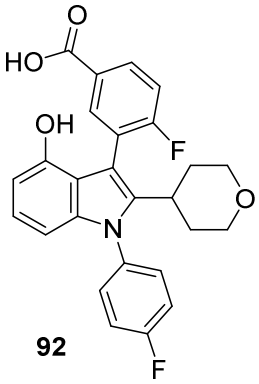
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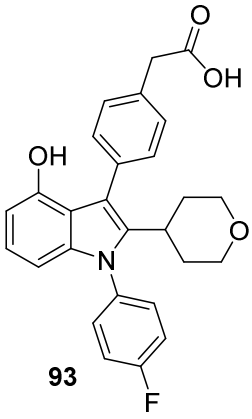
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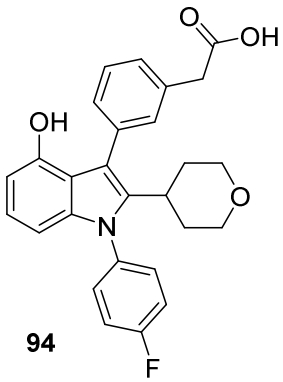
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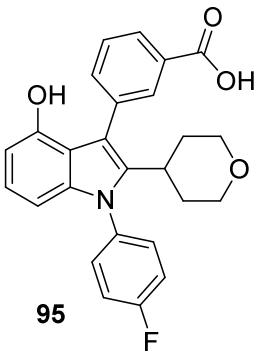
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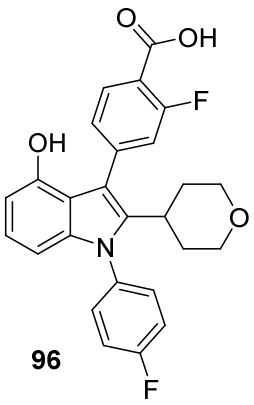
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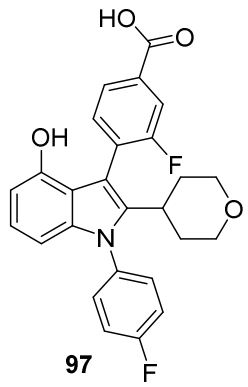
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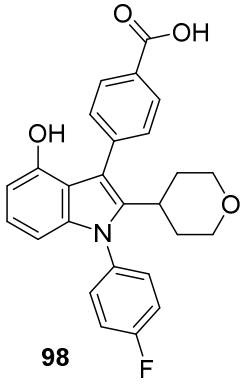
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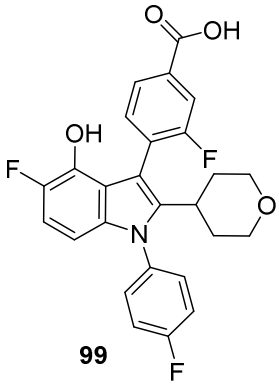
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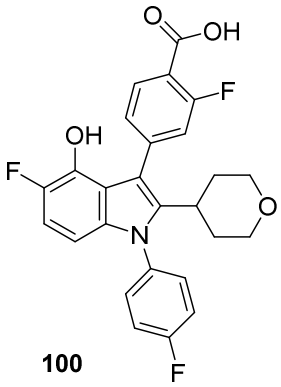
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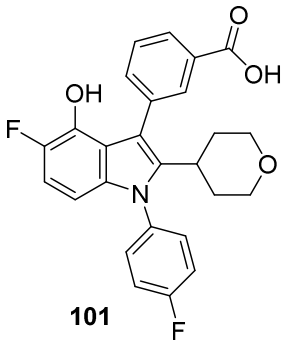
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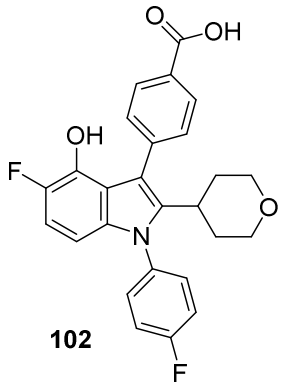
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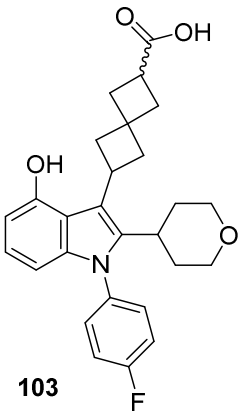
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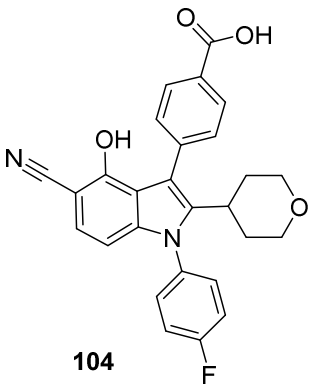
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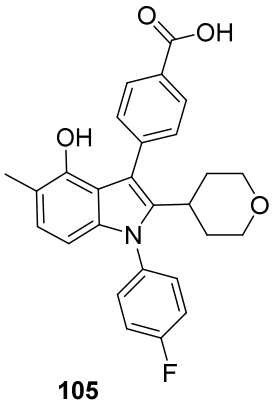
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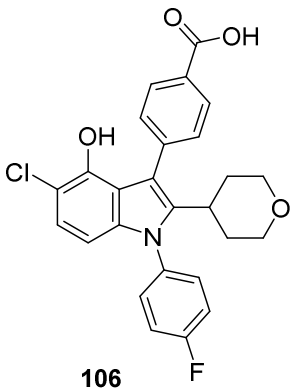
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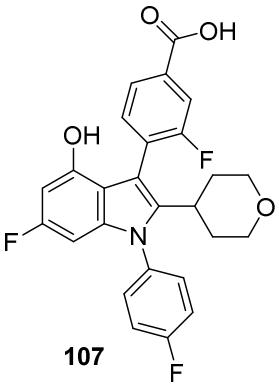
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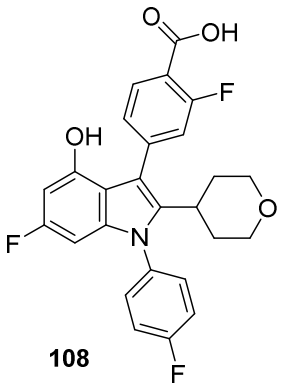
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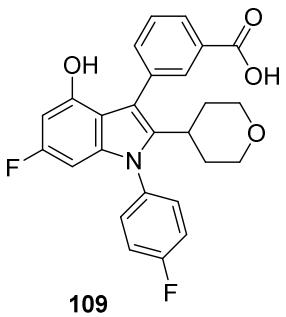
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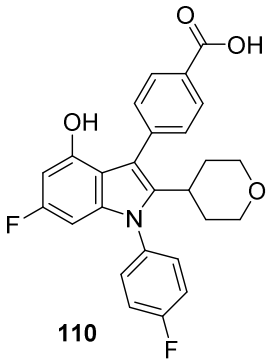
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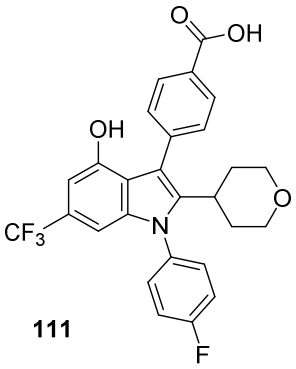
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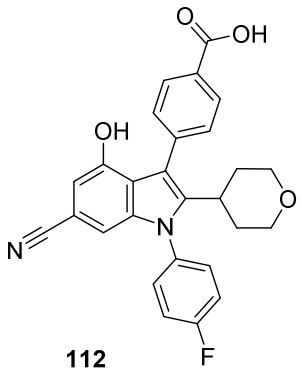
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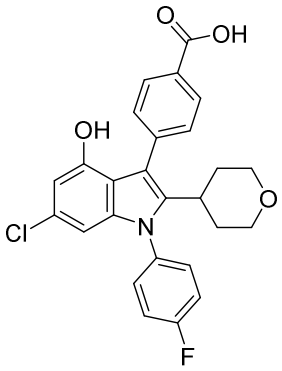
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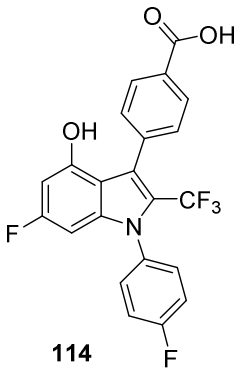
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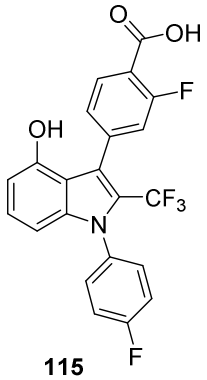
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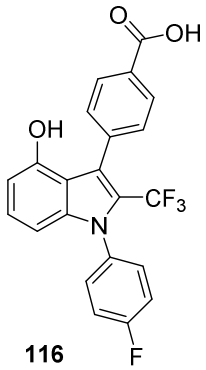
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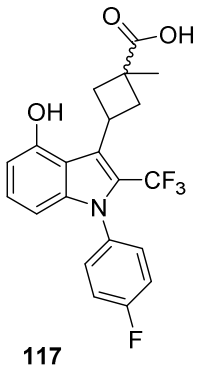
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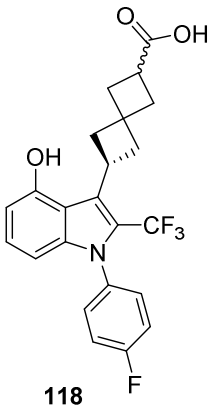
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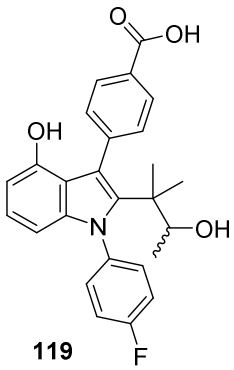
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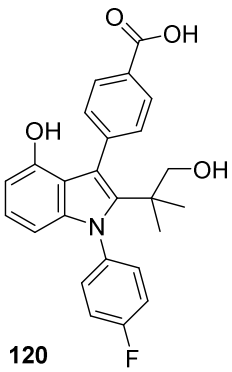
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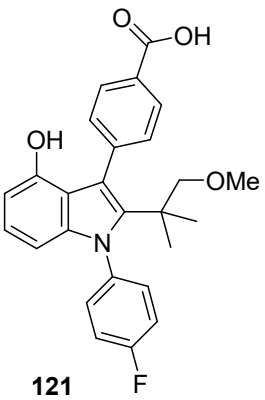
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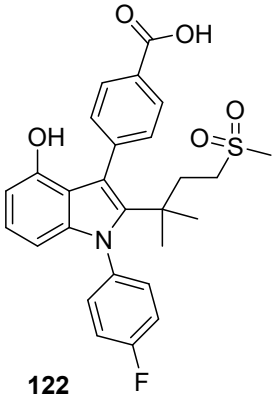
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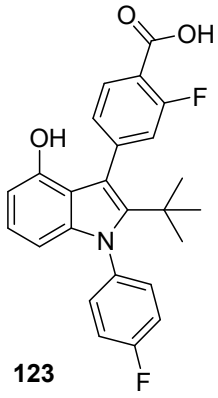
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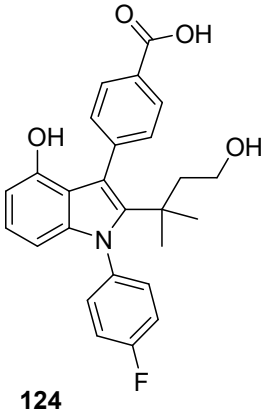
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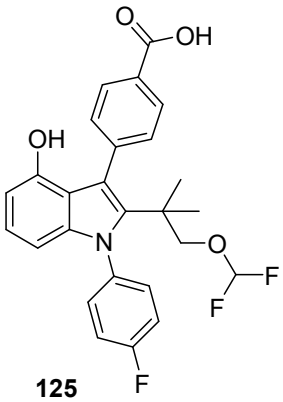
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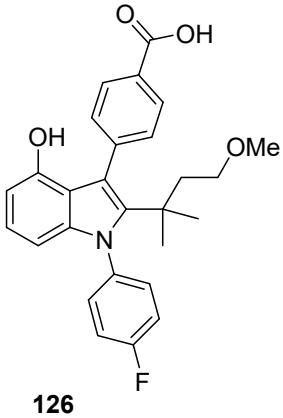
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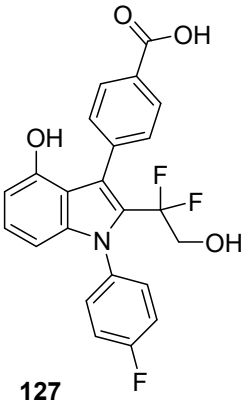
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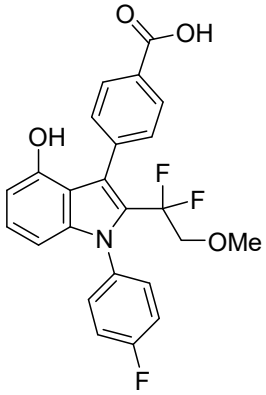
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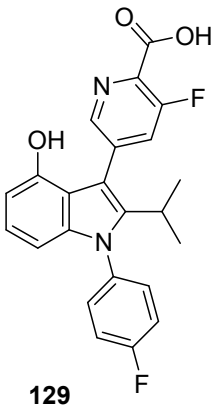
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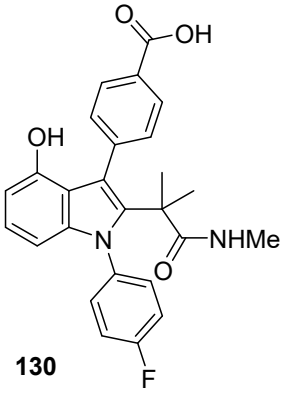
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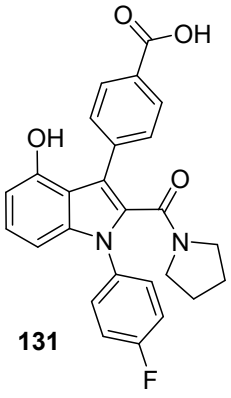
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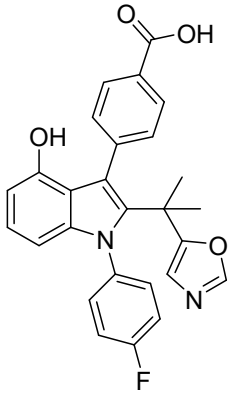
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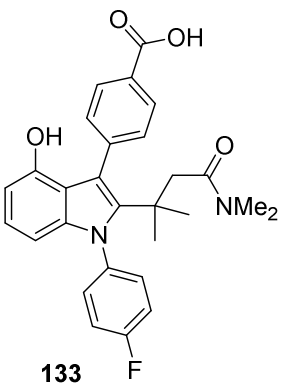
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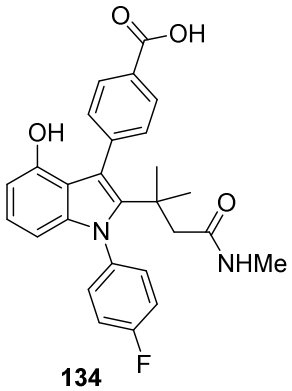
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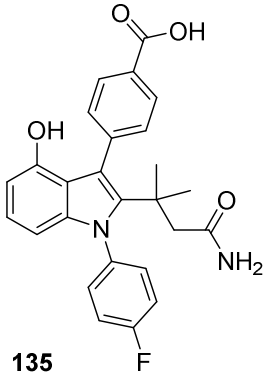
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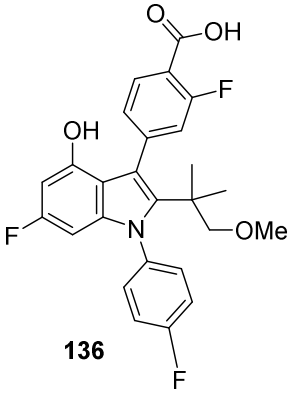
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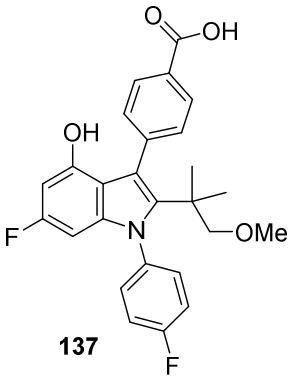
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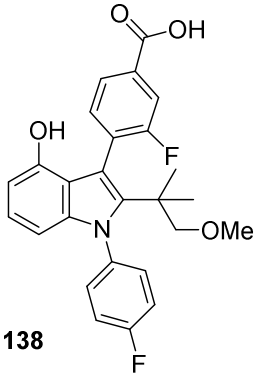
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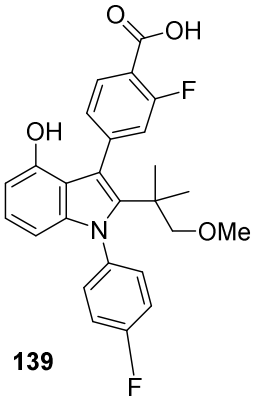
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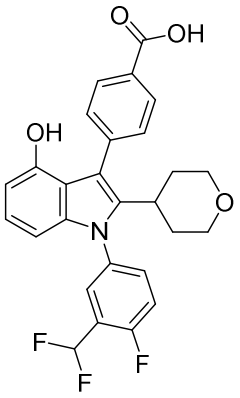
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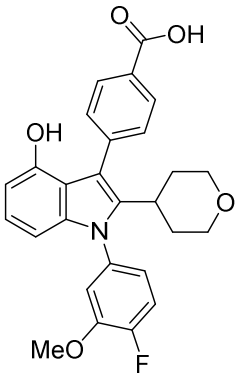
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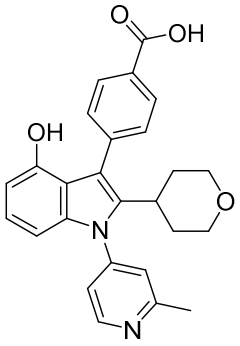
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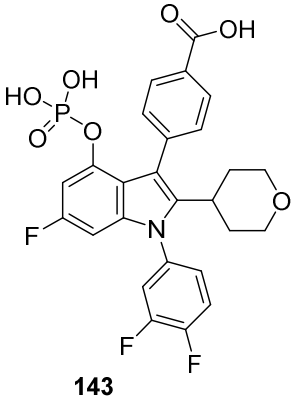
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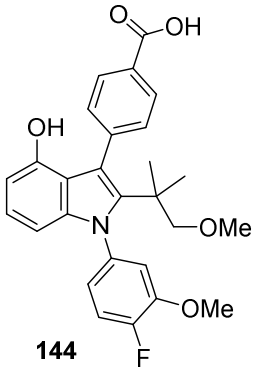
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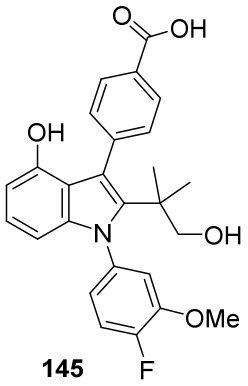
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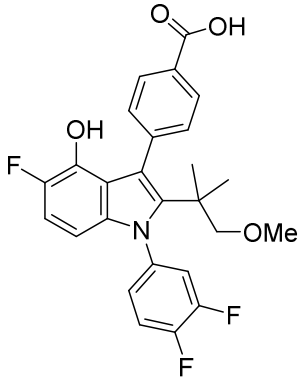
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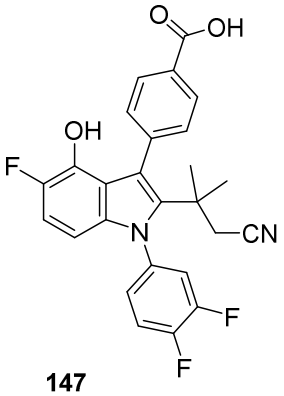
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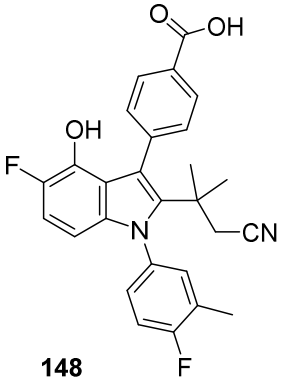
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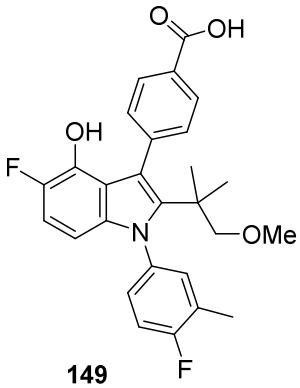
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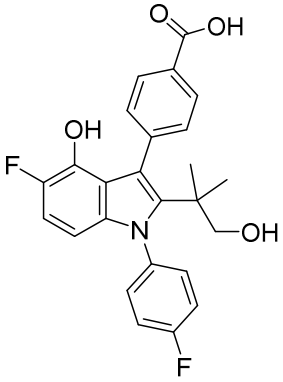
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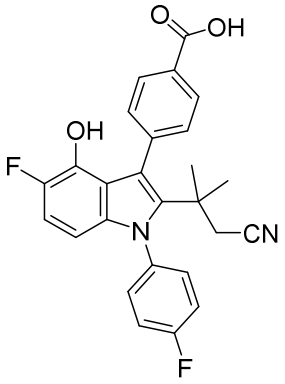
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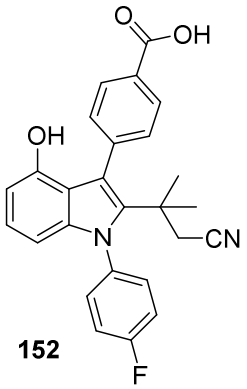
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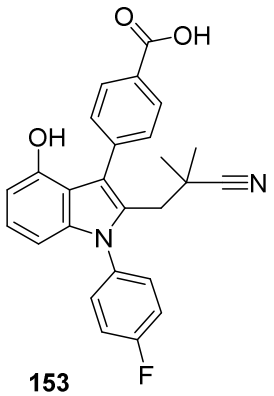
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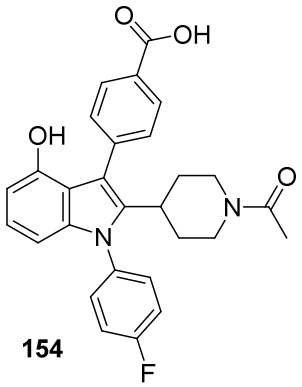
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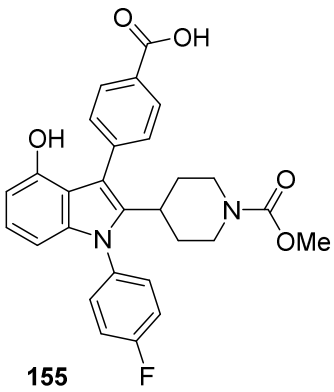
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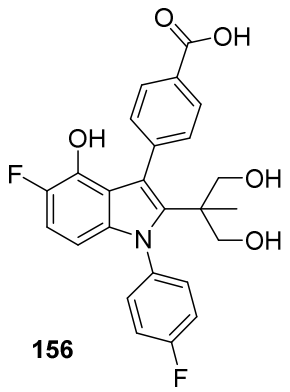
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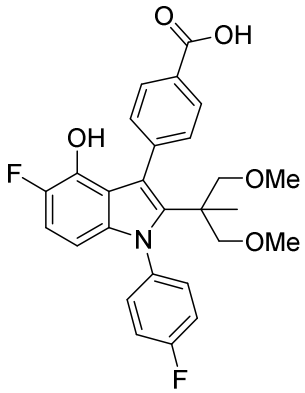
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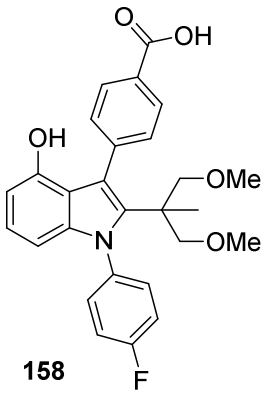
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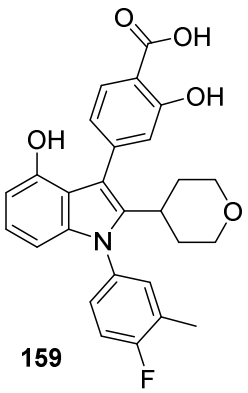
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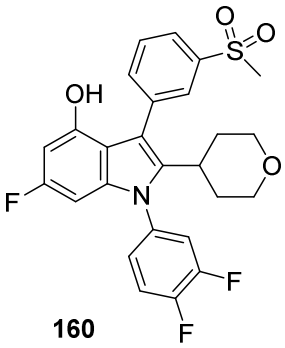
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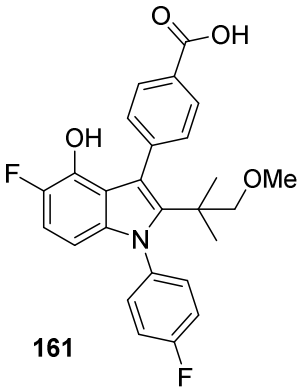
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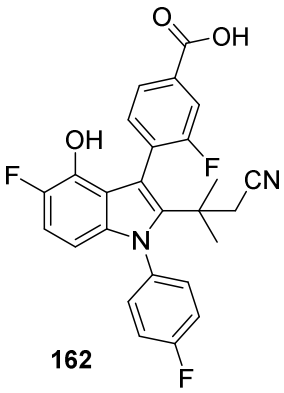
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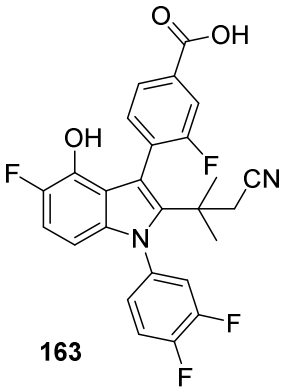
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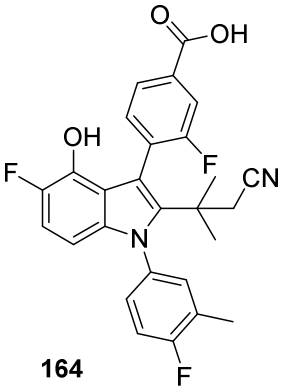
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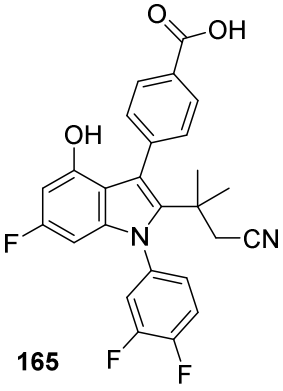
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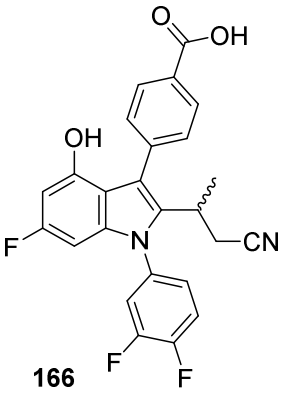
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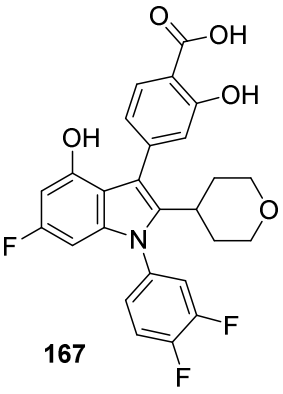
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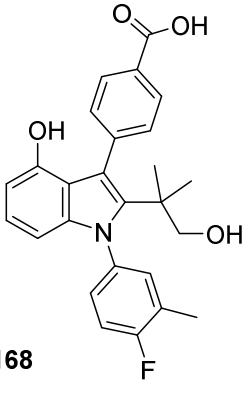
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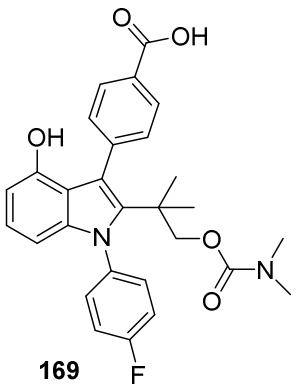
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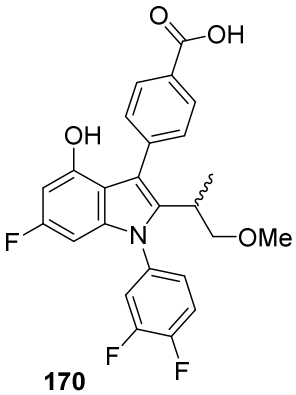
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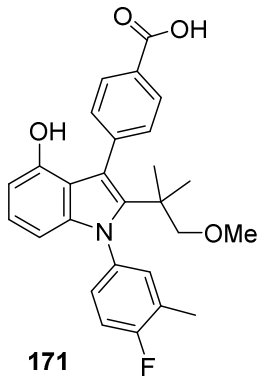
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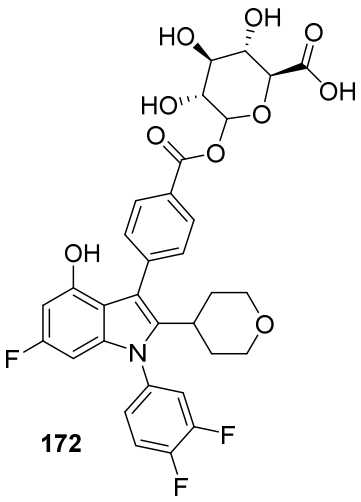
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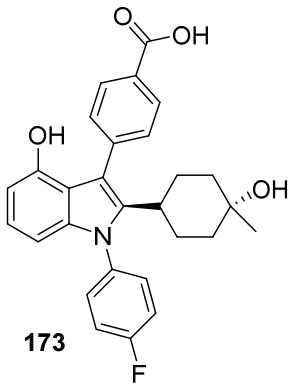
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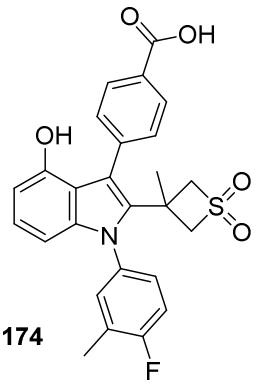
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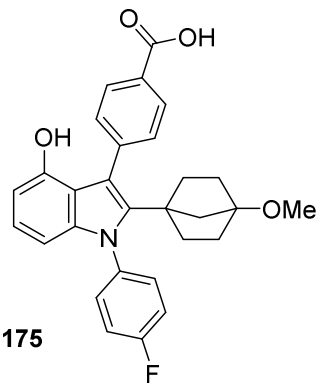
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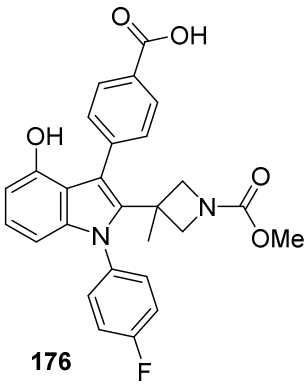
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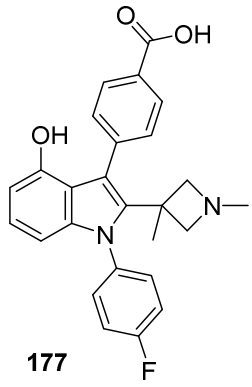
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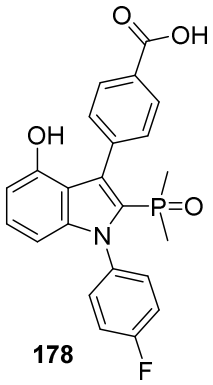
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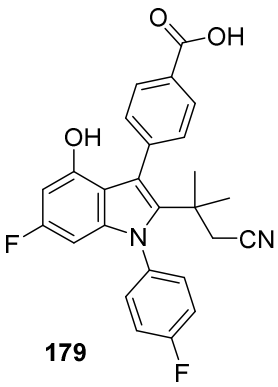
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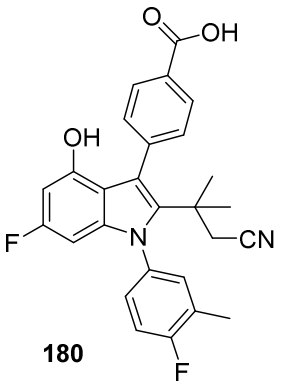
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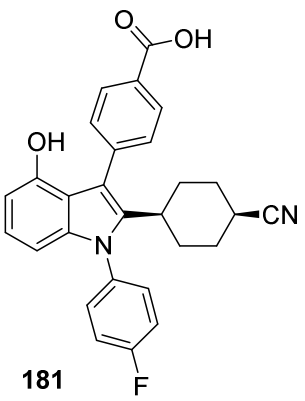
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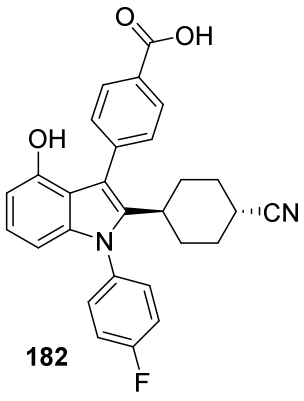
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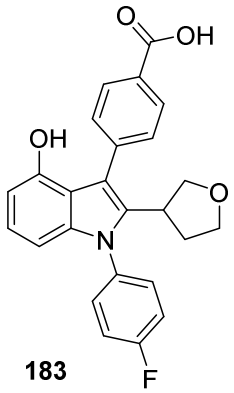
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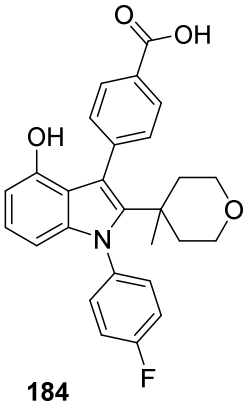
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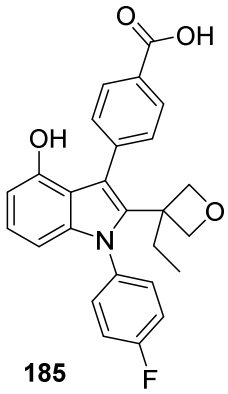
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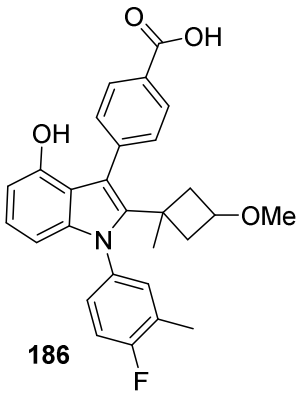
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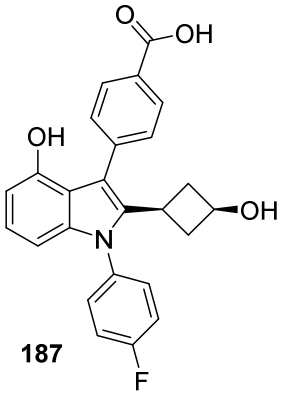
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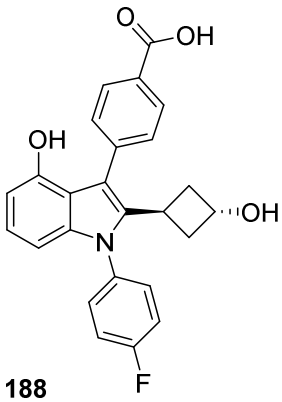
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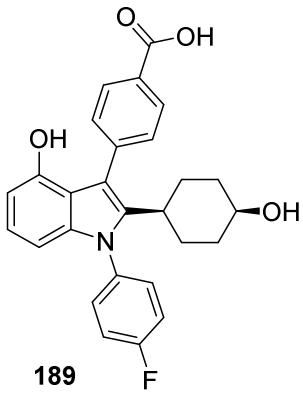
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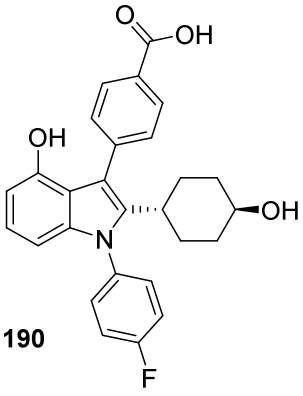
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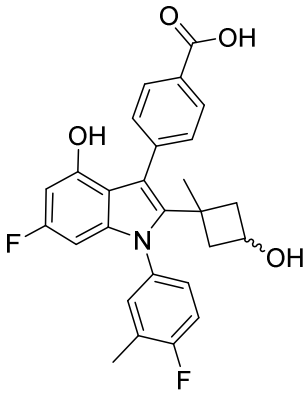
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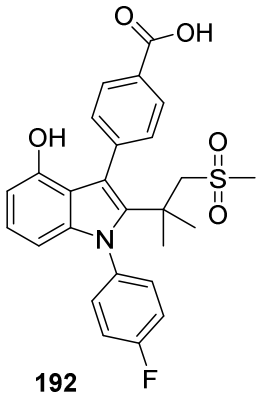
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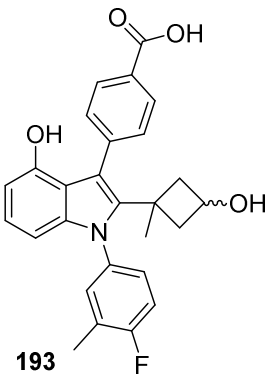
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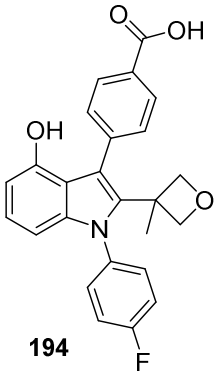


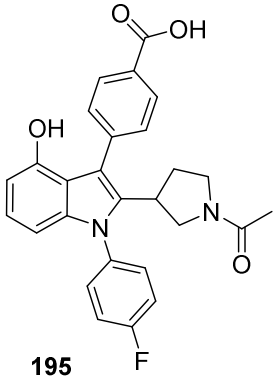
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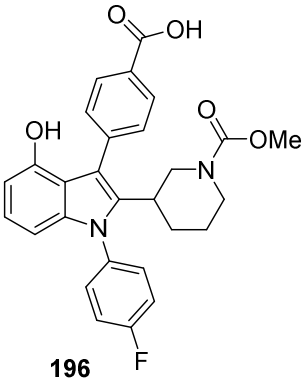


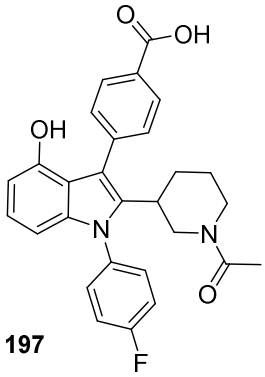
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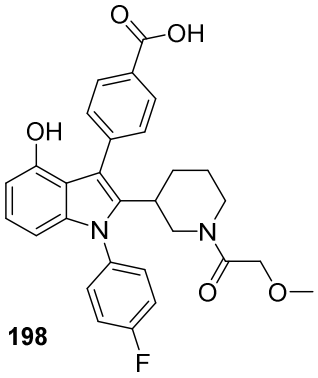

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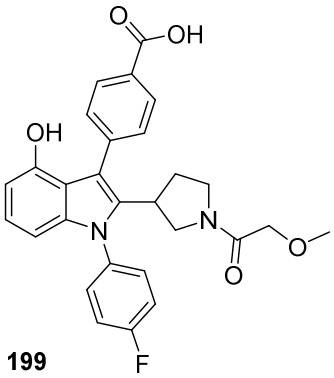

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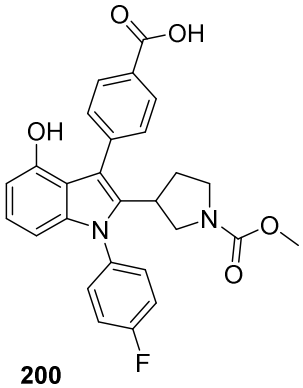

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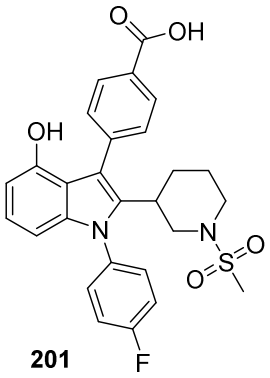

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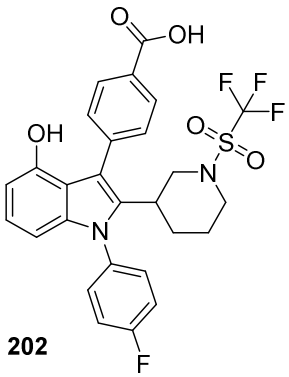

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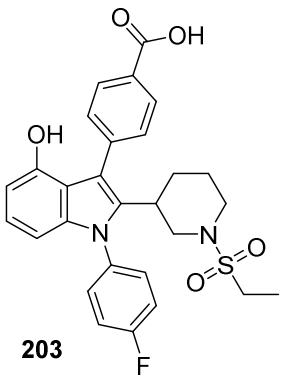

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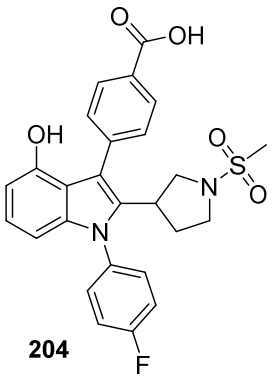

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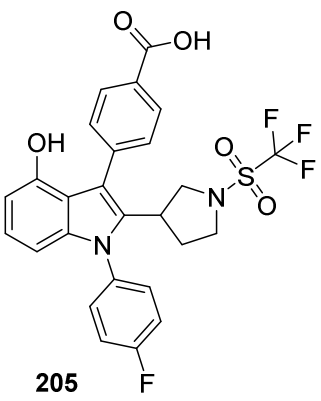

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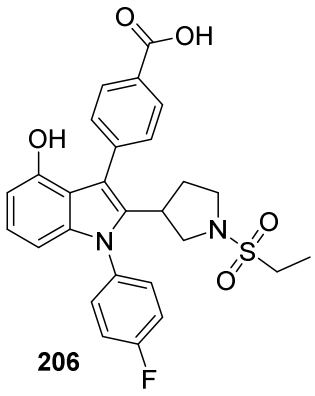

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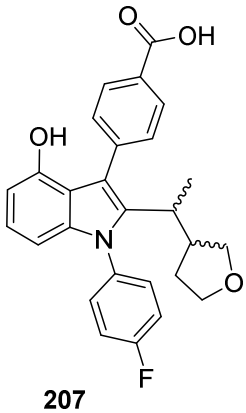

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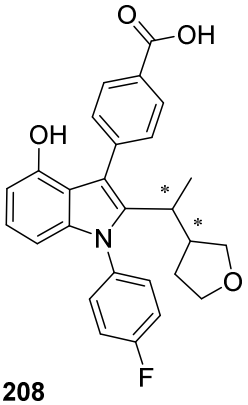
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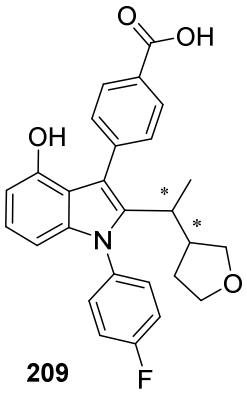
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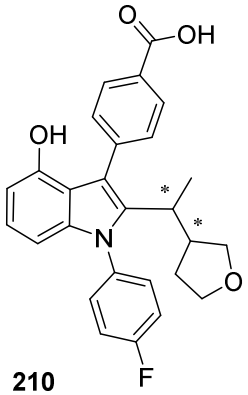
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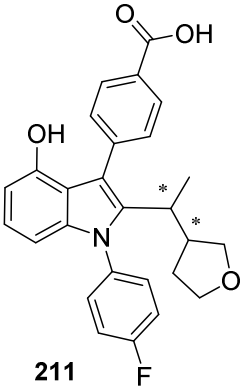
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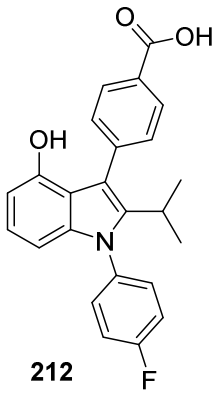
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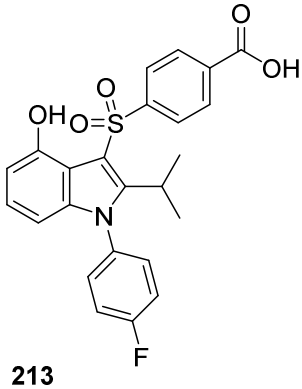
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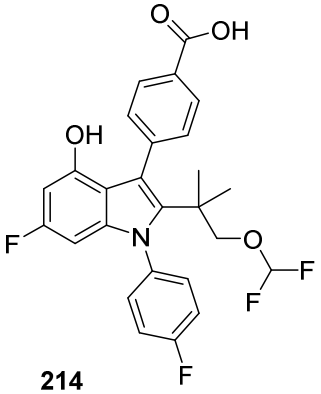
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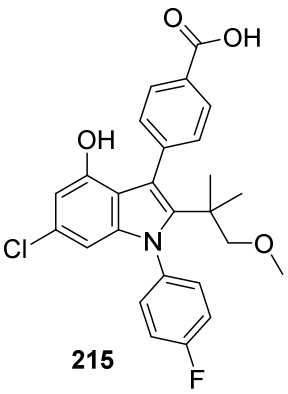
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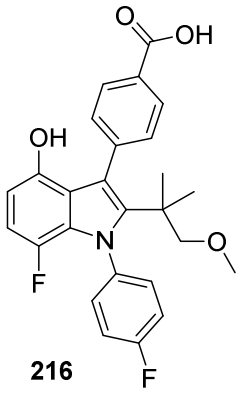
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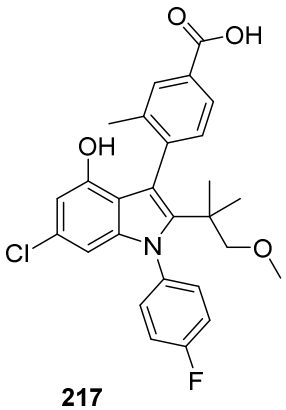
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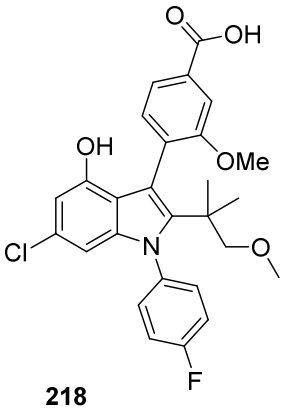
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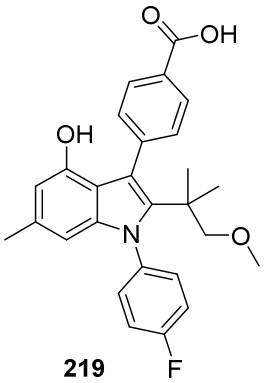
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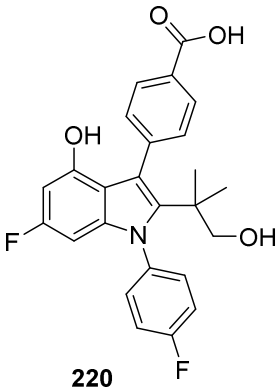
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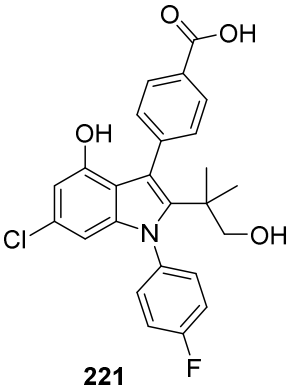
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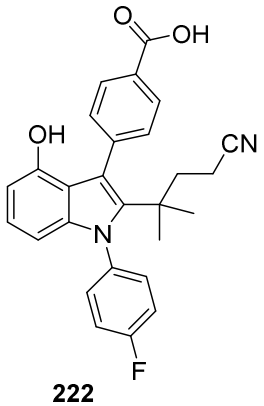
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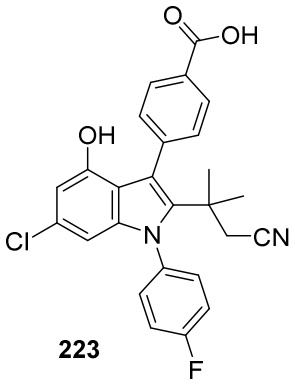
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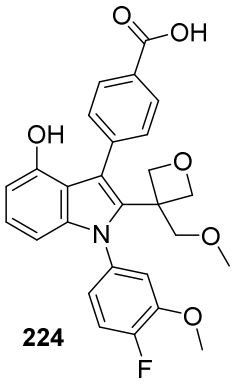
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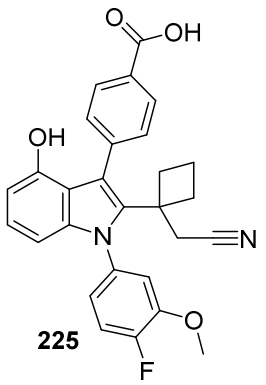
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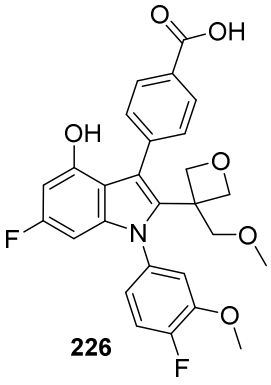
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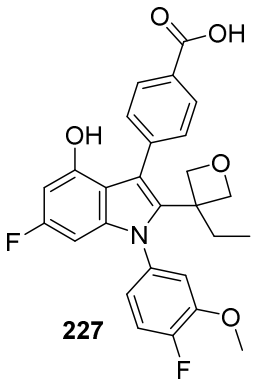
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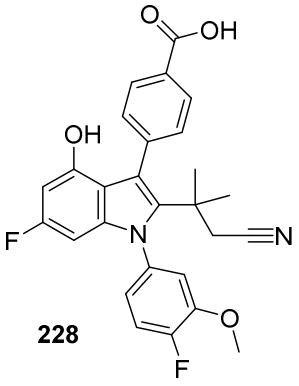
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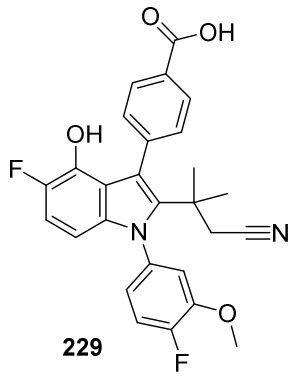
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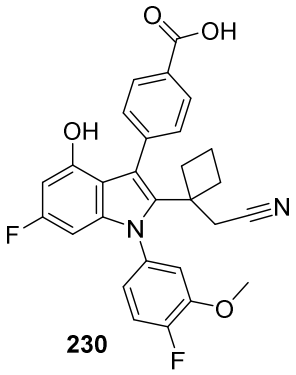
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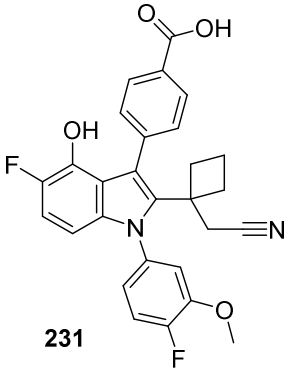
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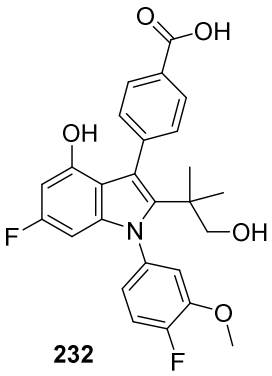
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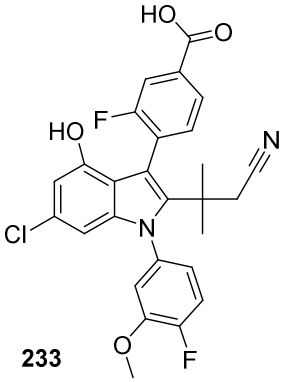
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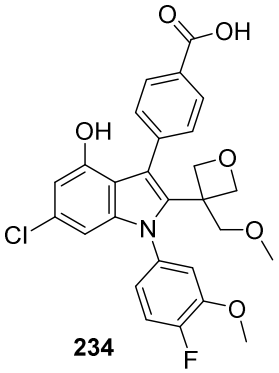
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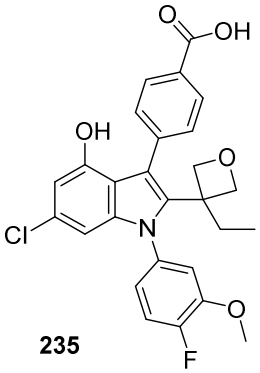
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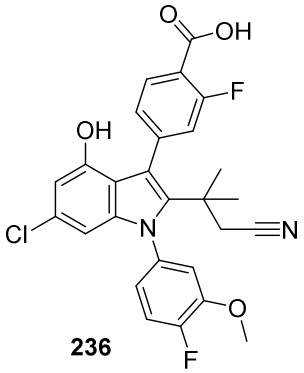
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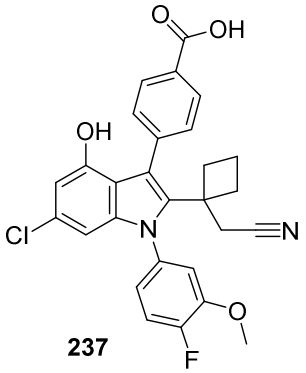
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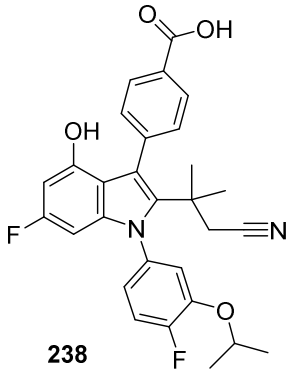
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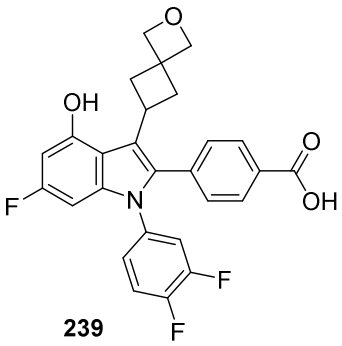
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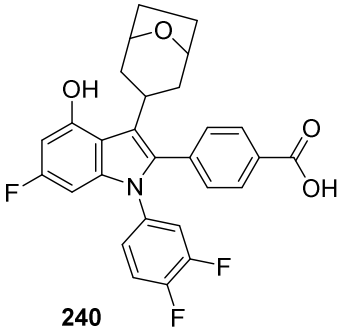
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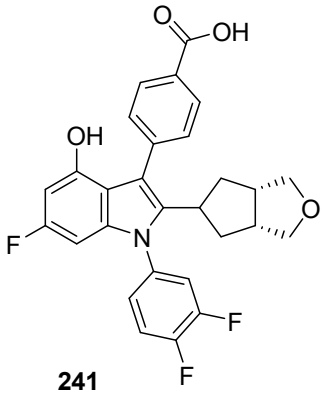
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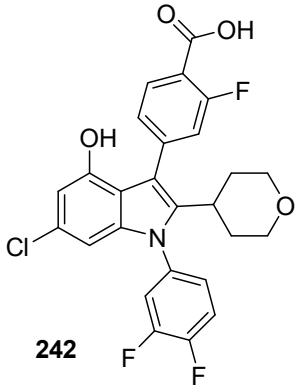
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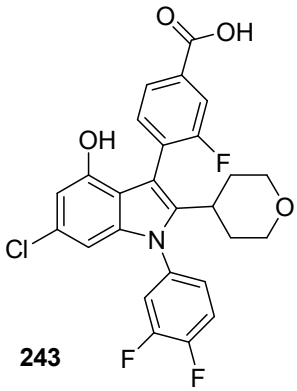
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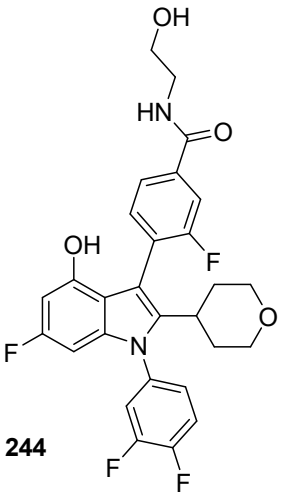
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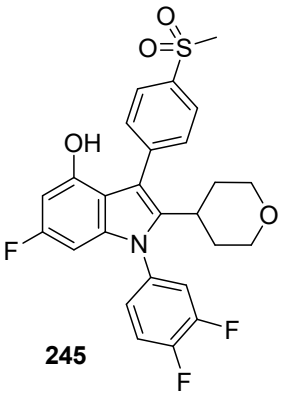
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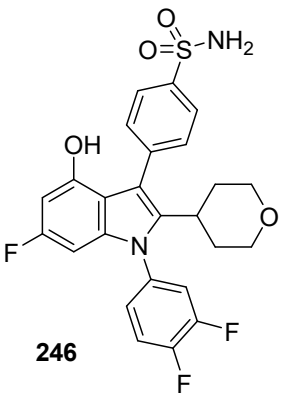
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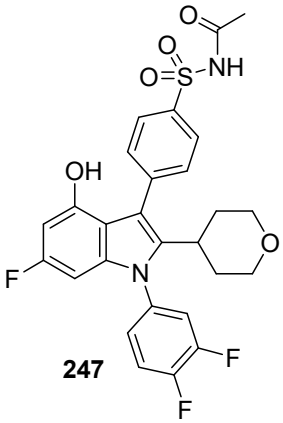
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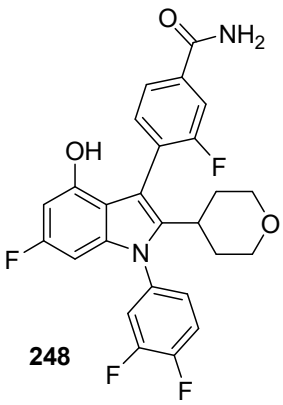
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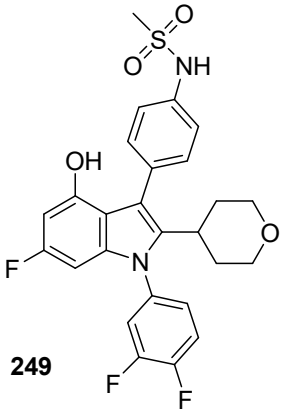
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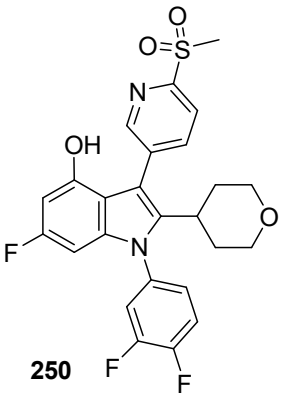
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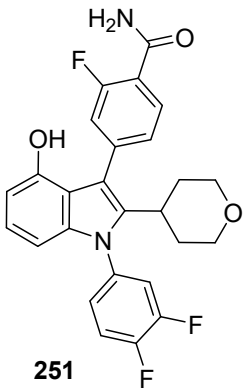
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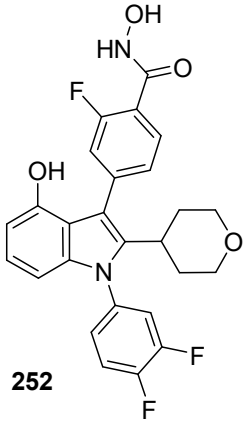
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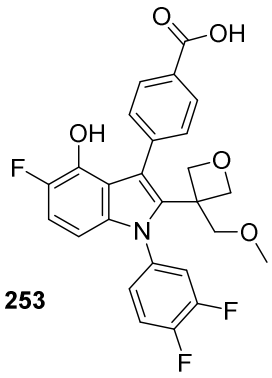
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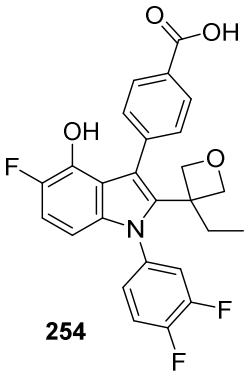
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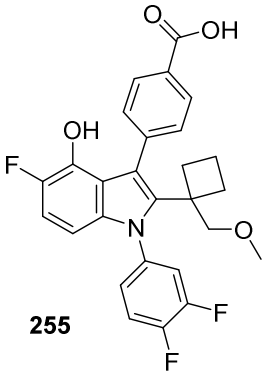
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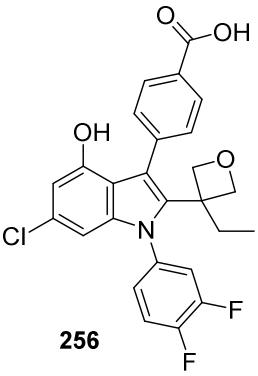
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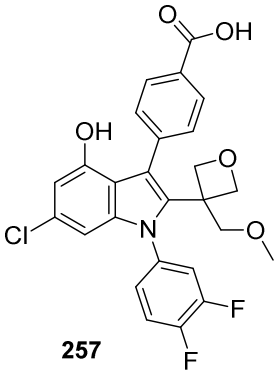
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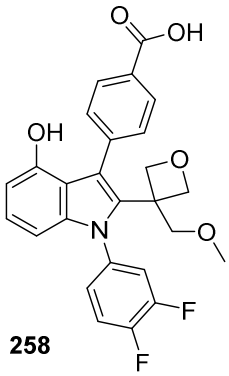
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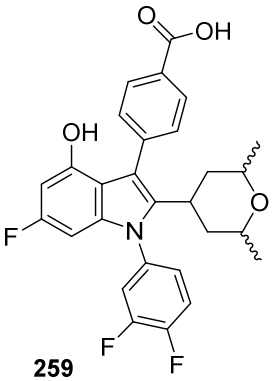
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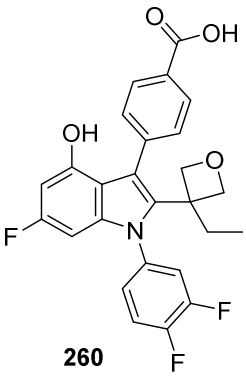
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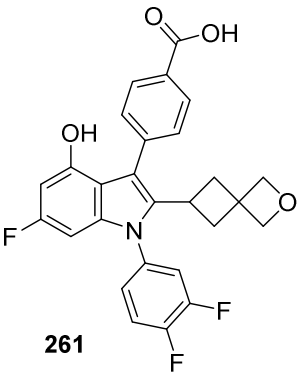
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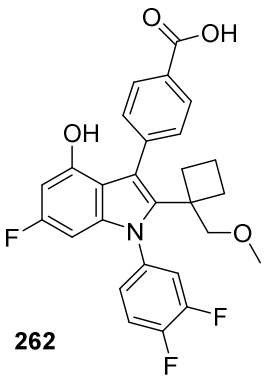
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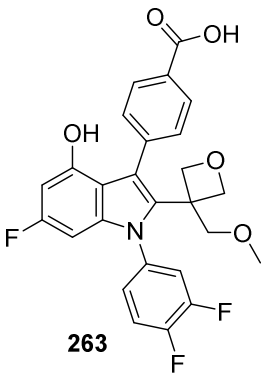
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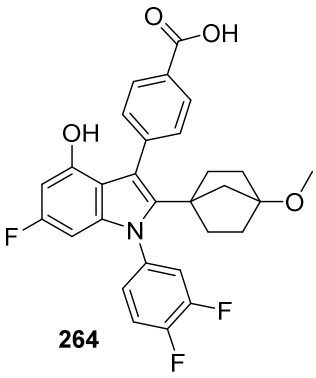
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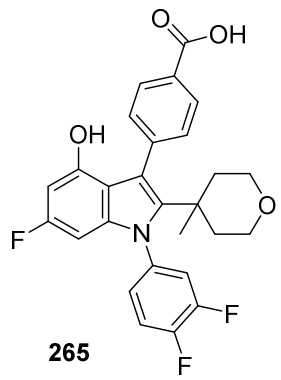
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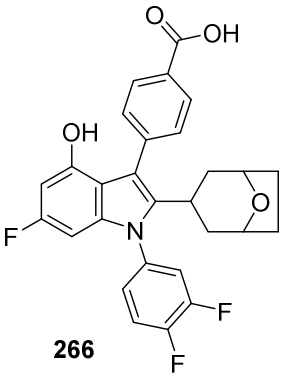
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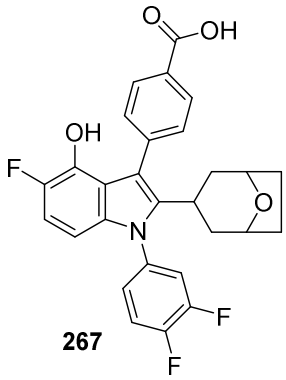
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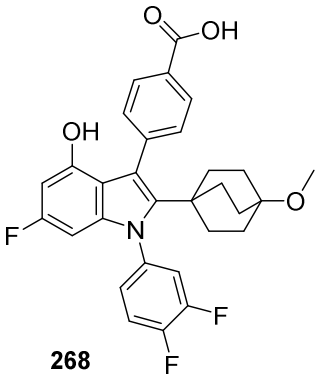
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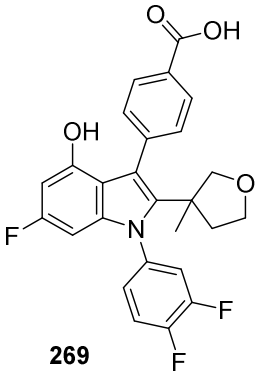
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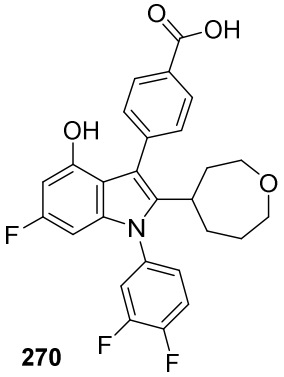
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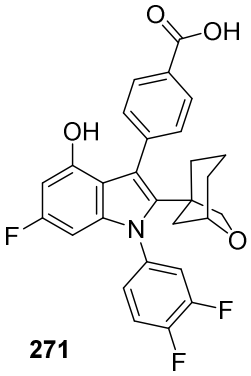
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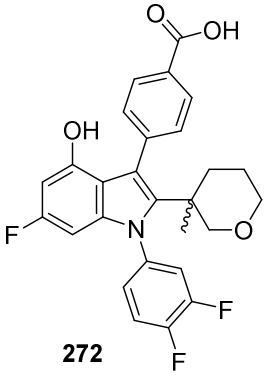
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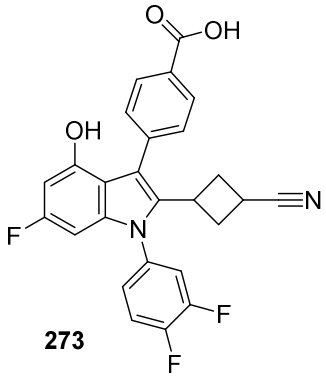
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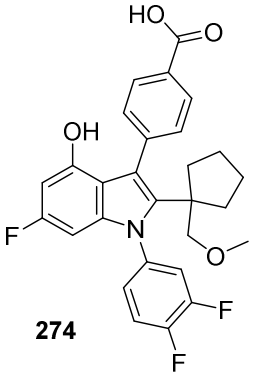
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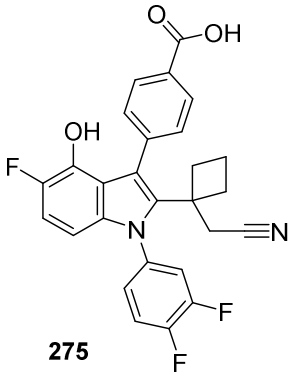
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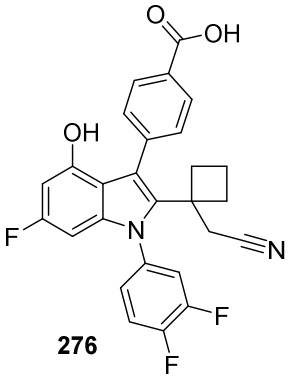
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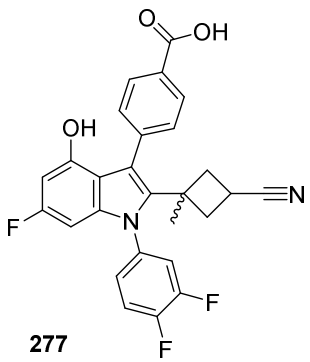
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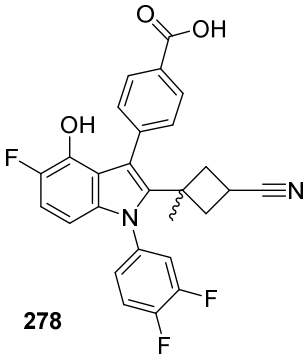
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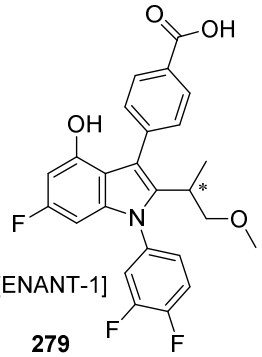
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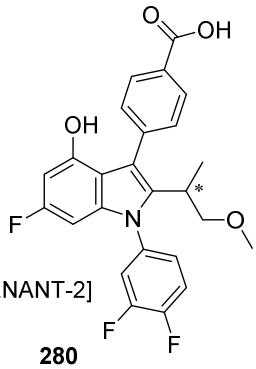


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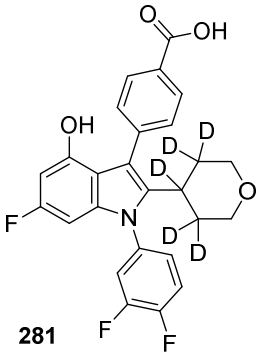
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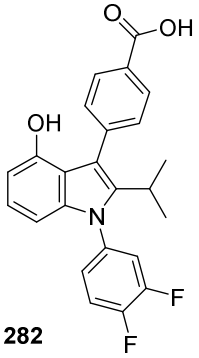


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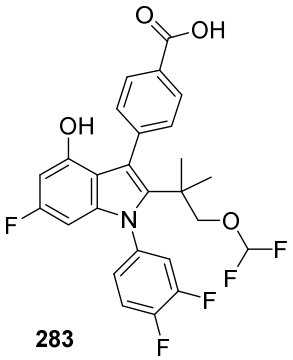
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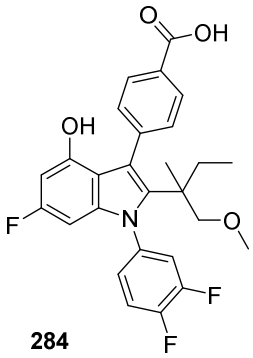
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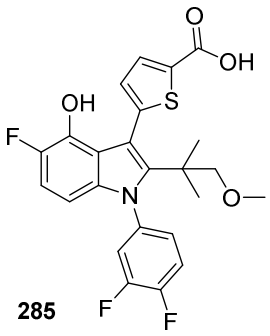
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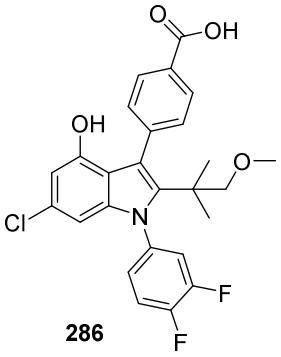
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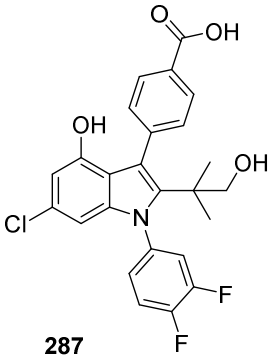
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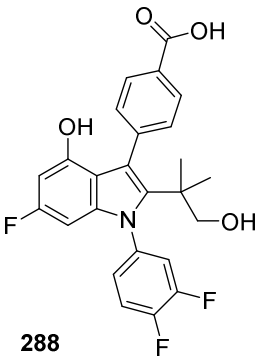
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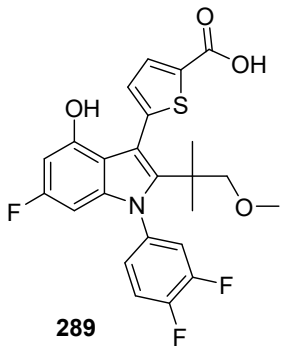
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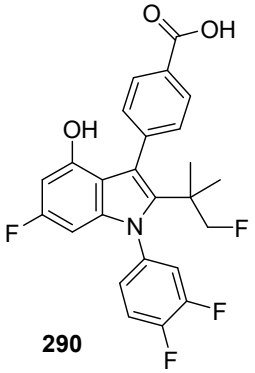
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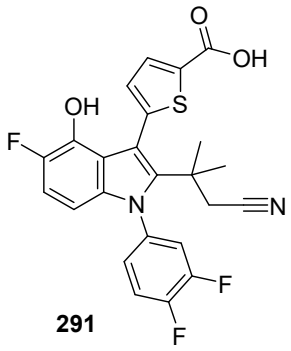
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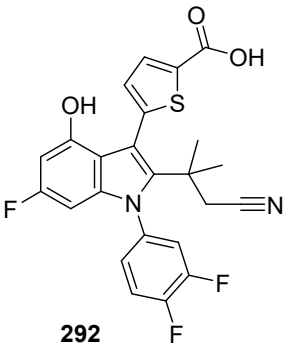
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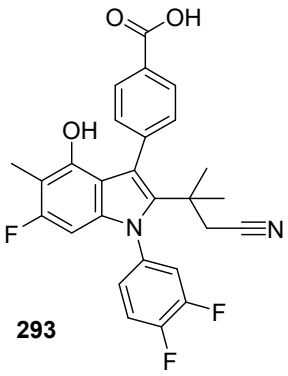
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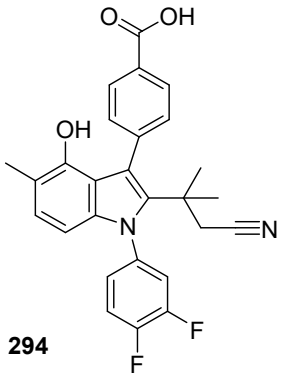
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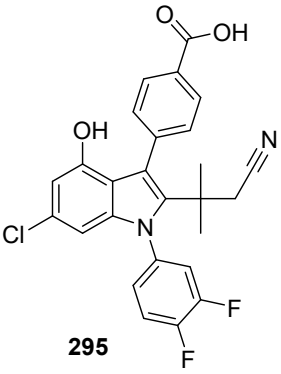
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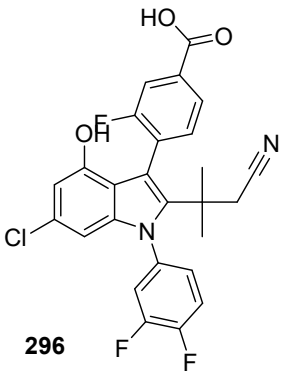
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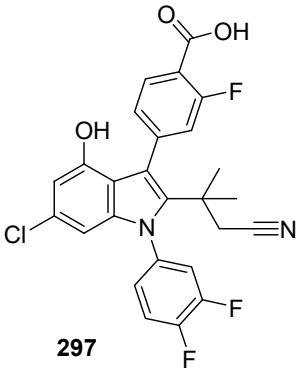
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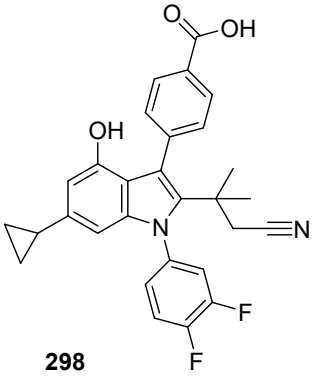
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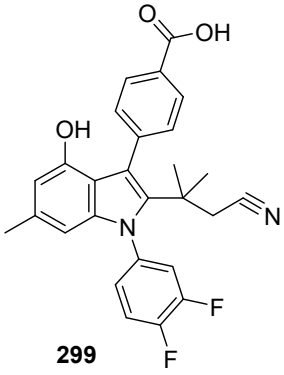
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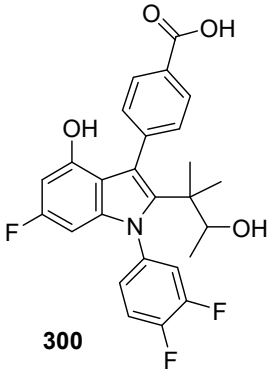
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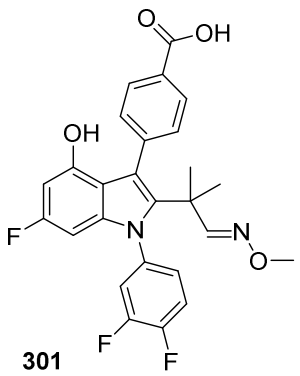
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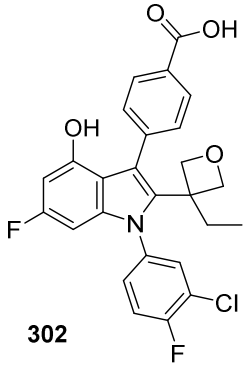
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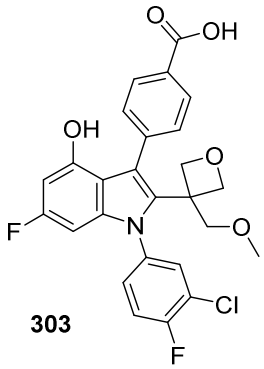
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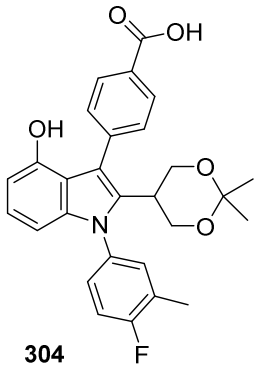
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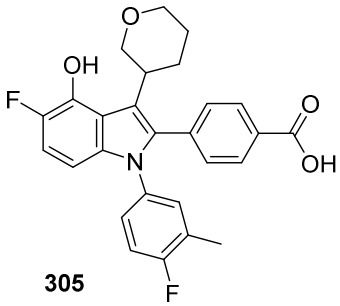
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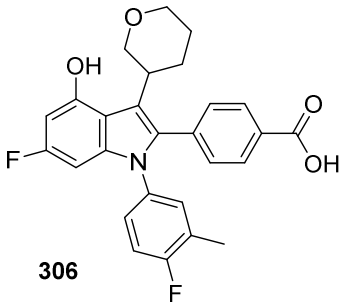
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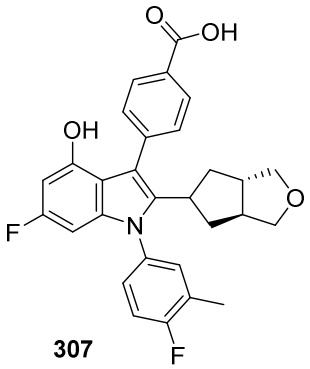
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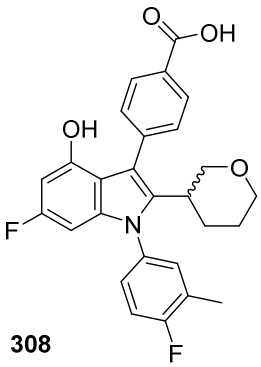
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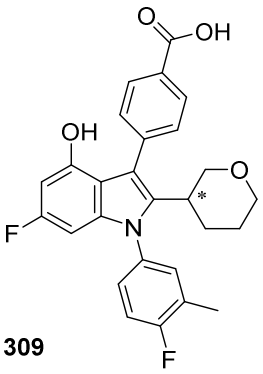
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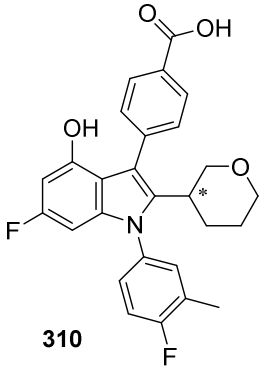
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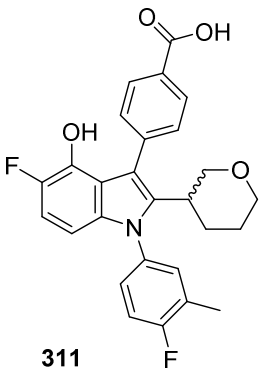
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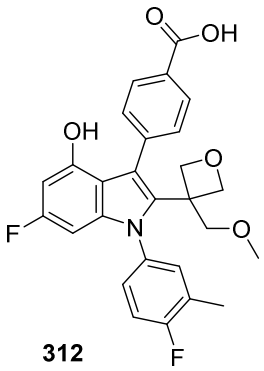
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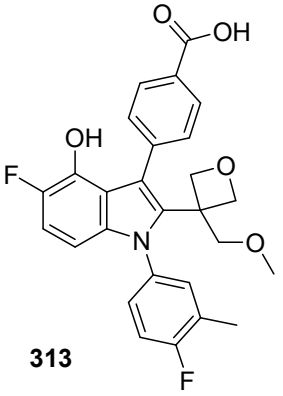
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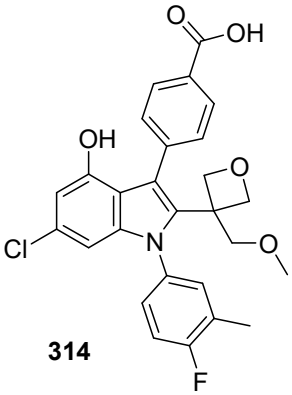
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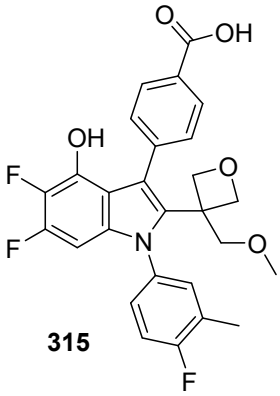
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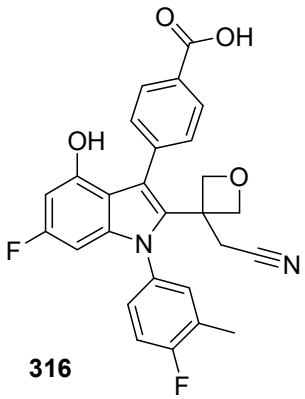
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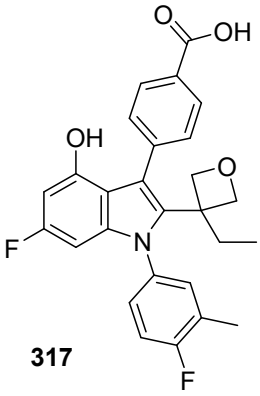
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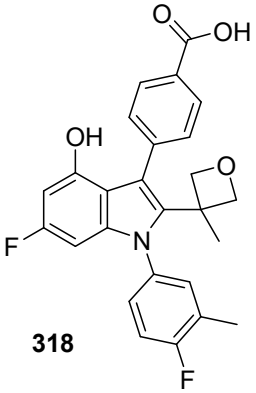
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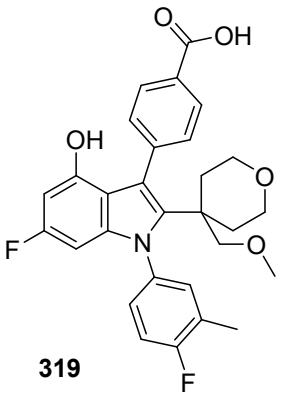
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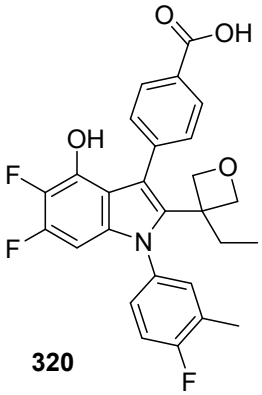
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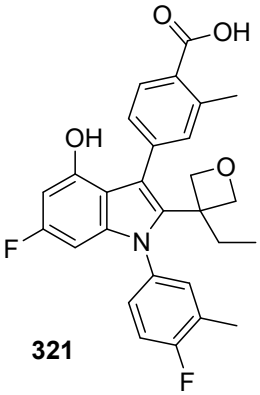
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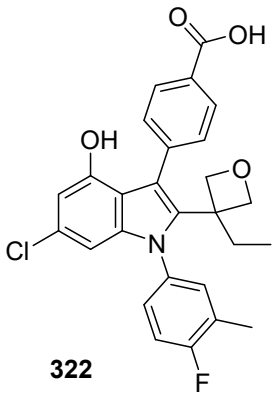
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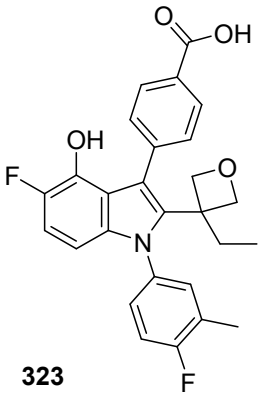
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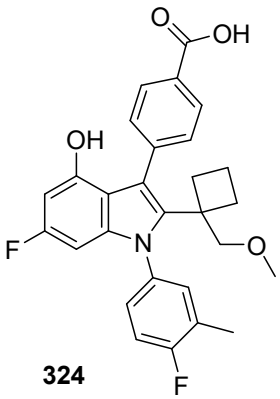
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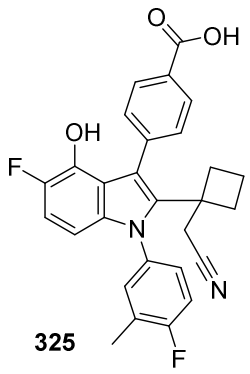
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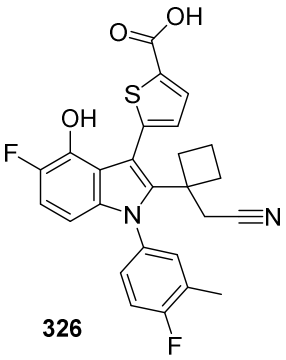
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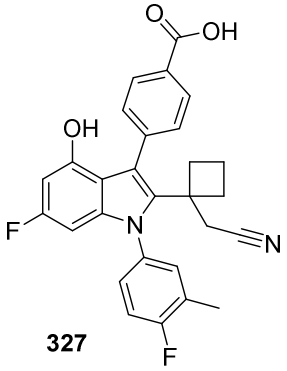
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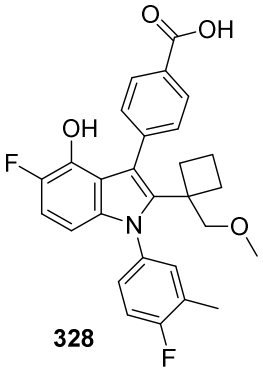
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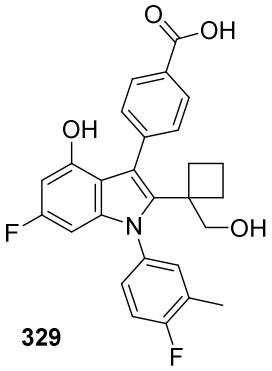
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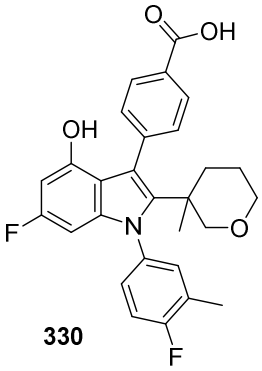
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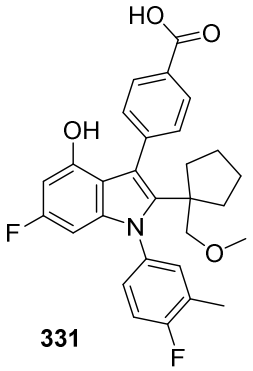
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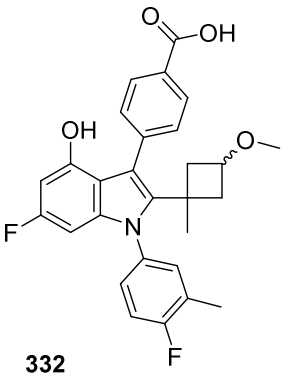
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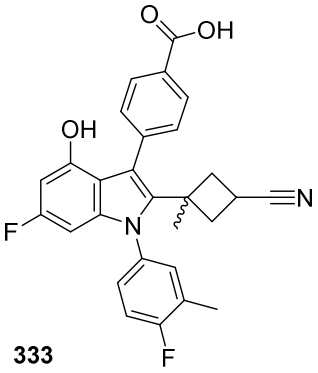
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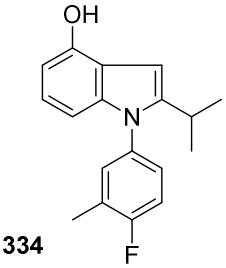
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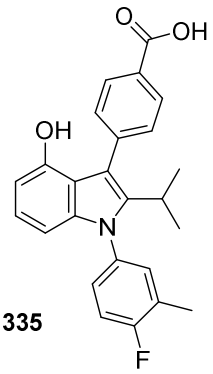
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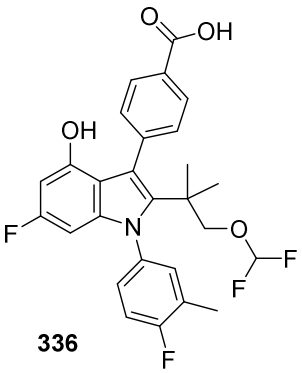
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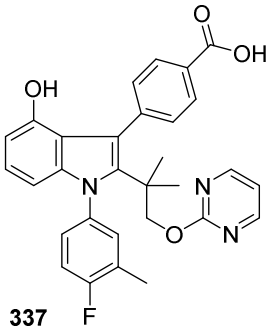
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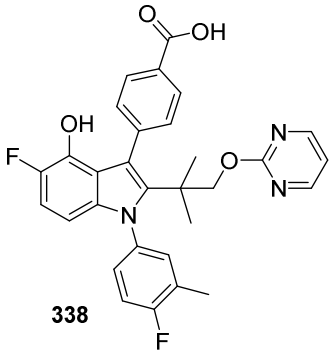
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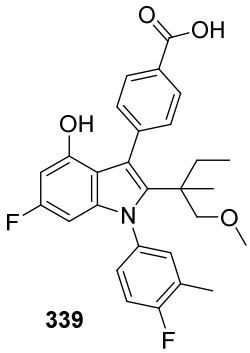
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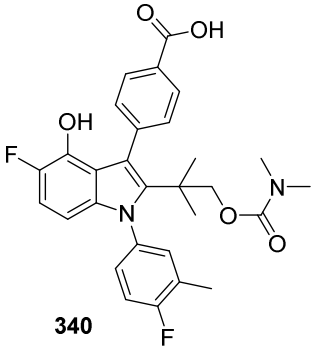
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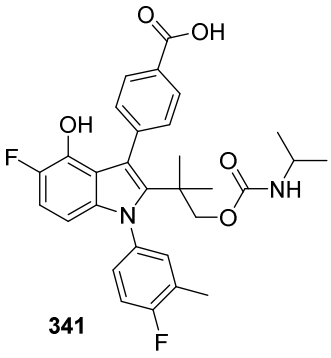
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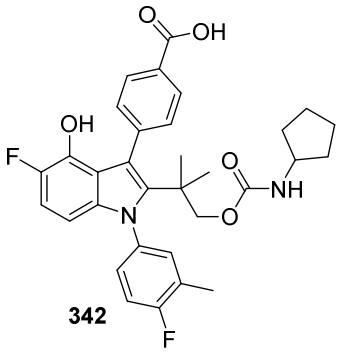
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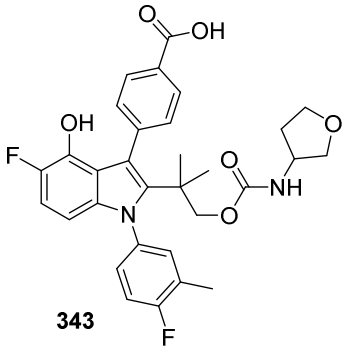
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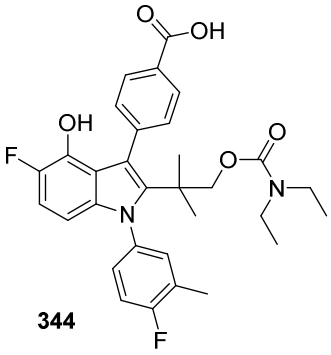
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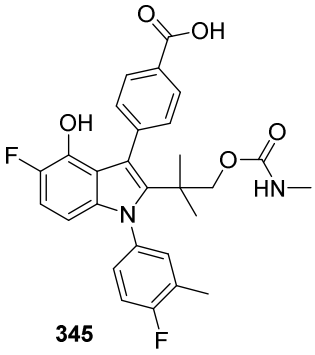
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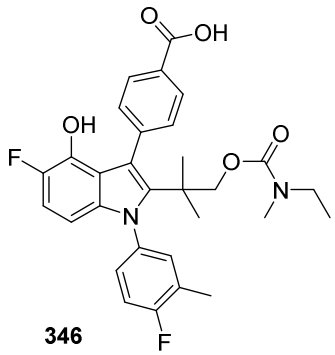
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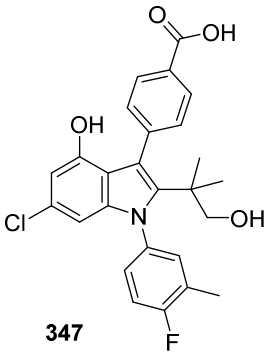
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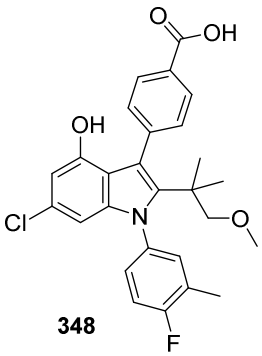
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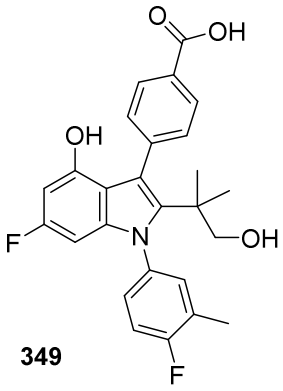
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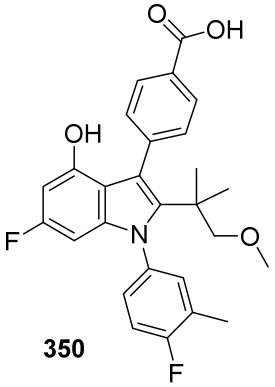
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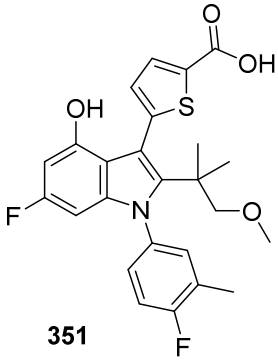
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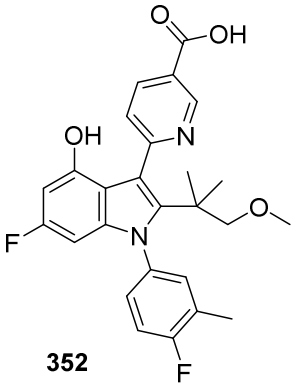
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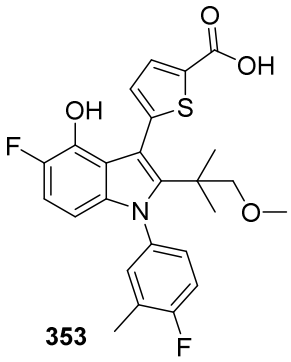
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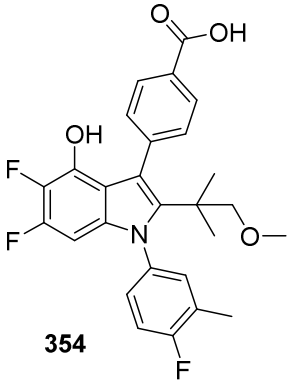
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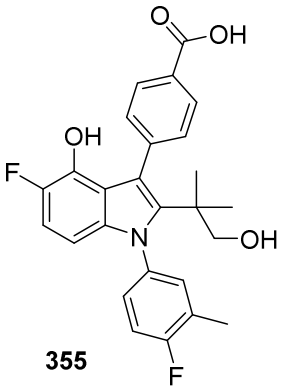
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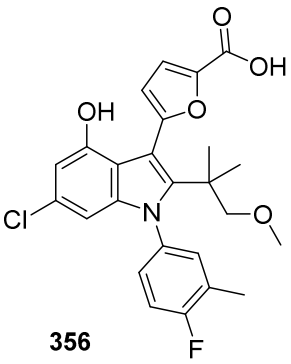
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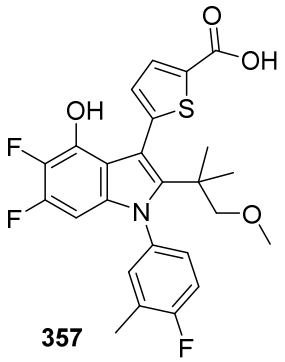
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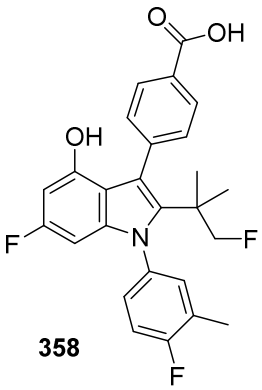
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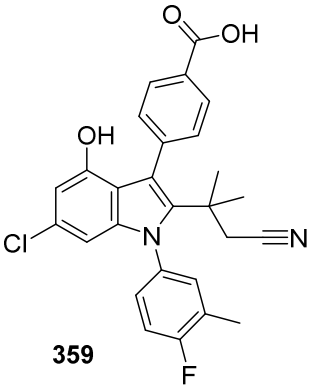
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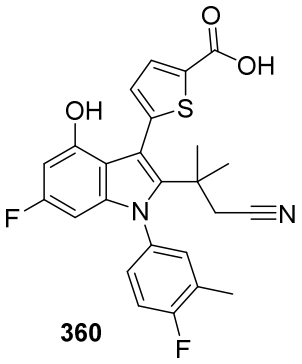
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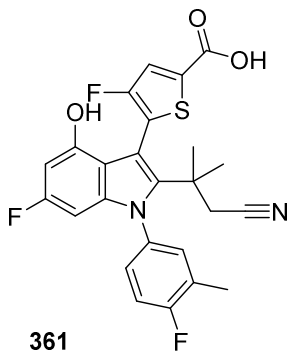
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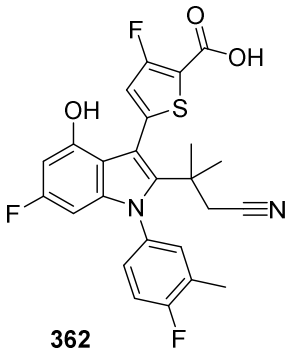
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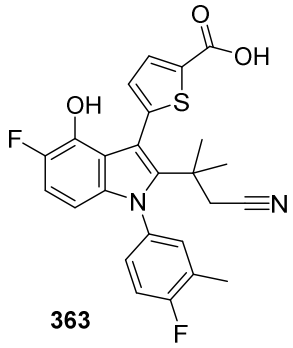
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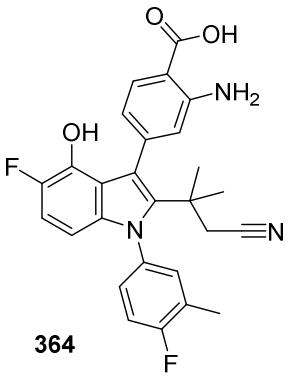
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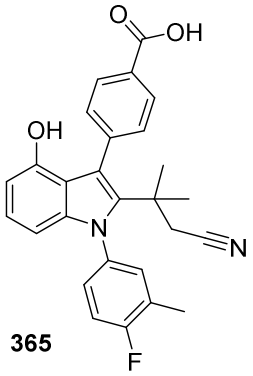
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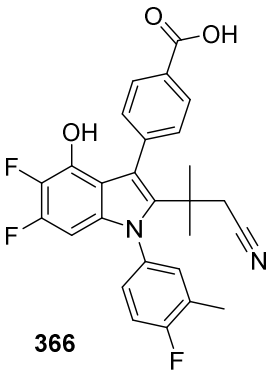
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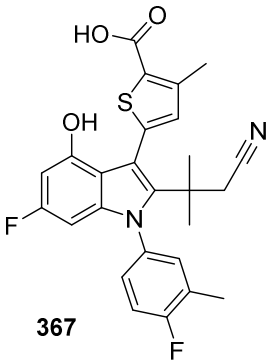
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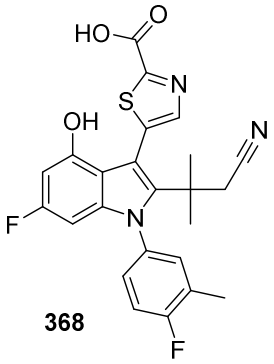
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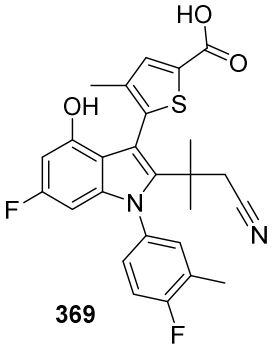
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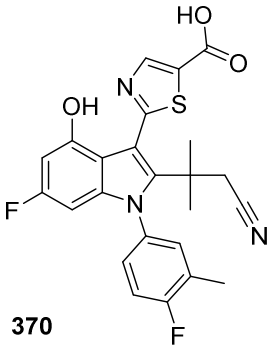
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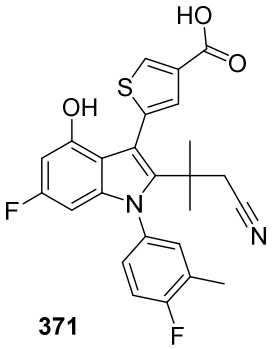
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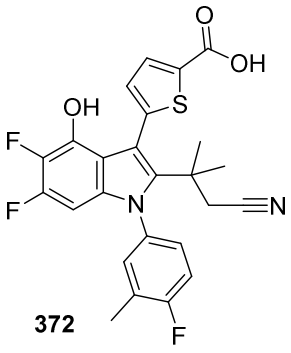
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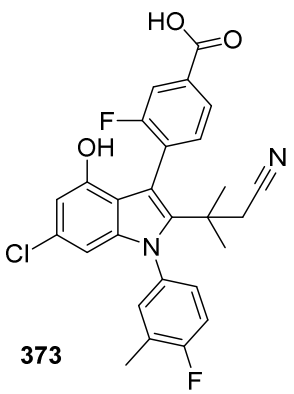
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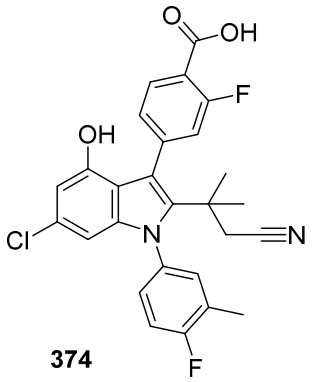
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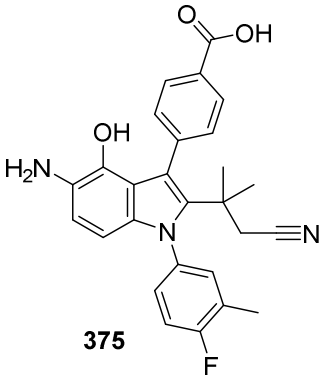
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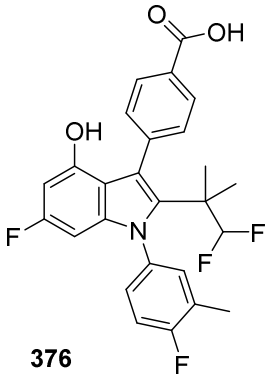
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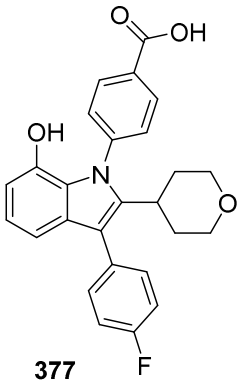
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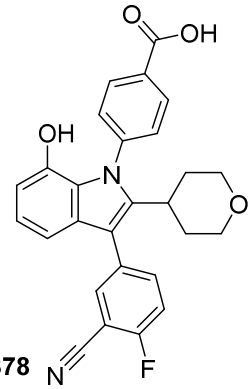
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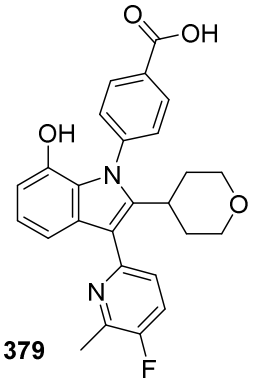
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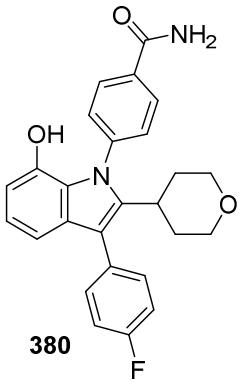
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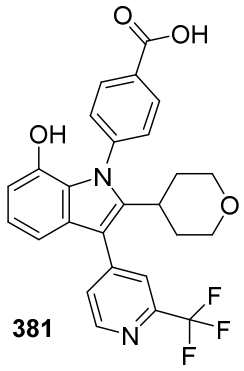
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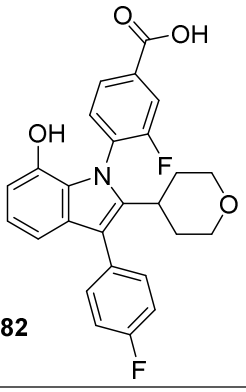
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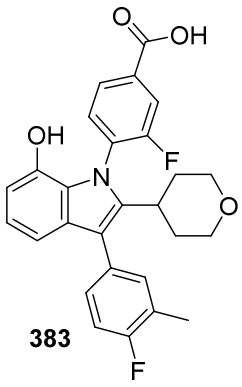
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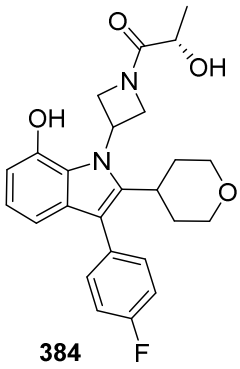
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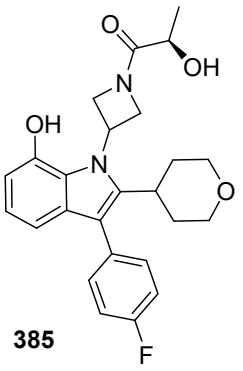
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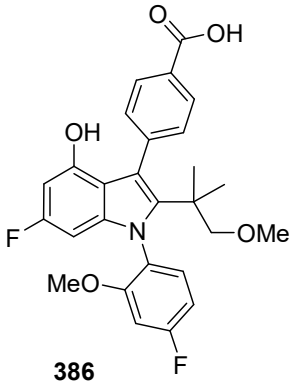
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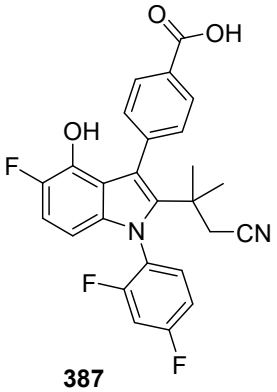
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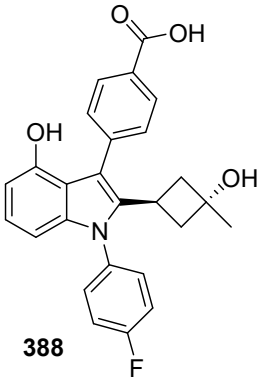
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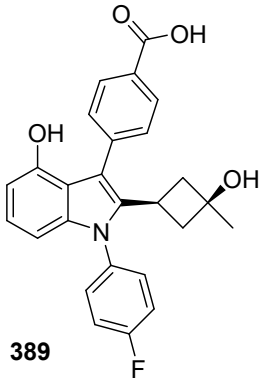
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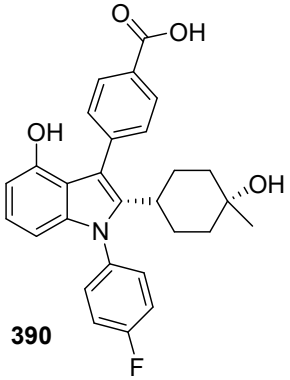
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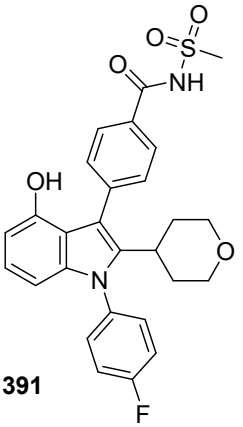
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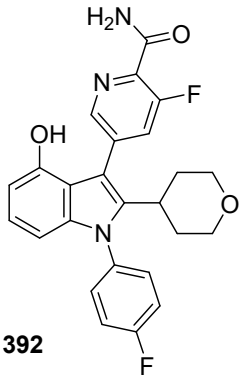
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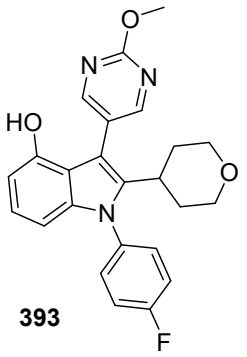
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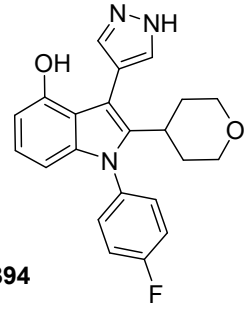
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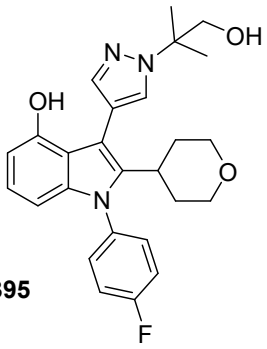
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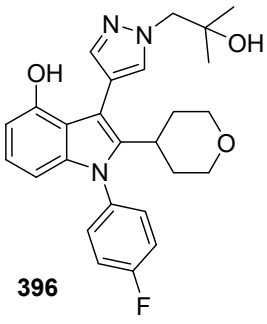
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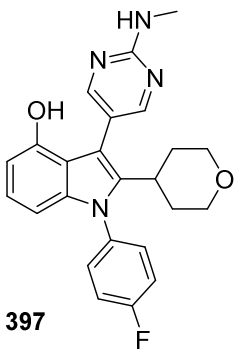
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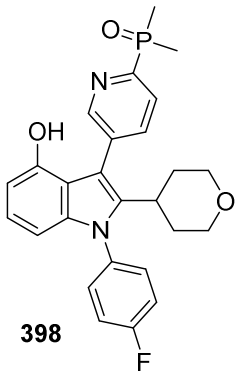
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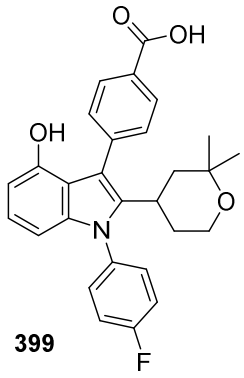
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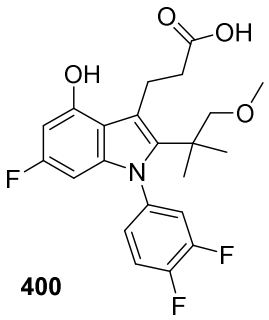
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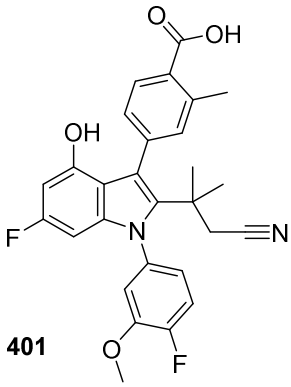
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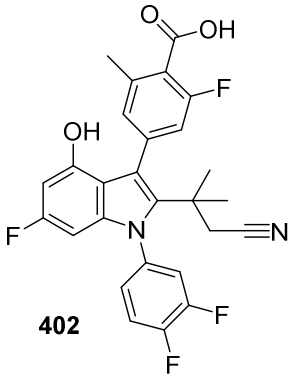
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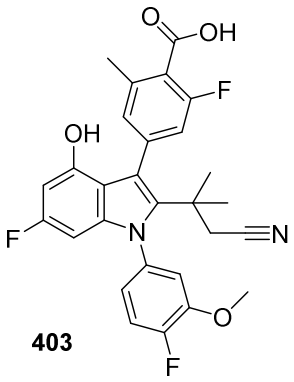
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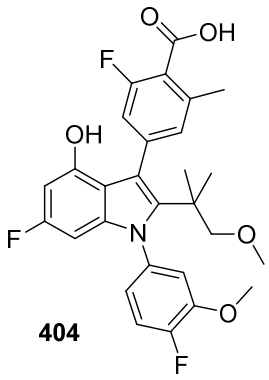
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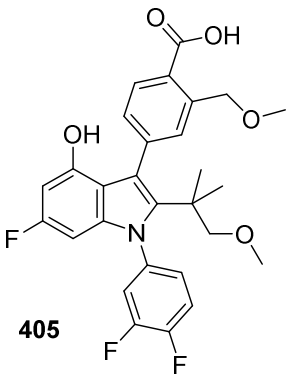
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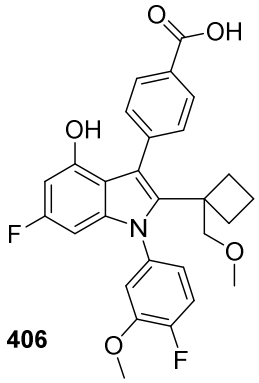
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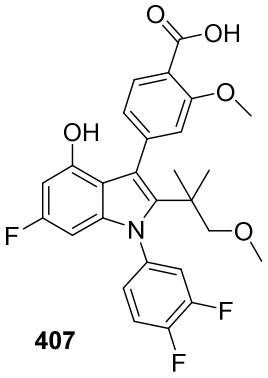
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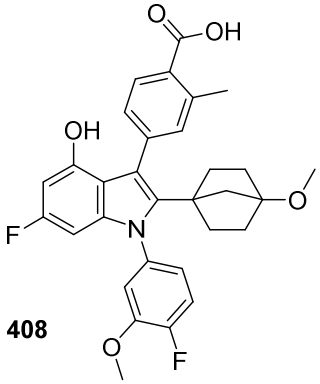
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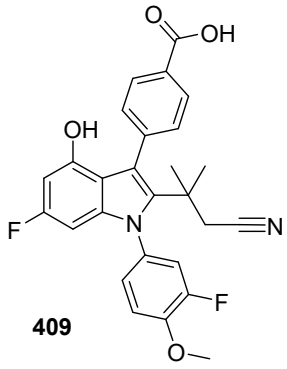
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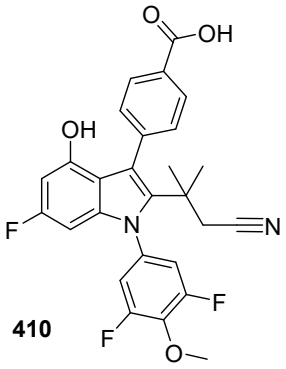
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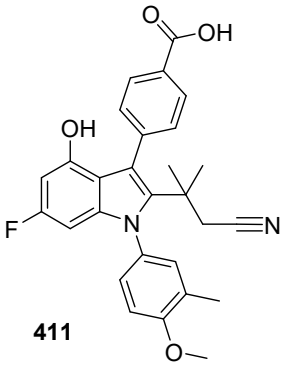
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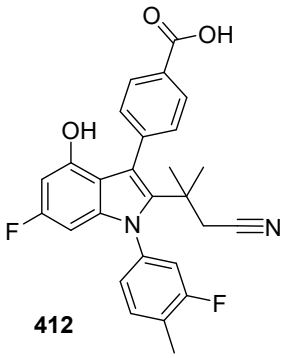
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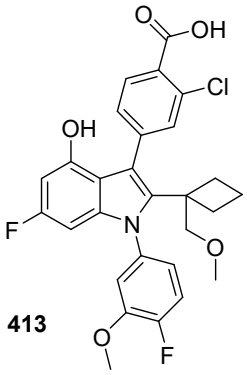
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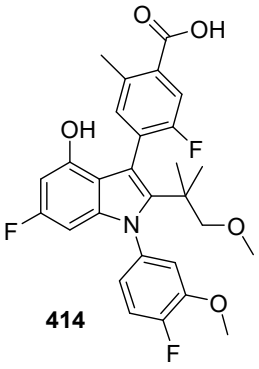
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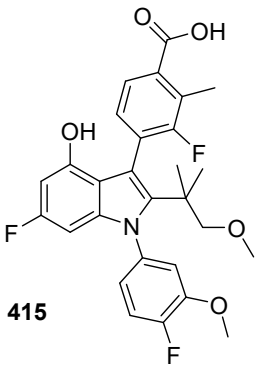
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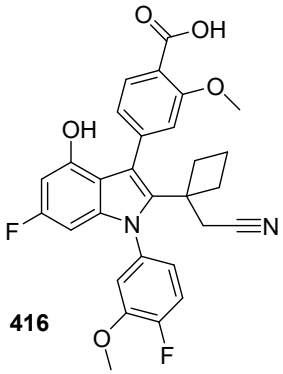
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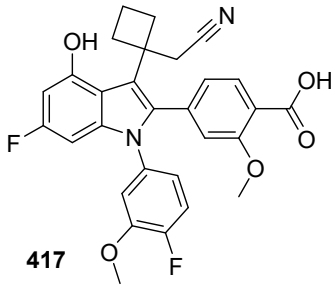
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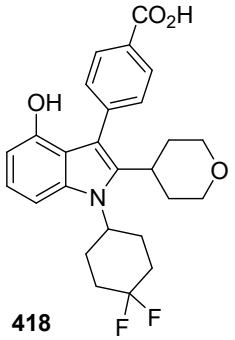
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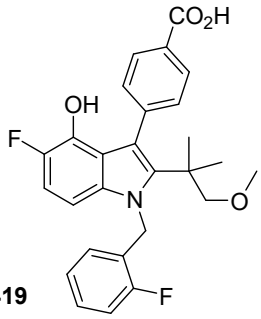
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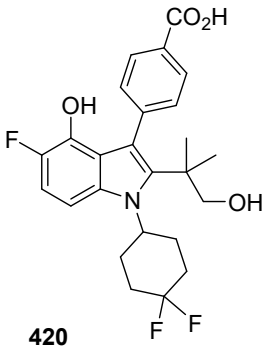
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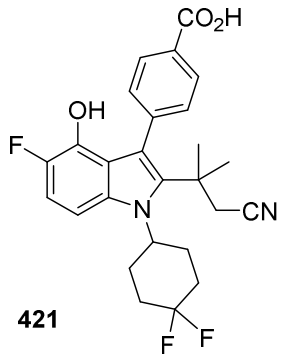
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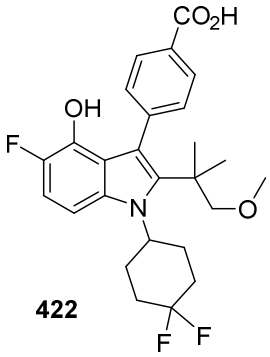
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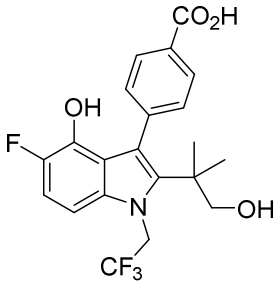
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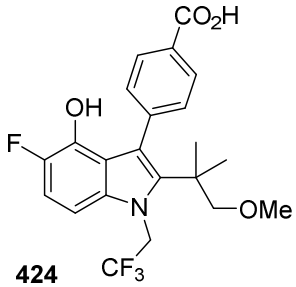
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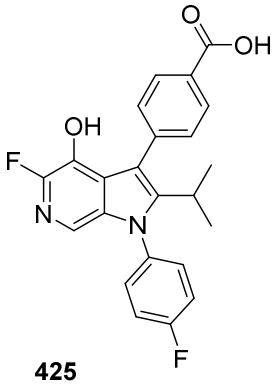
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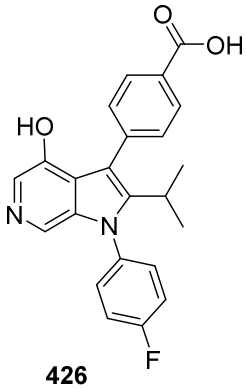
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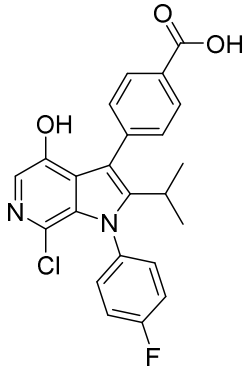
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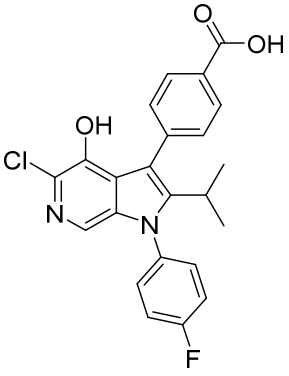
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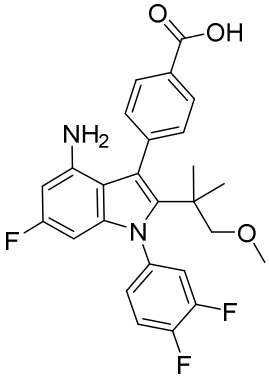
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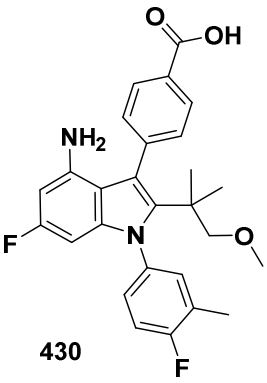
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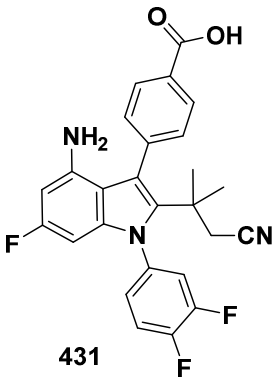
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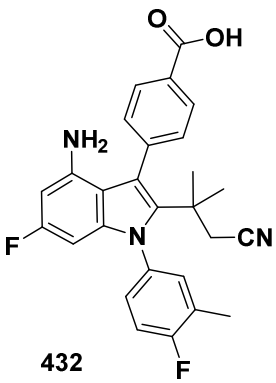
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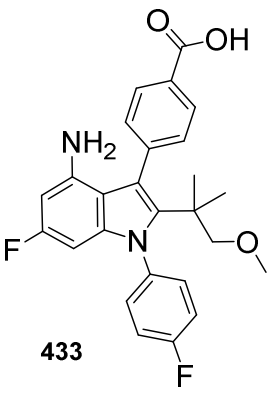
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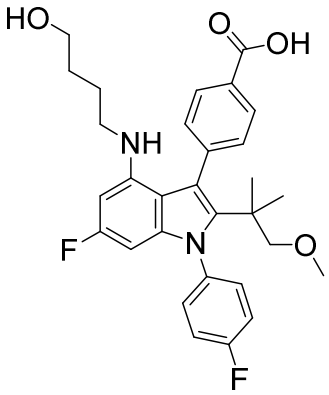
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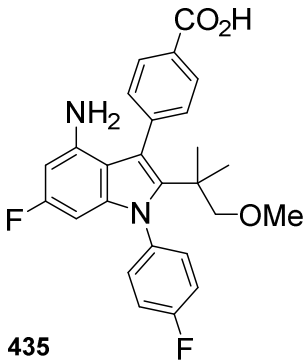
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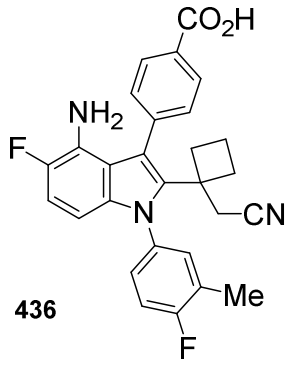
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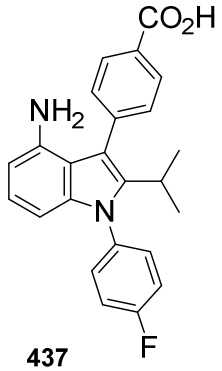
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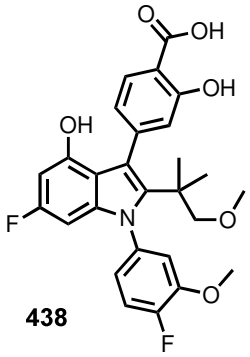
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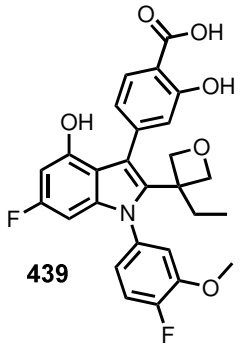
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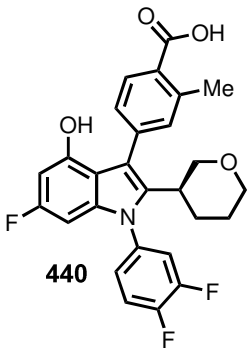
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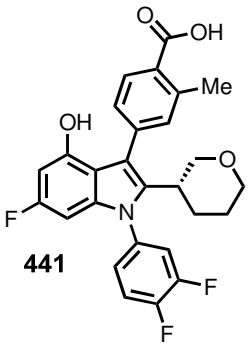
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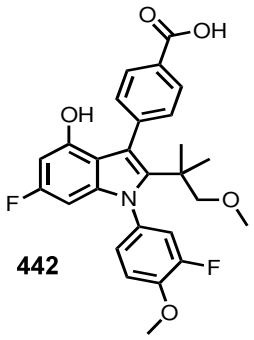
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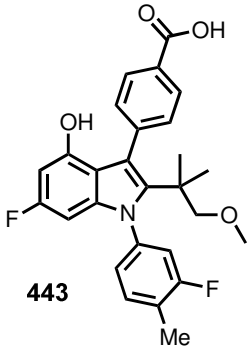
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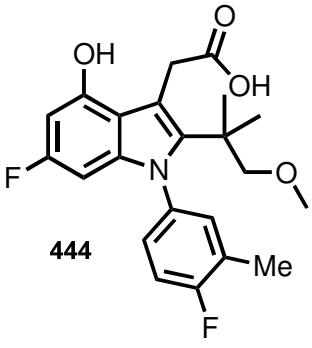
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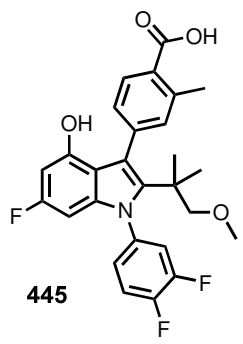
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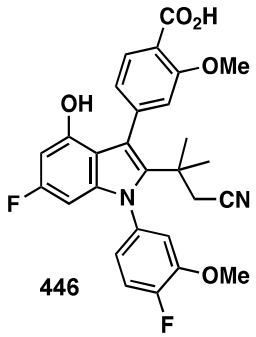
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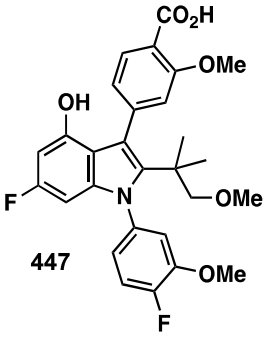
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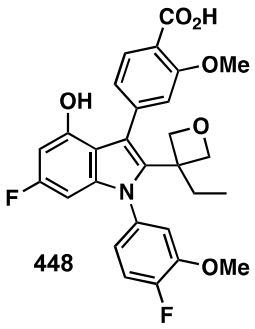
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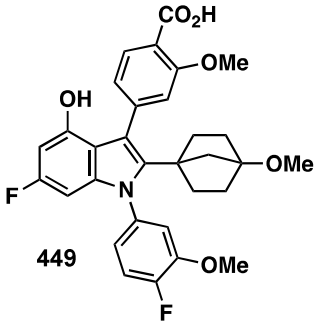
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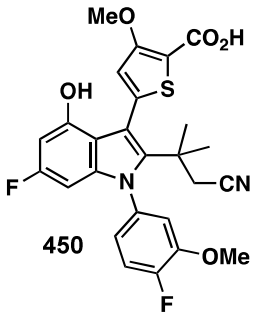
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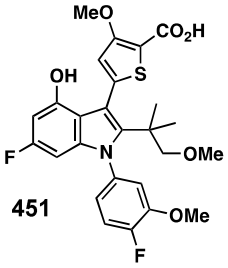
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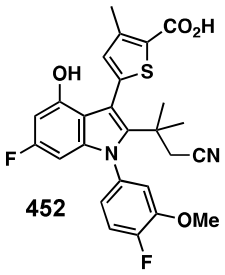
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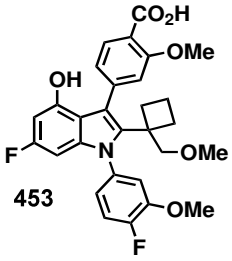
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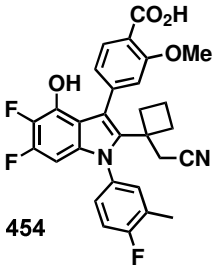
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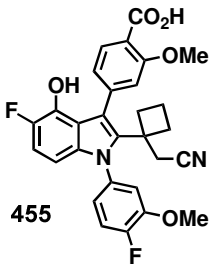
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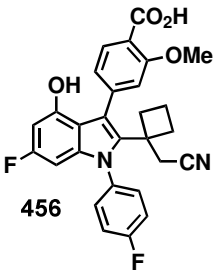
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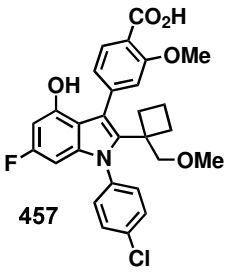
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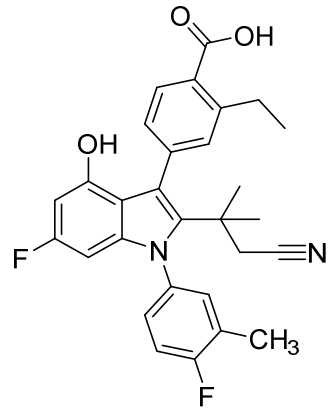
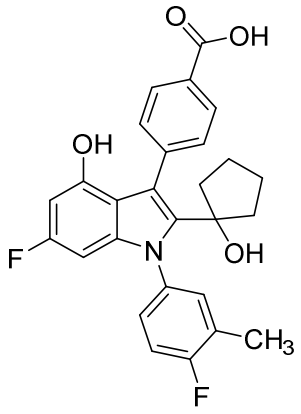
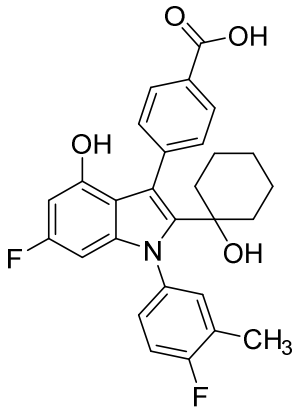
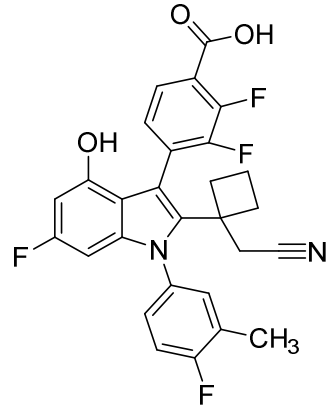
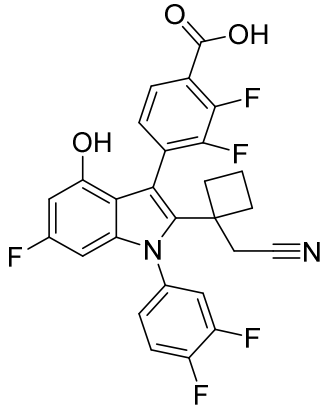
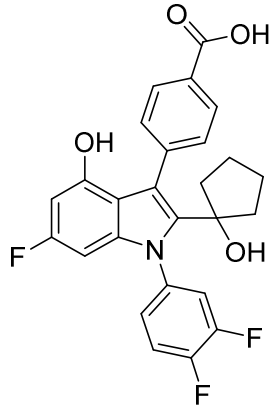
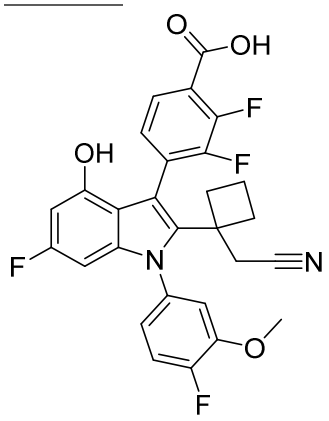
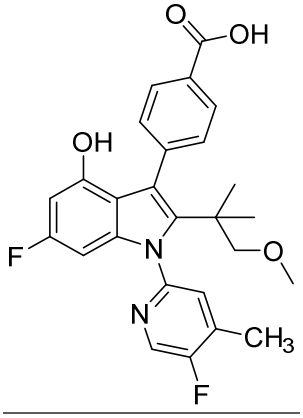
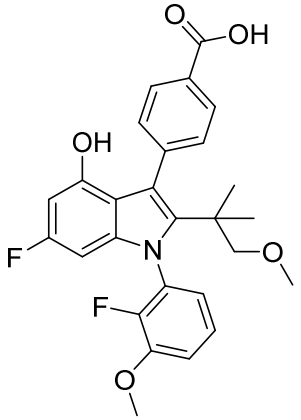
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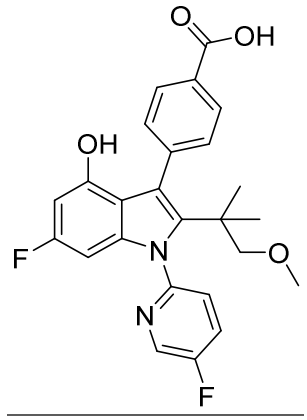
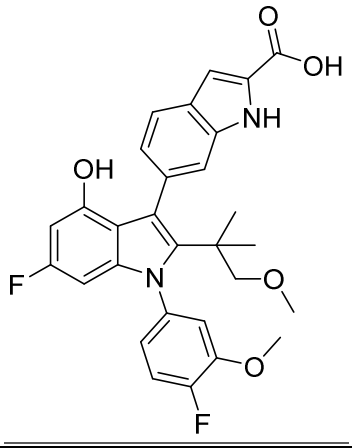
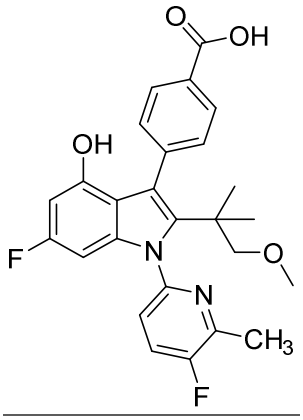
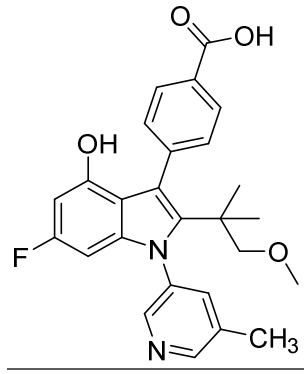
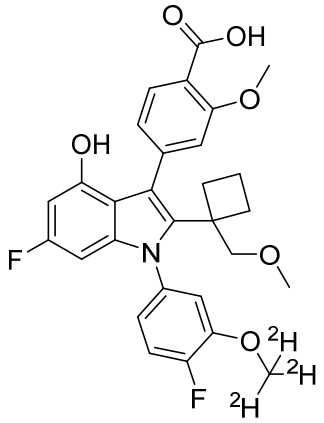
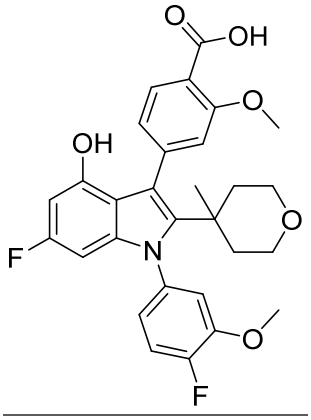
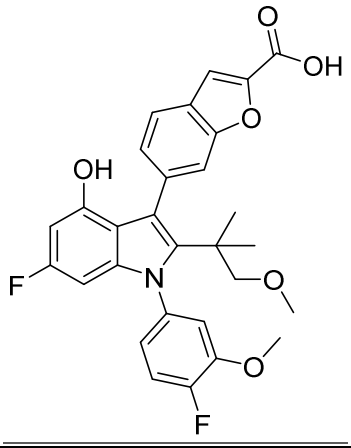
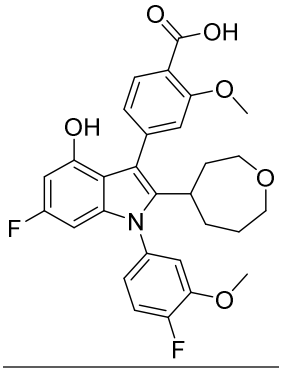
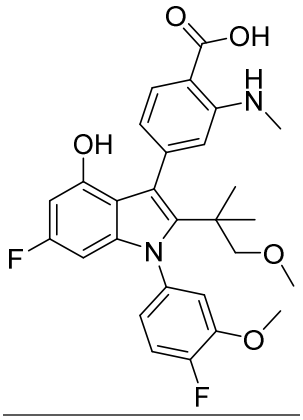


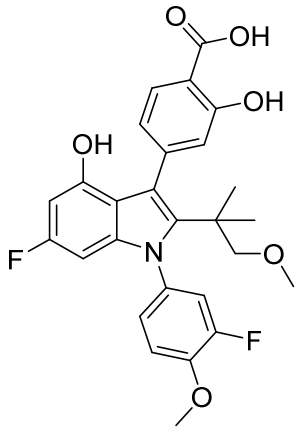
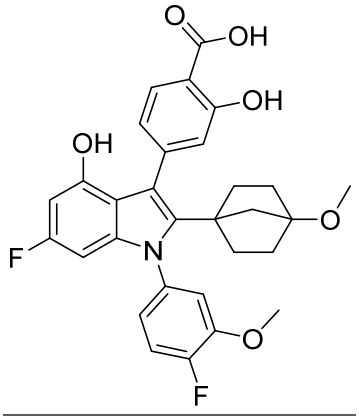
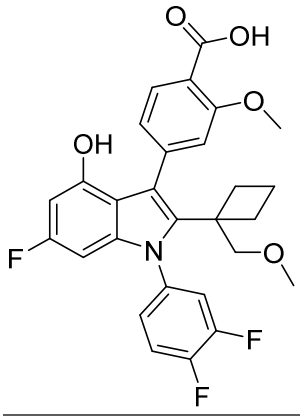
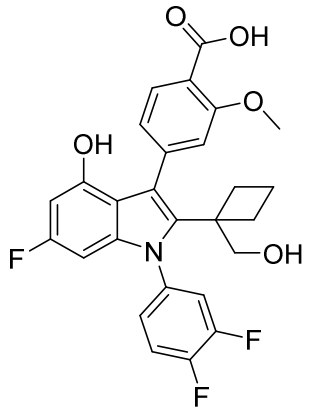
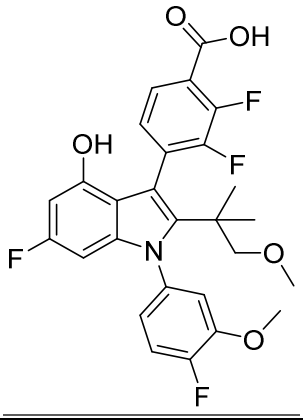
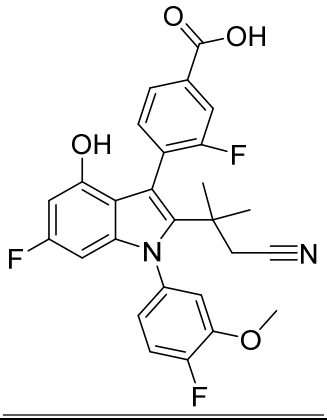
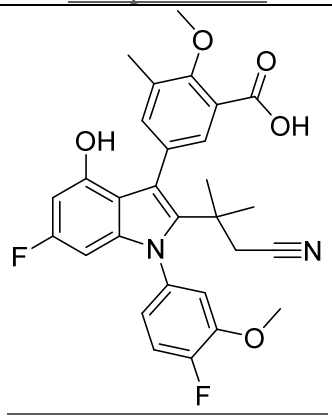
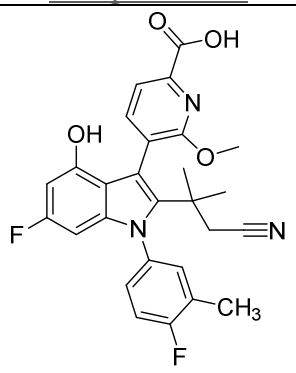
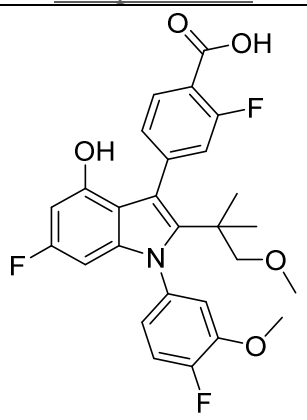
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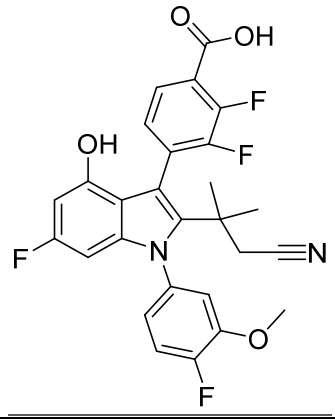
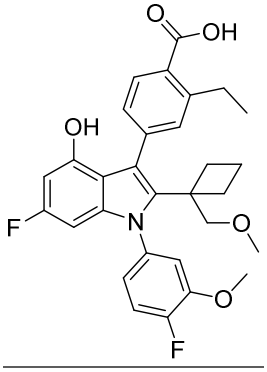
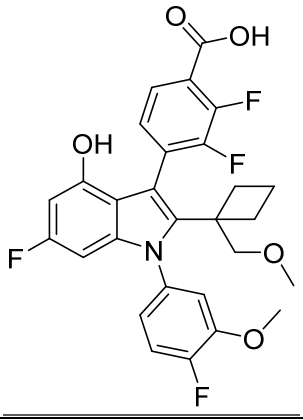
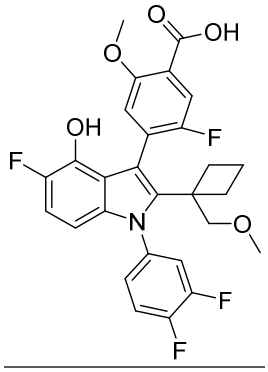
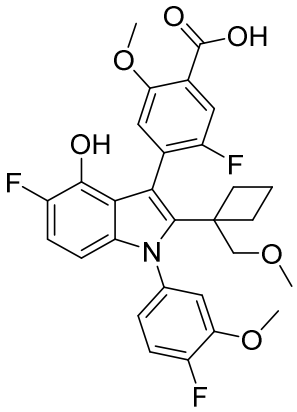
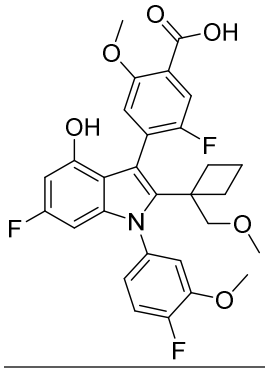
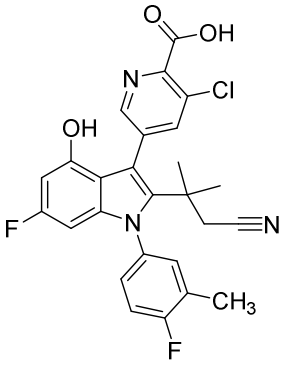
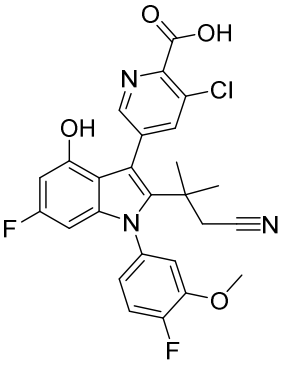
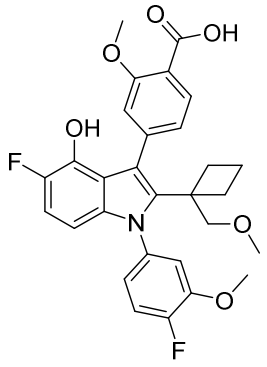
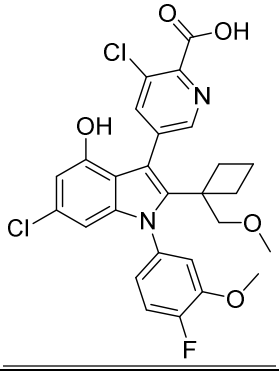
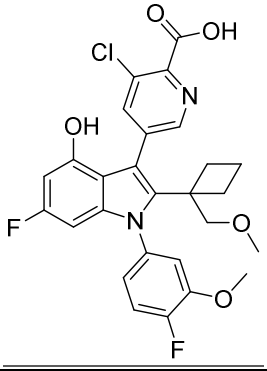
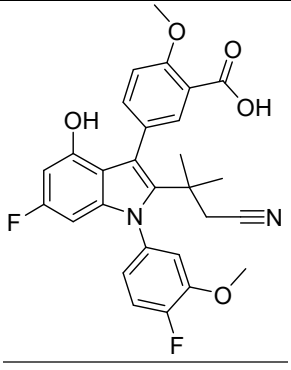


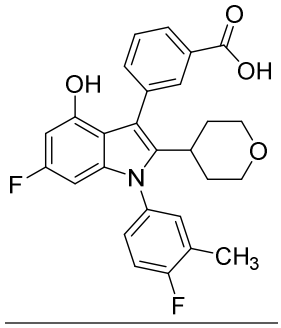
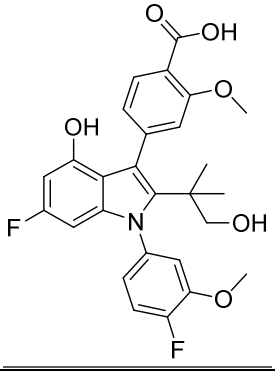
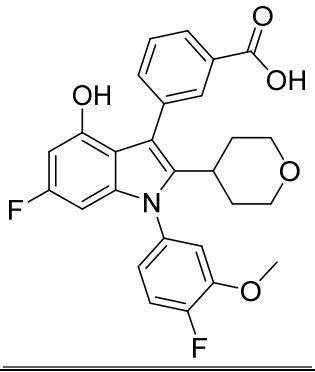
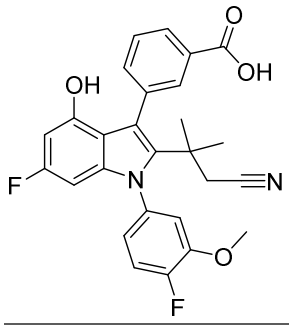
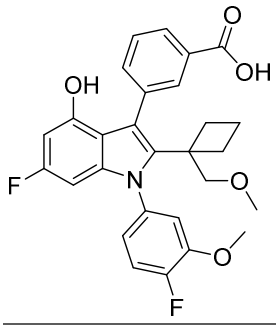
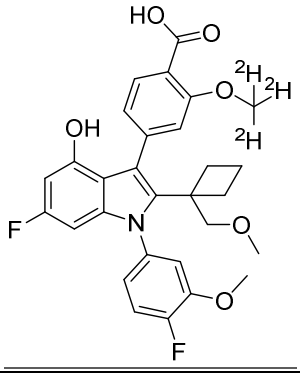
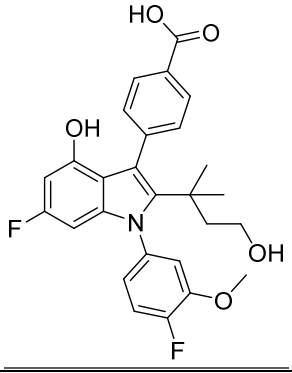
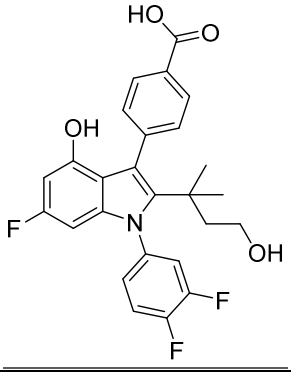
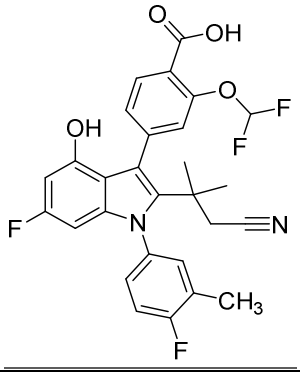
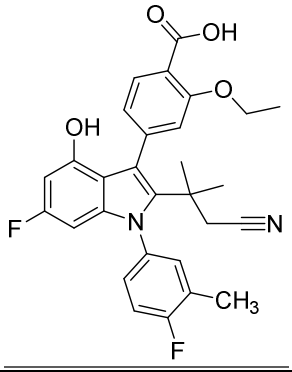
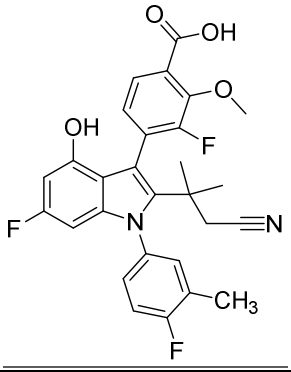
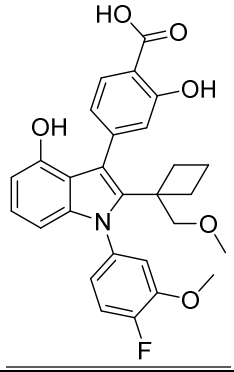
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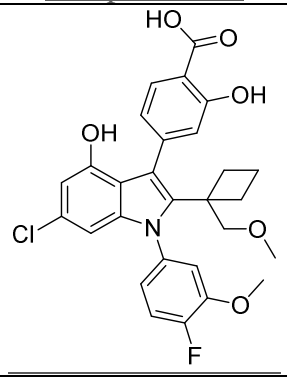
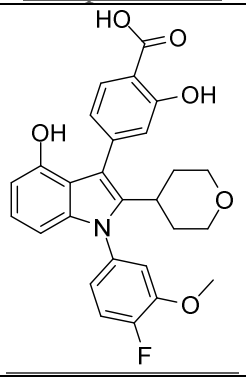
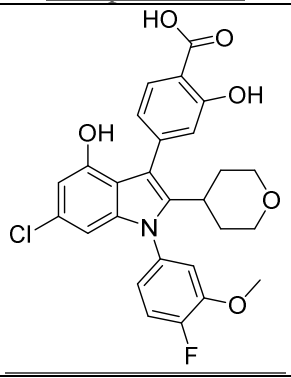
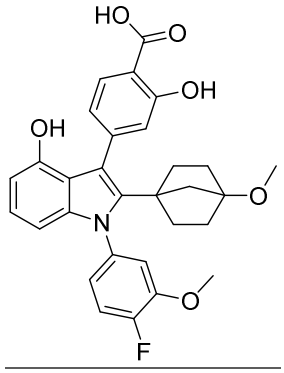
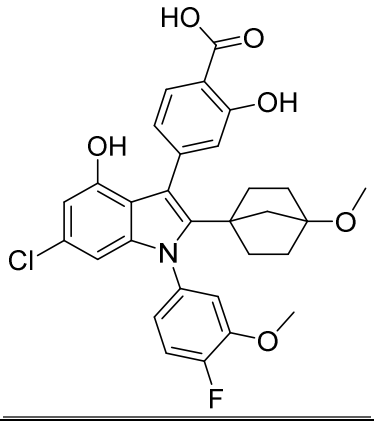
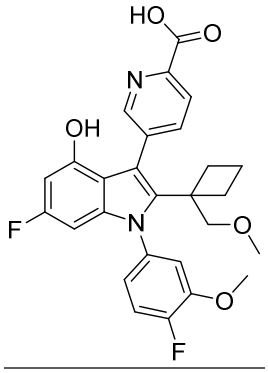
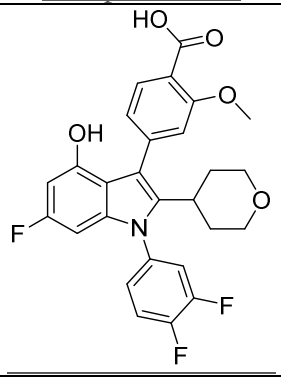
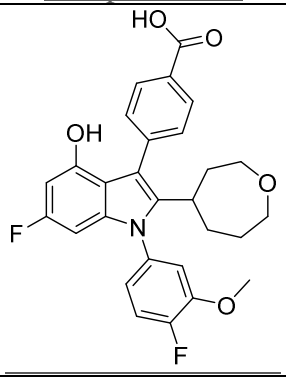
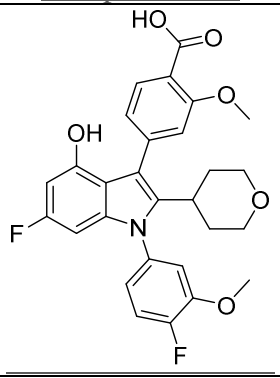
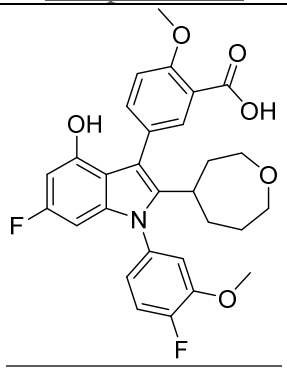
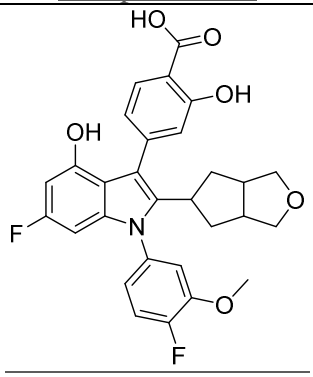
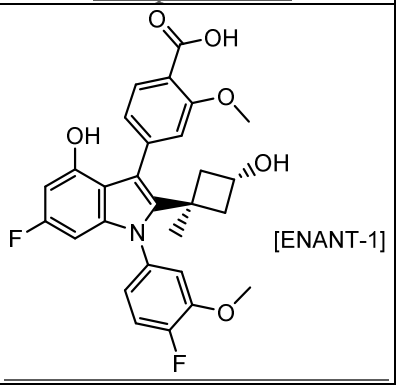
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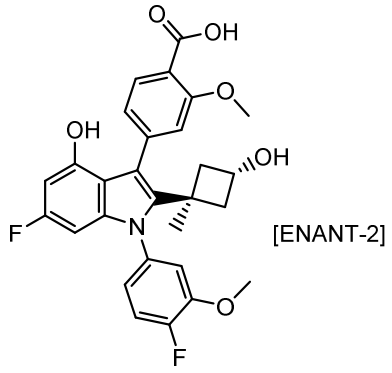
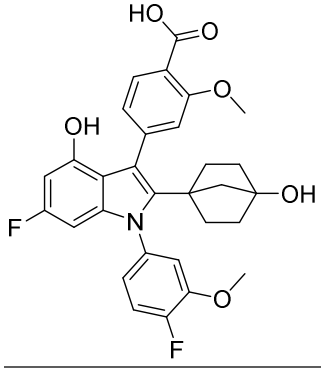
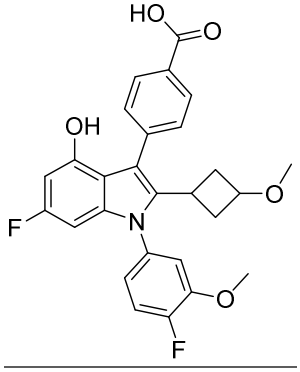
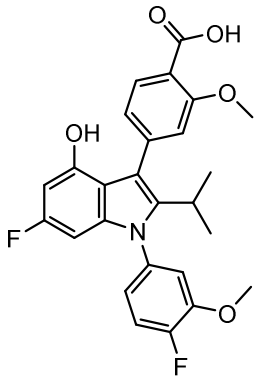
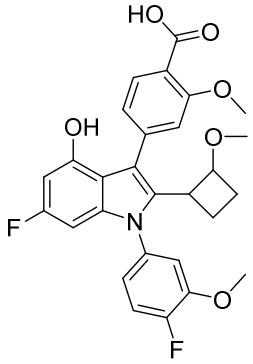
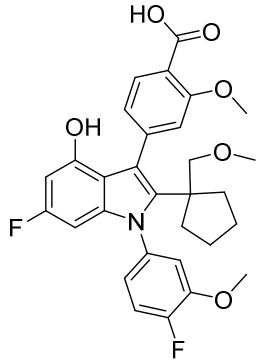
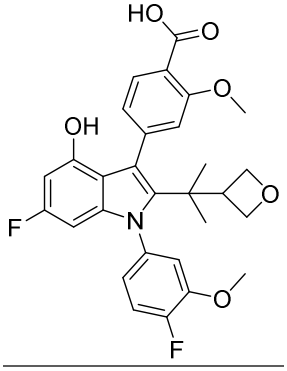
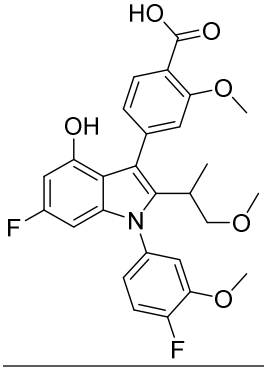
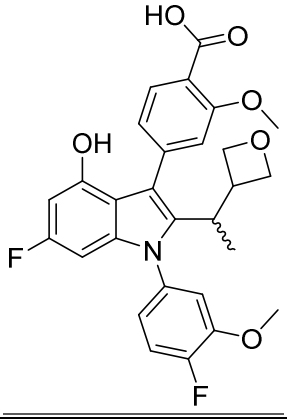
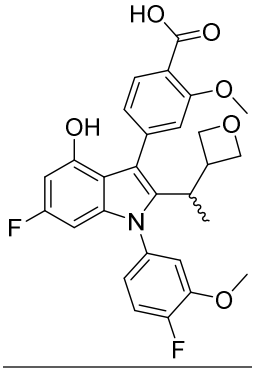
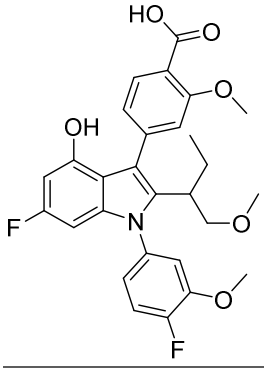
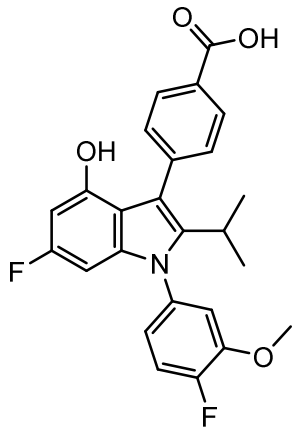
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Compound 473	Compound 474	Compound 475
		

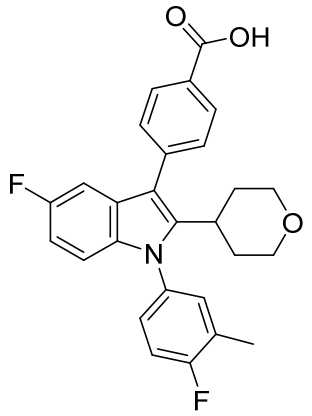
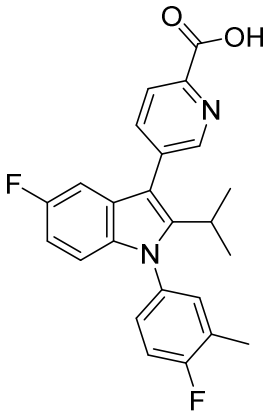
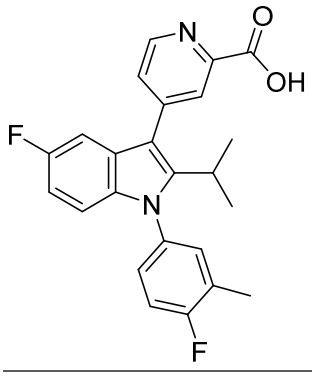
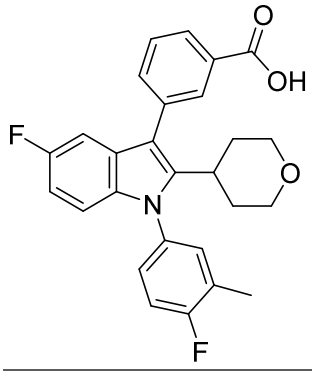
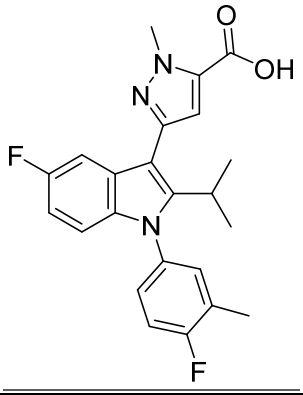
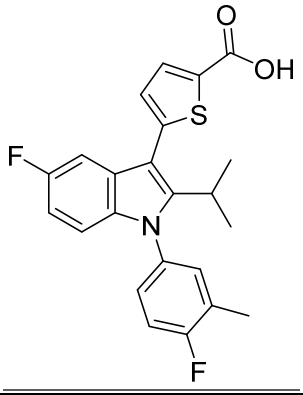
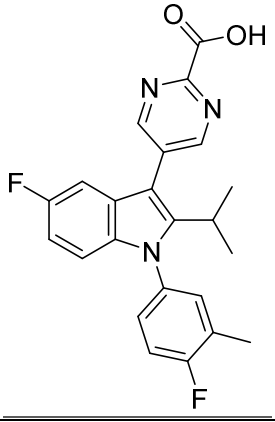
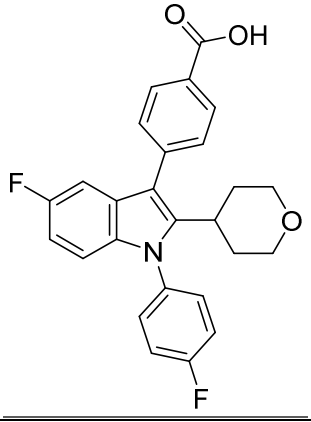
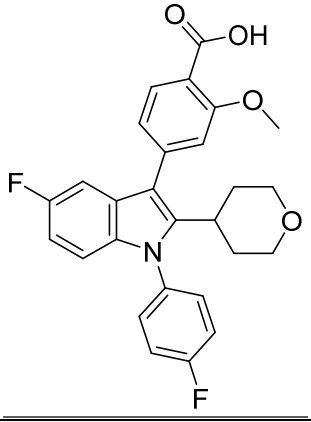
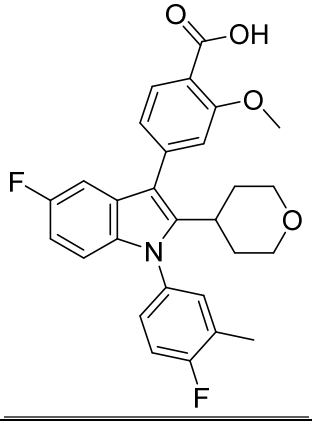
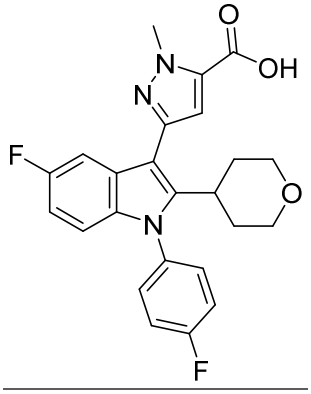
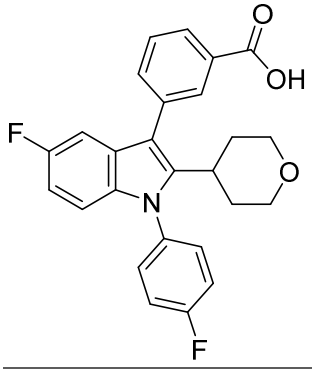
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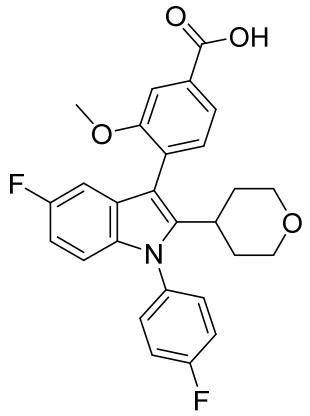
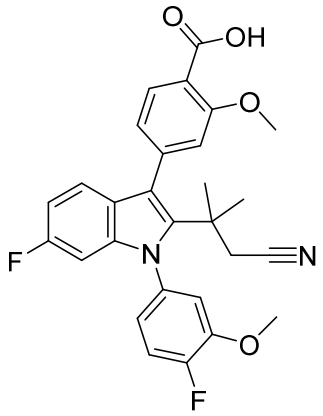
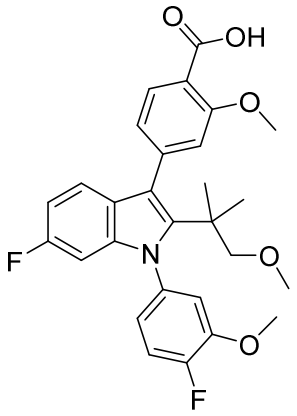
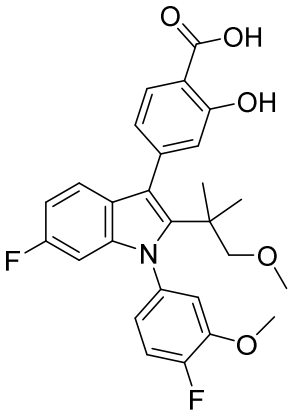
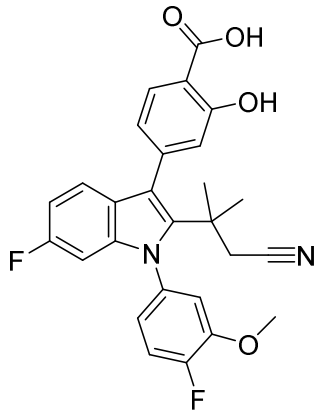
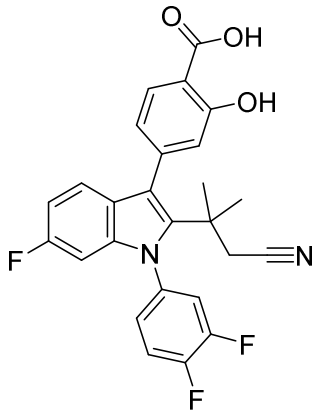
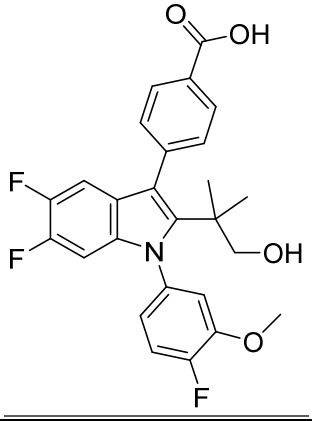
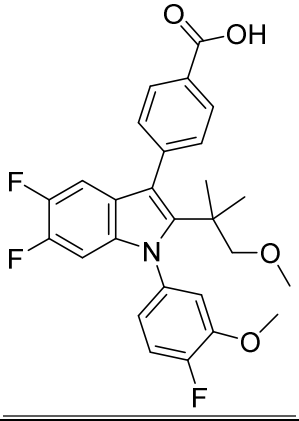
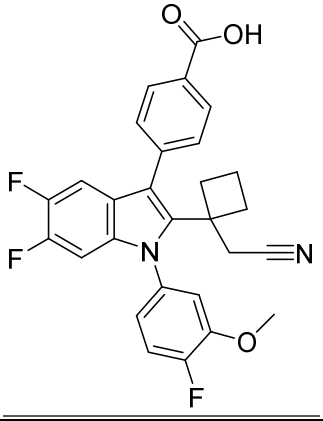
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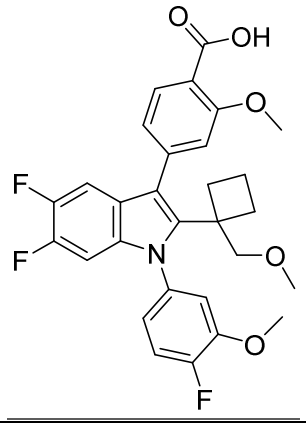
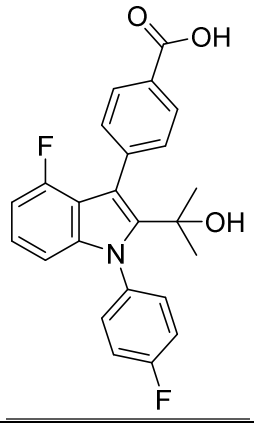
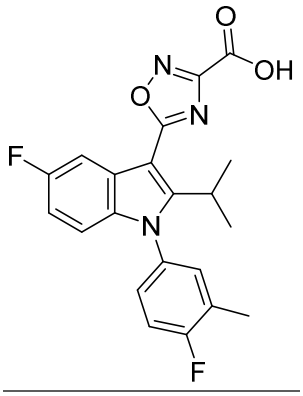
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Compound 503	Compound 504	Compound 505
		
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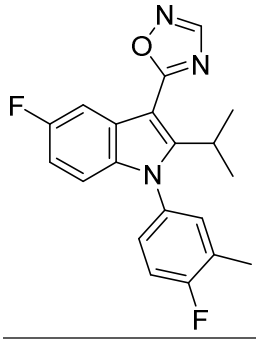
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		 [ENANT-1]

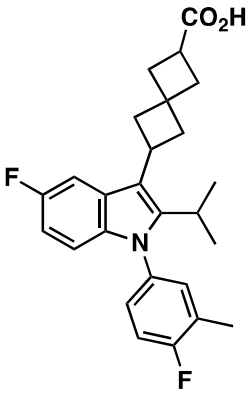
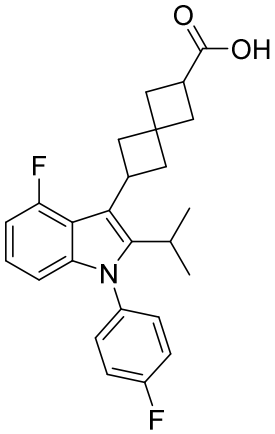
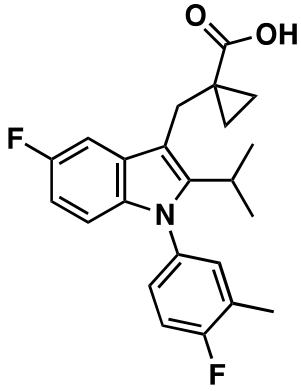
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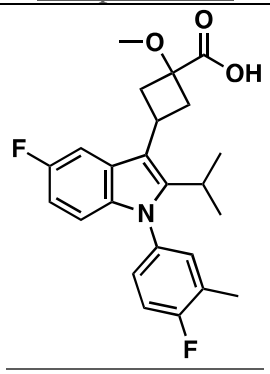
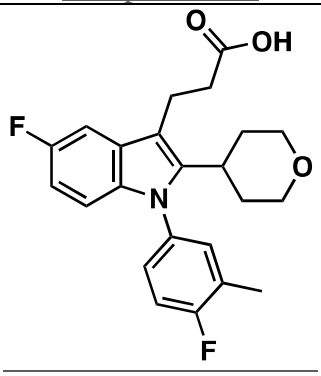
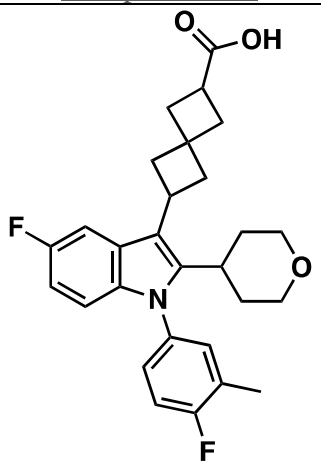
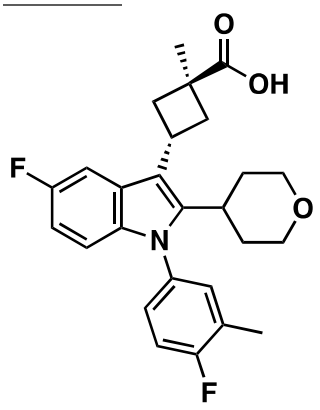
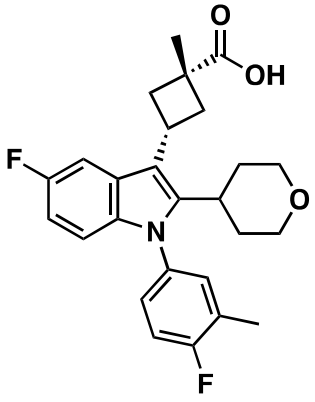
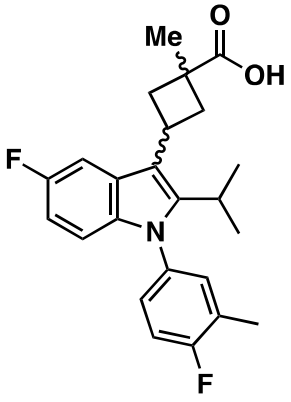
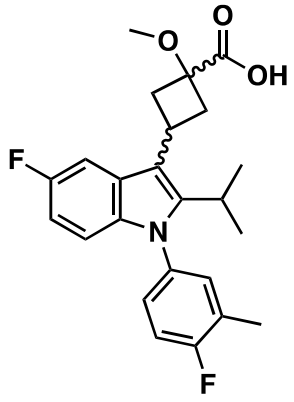
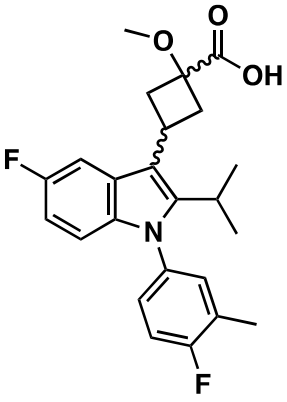
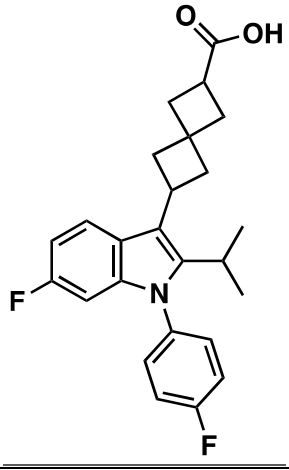
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Compound B7	Compound B8	Compound B9
		
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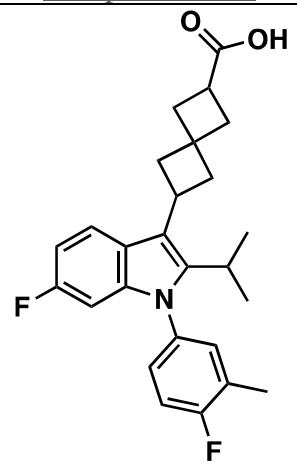
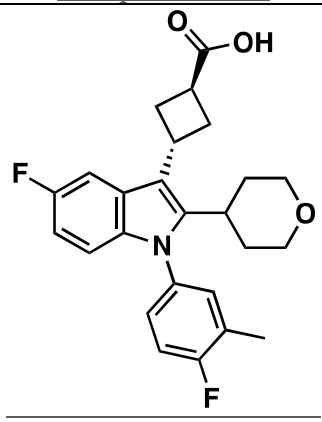
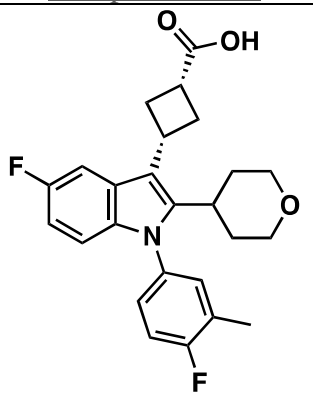
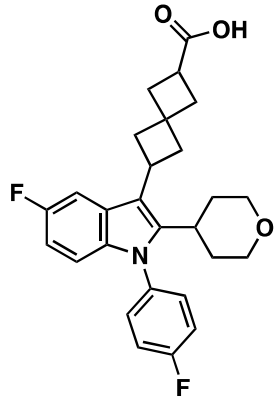
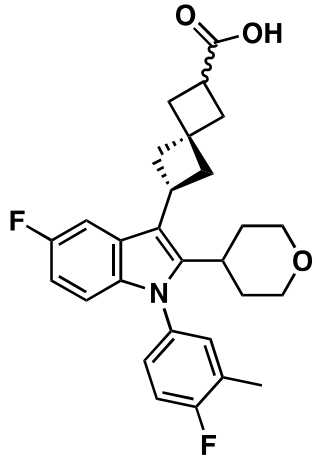
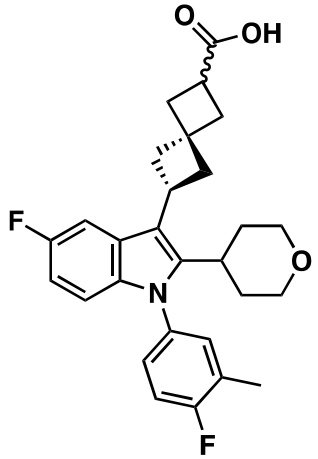
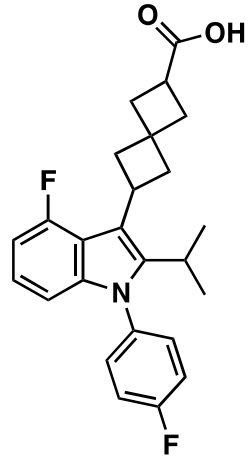
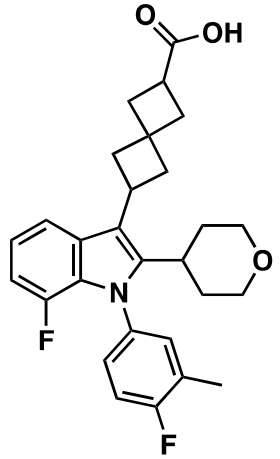
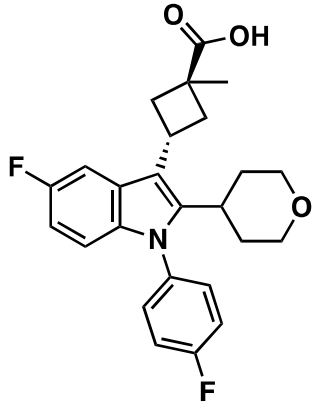
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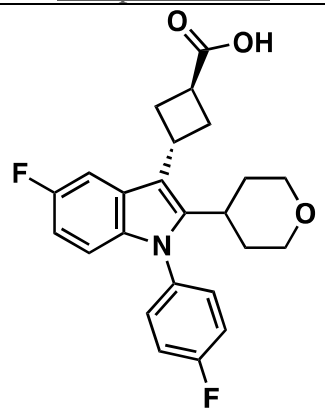
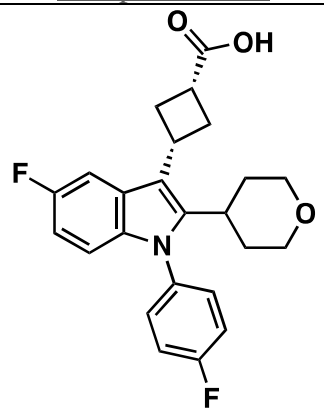
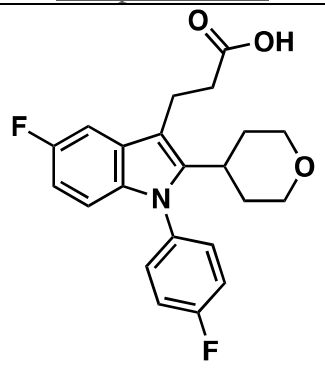
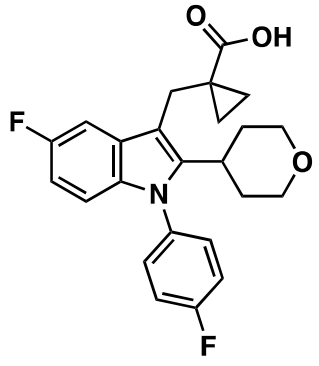
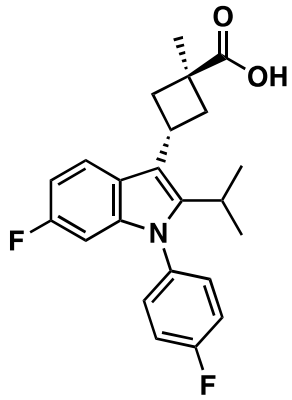
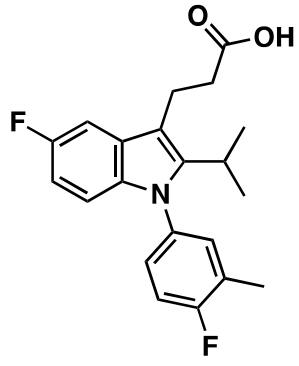
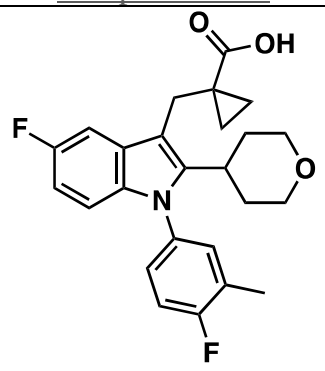
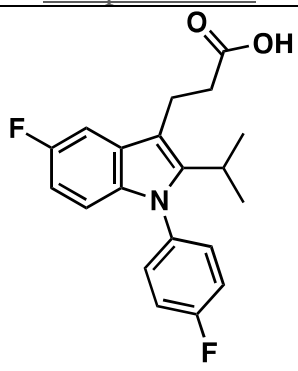
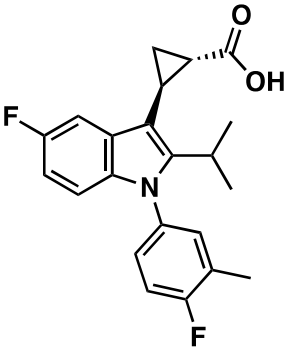
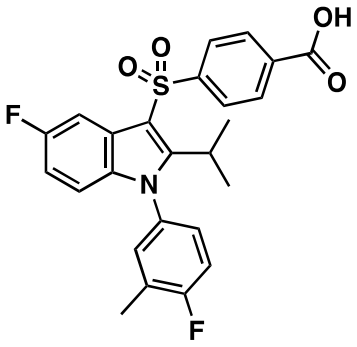
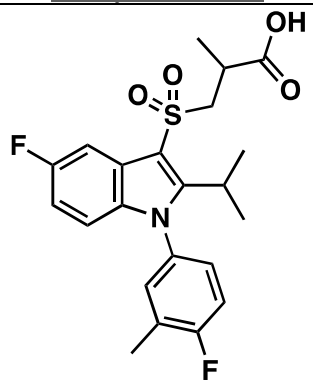
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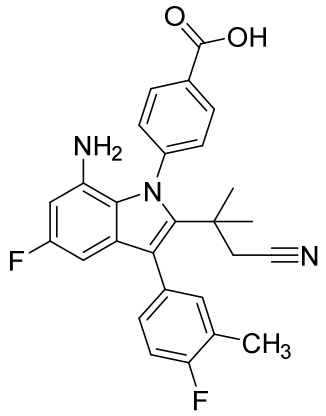
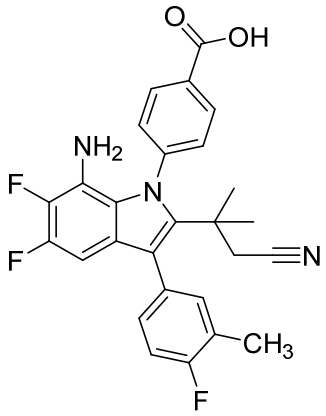
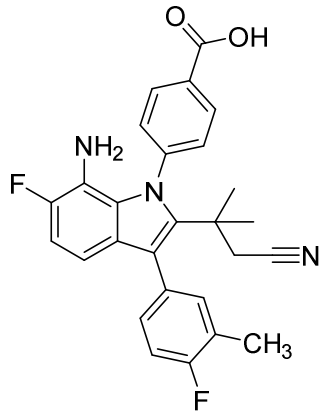
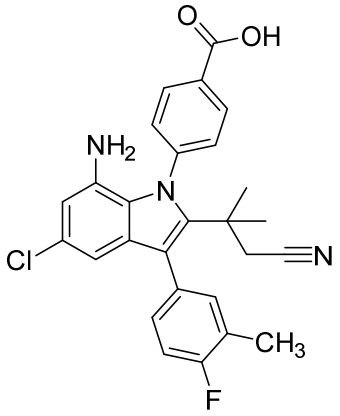
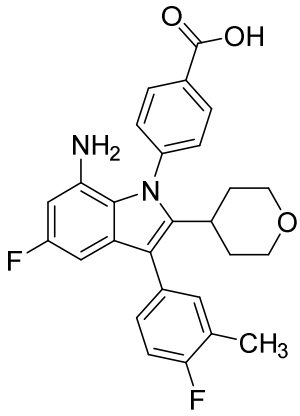
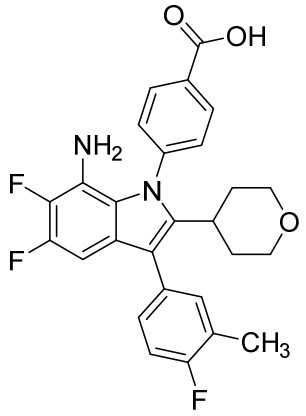
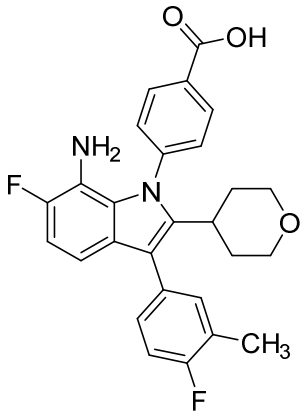
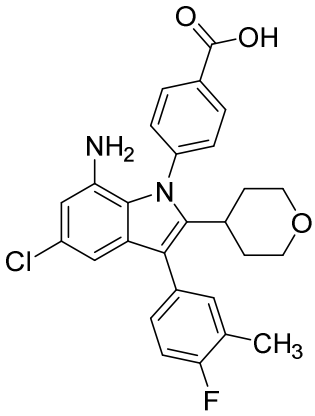
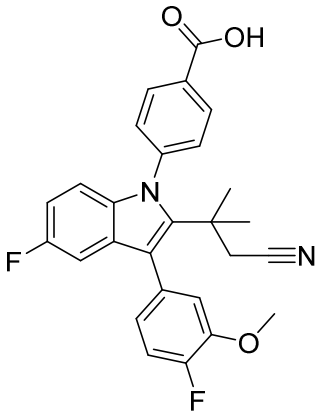
Compound B25


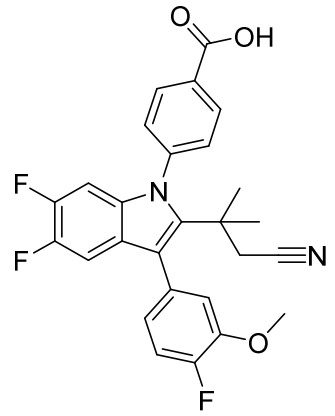
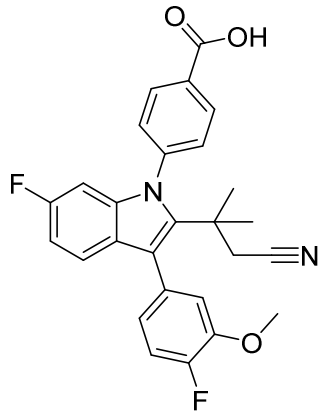
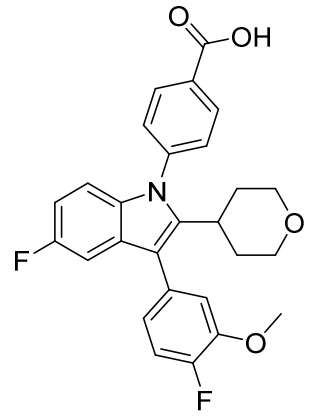
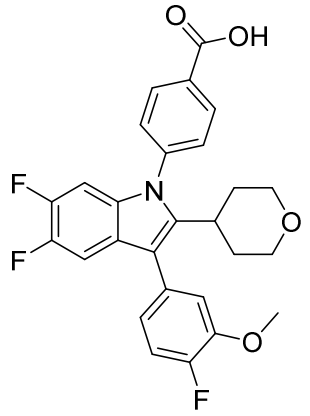
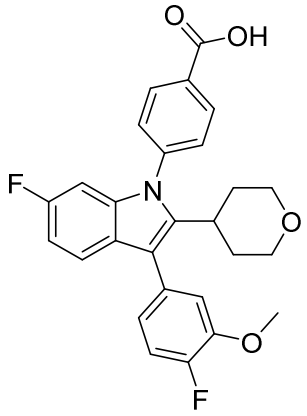
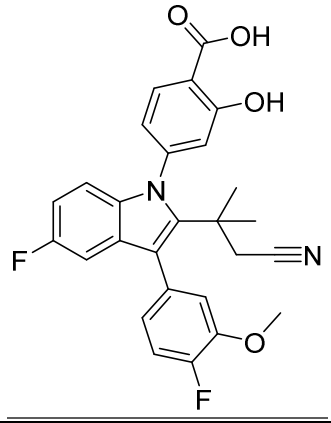
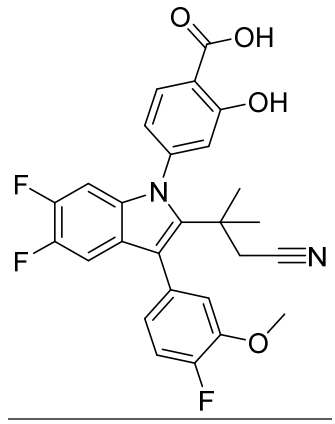
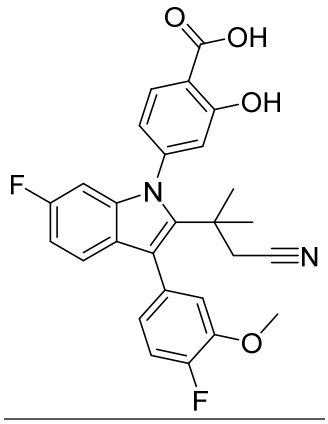
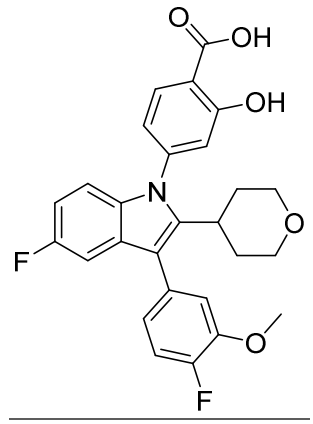
Compound W1	Compound W2	Compound W3
		

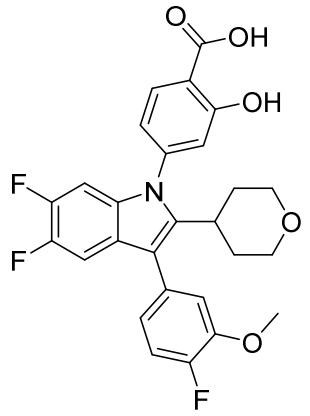
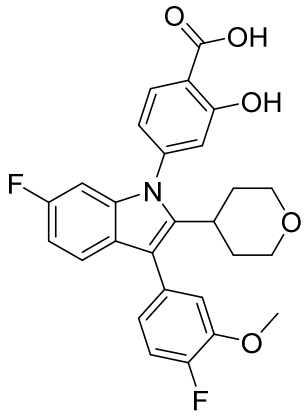
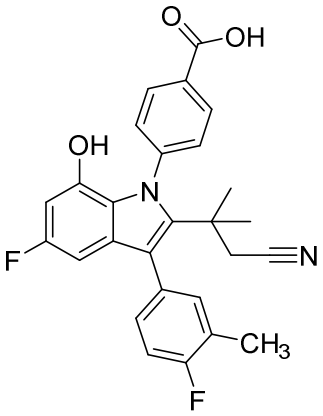
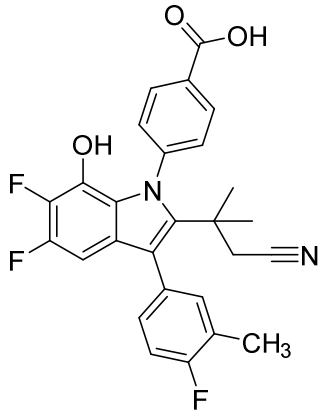
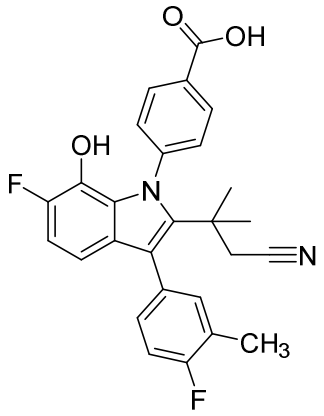
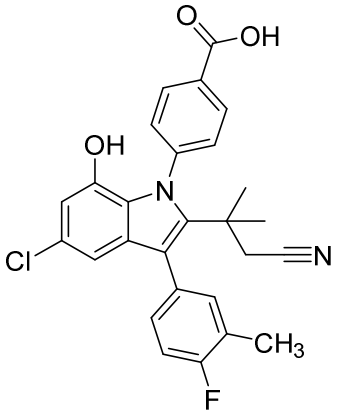
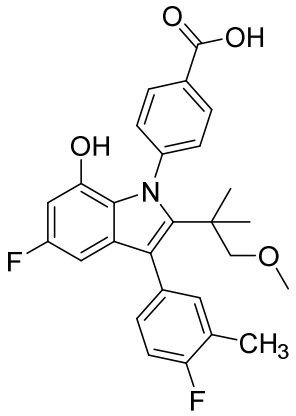
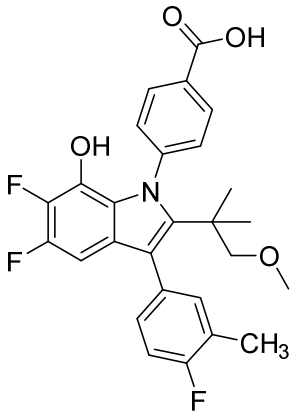
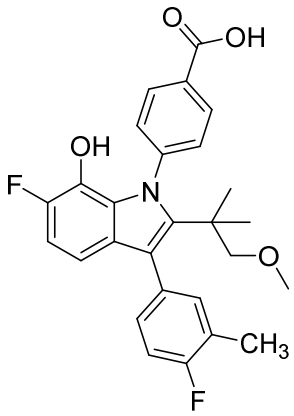
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Compound W7	Compound W8	Compound W9
		
Compound W10	Compound W11	Compound W12
		

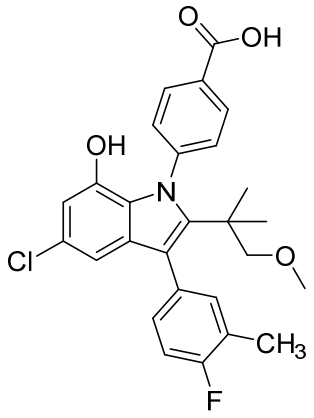
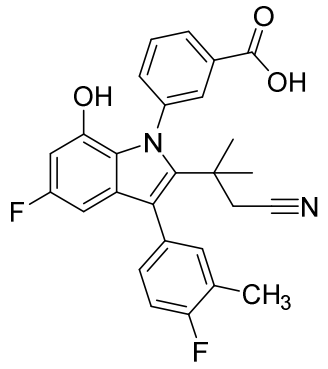
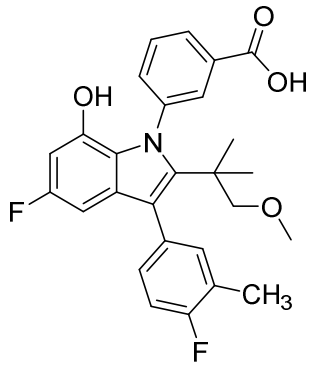
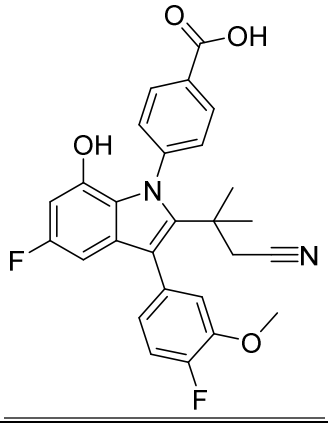
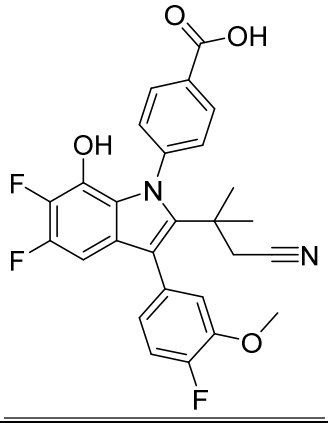
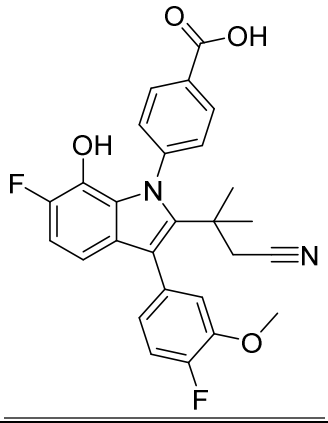
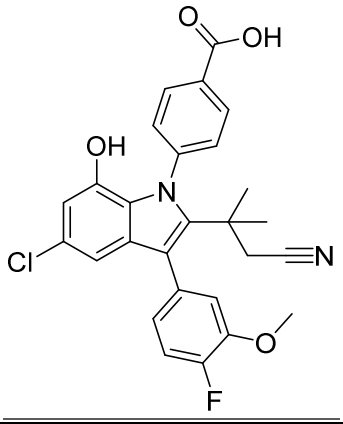
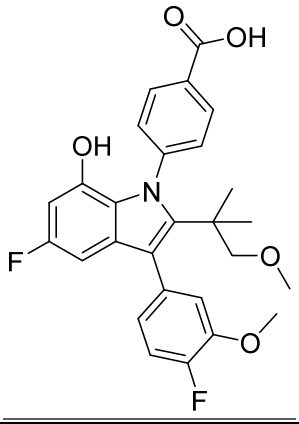
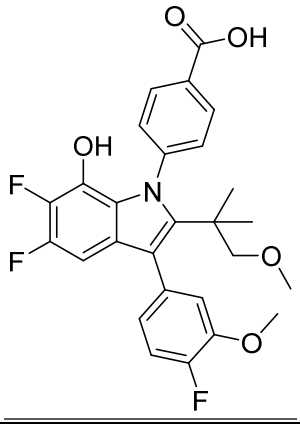
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Compound W16	Compound W17	Compound W18
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Compound W19	Compound W20	Compound W21
		

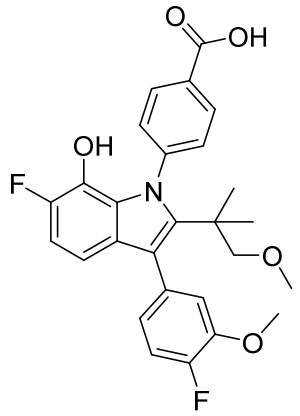
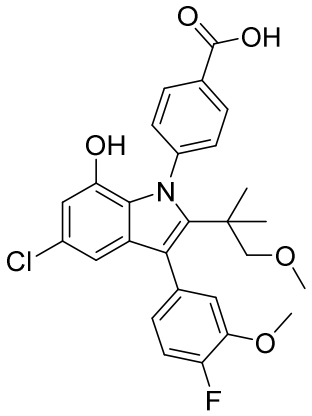
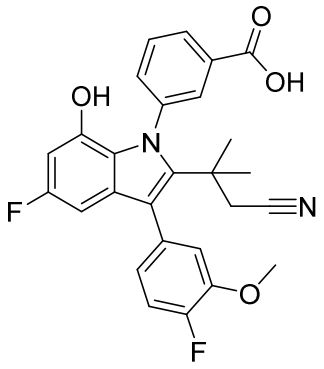
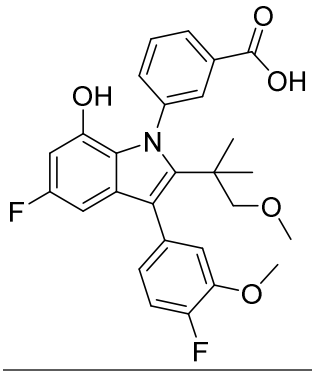
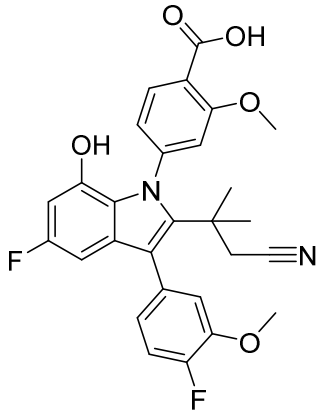
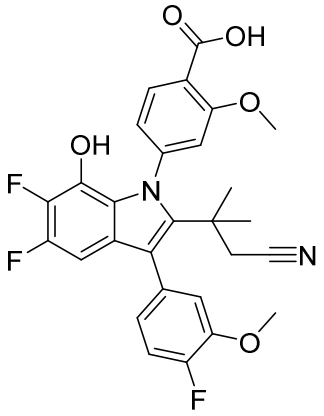
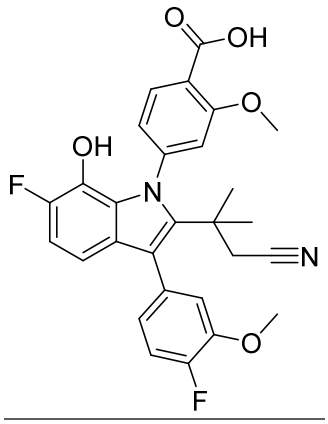
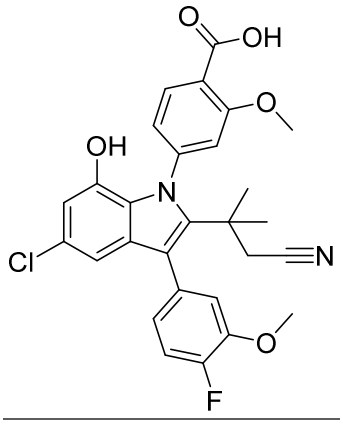
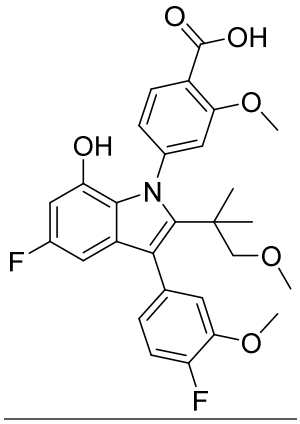
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Compound W25	Compound W26	Compound W27
		
Compound W28	Compound W29	Compound W30
		
Compound W31	Compound W32	
		

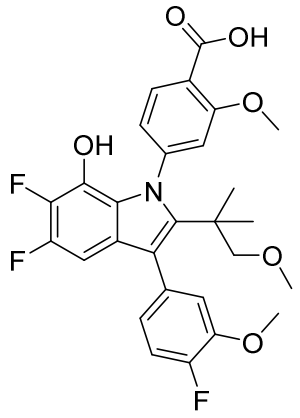
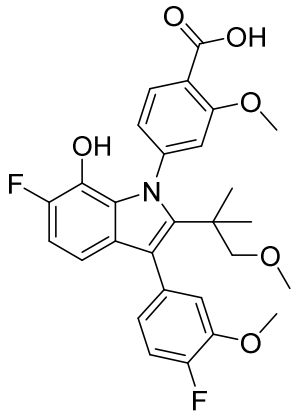
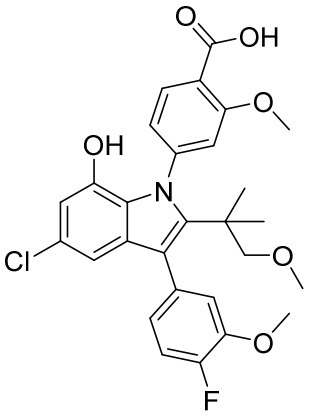
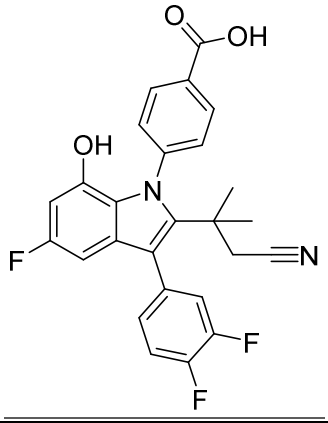
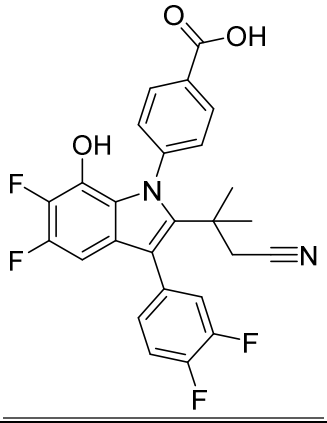
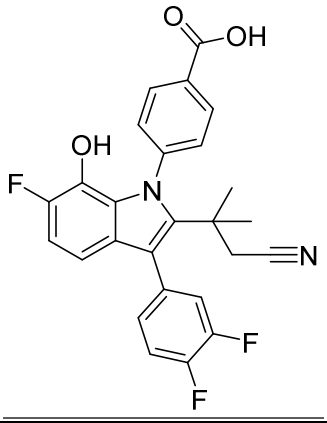
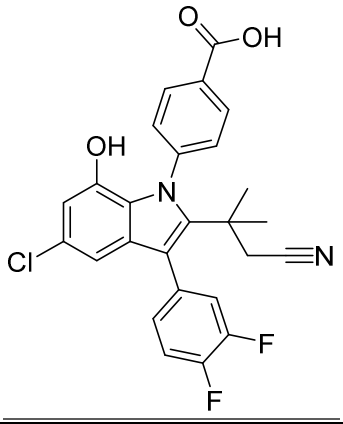
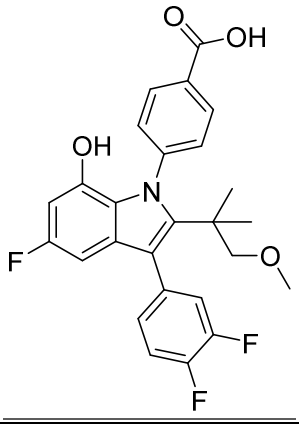
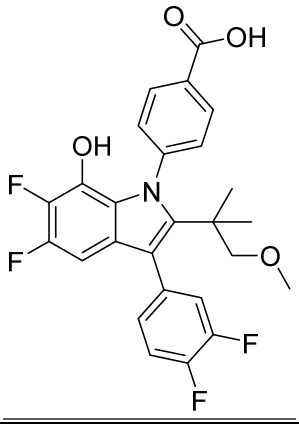
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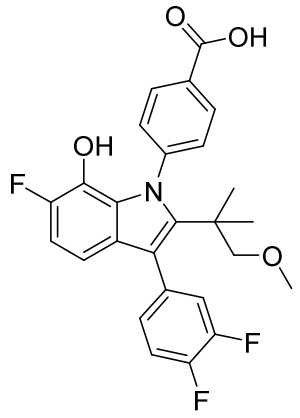
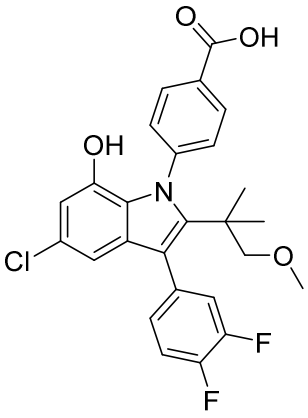
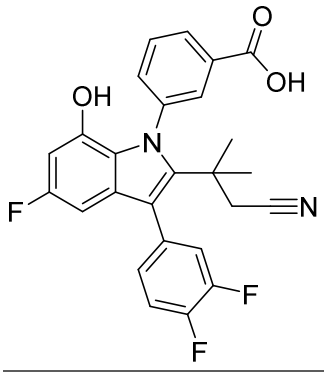
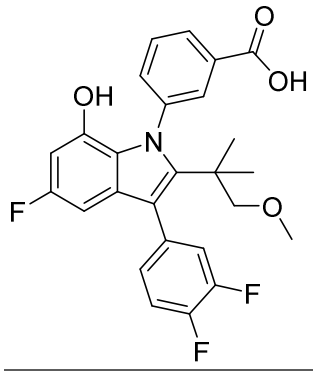
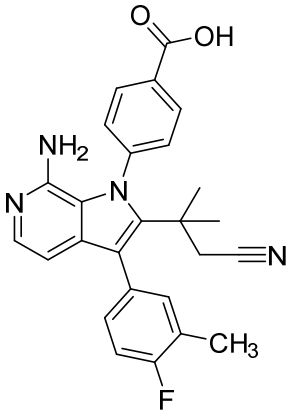
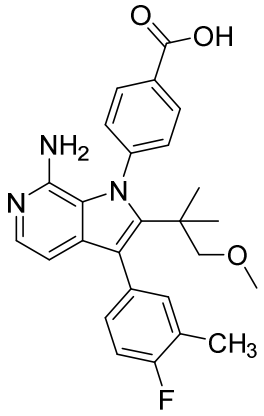
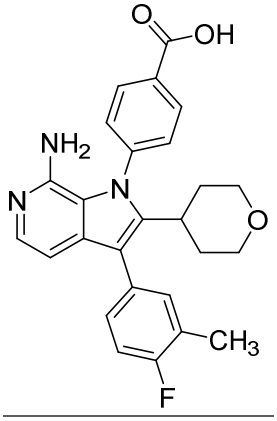
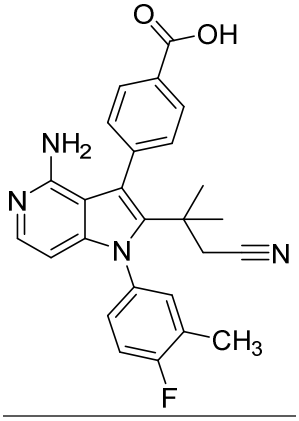
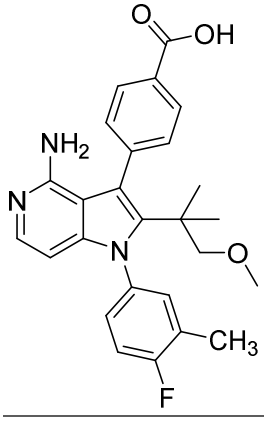
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Compound P13	Compound P14	Compound P15
		
Compound P16	Compound P17	Compound P18
		

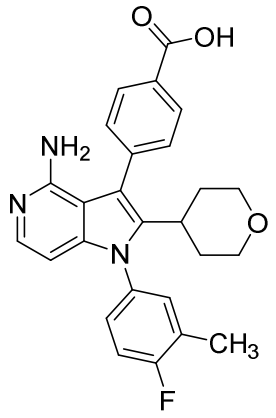
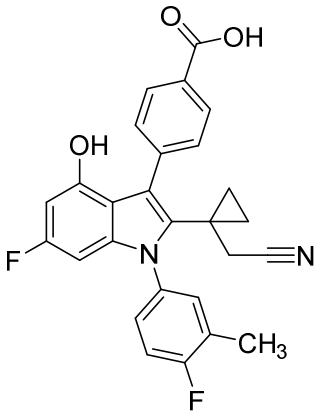
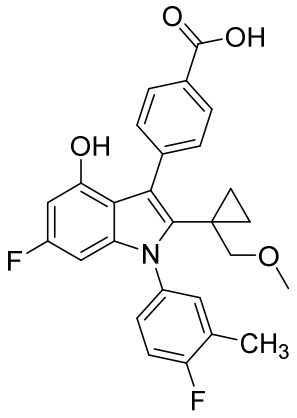
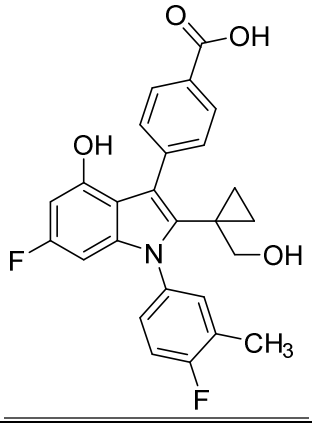
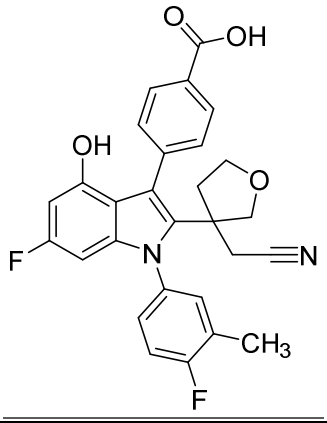
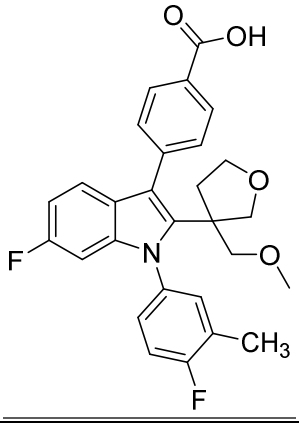
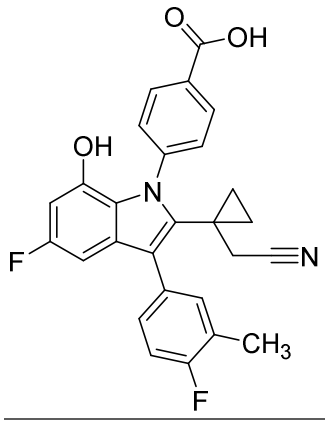
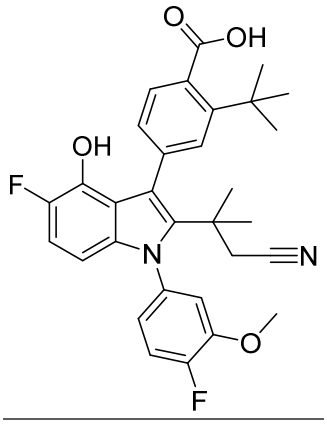
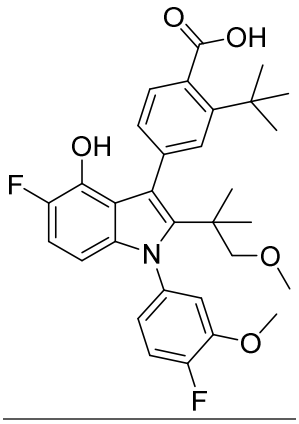
Compound P19	Compound P20	Compound P21
		
Compound P22	Compound P23	Compound P24
		
Compound P25	Compound P26	Compound P27
		

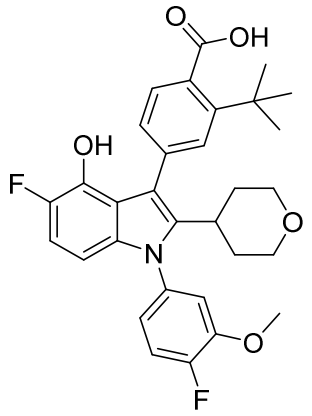
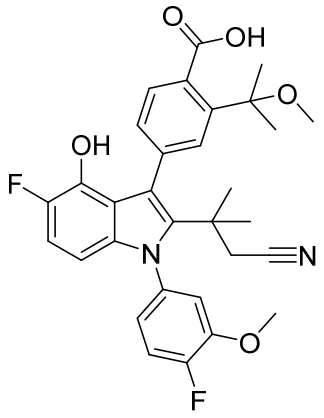
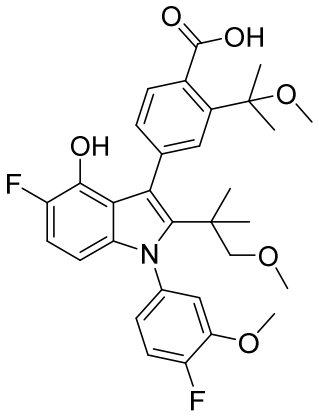
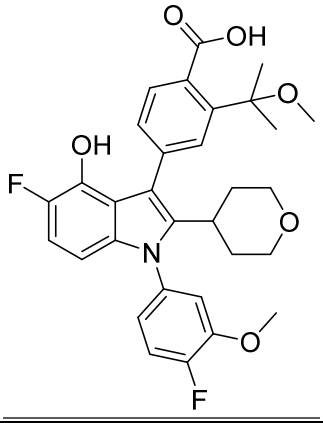
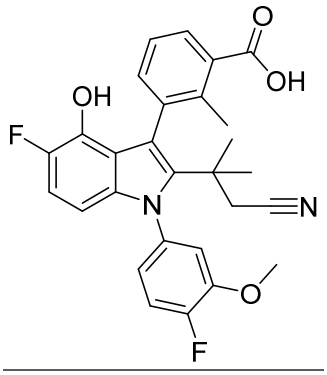
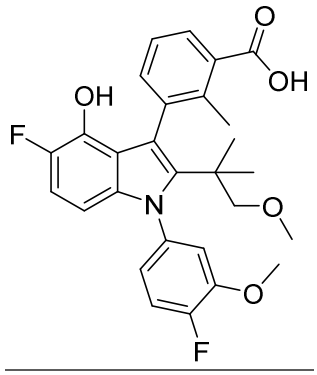
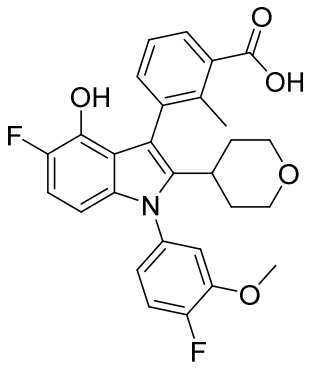
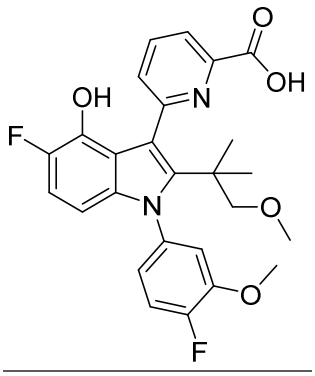
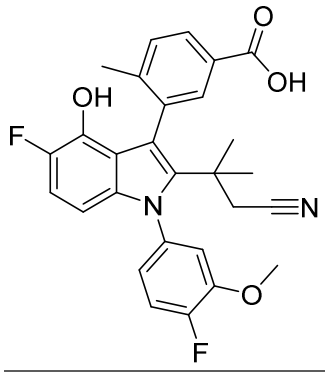
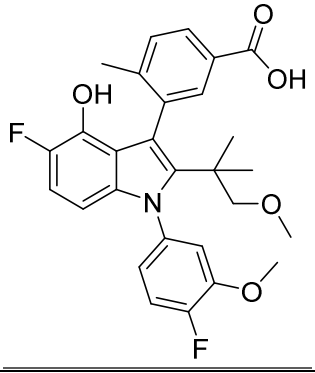
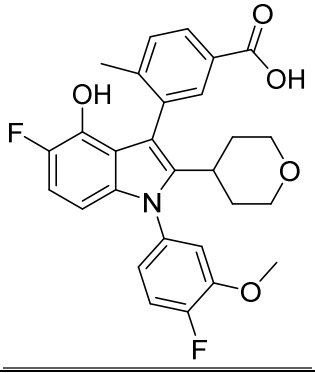
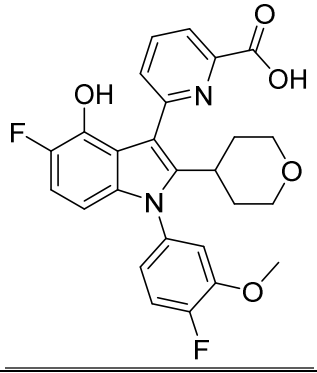
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Compound P31	Compound P32	Compound P33
		
Compound P34	Compound P35	Compound P36
		

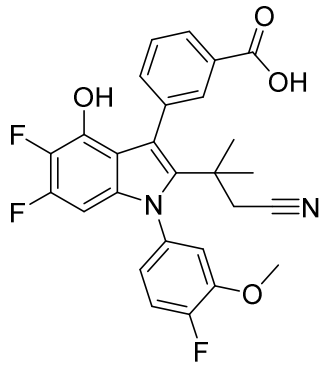
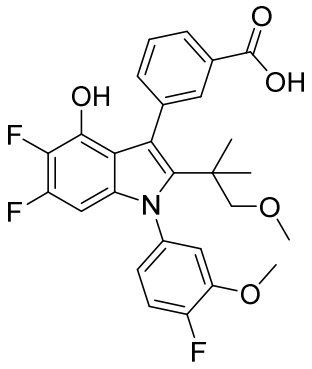
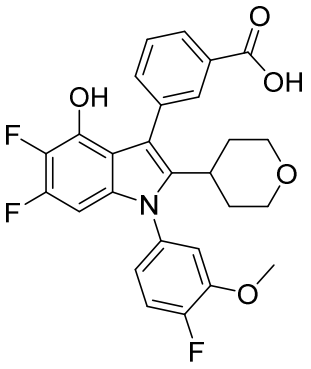
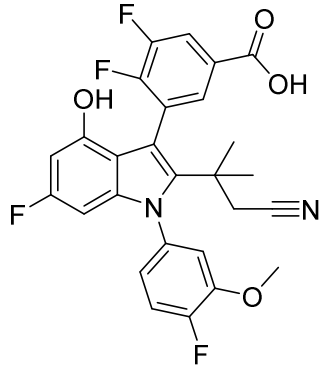
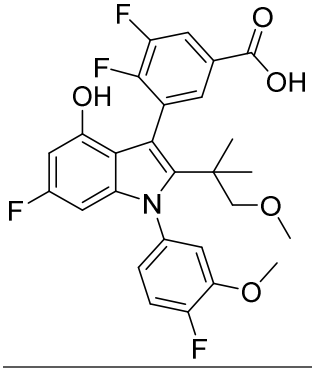
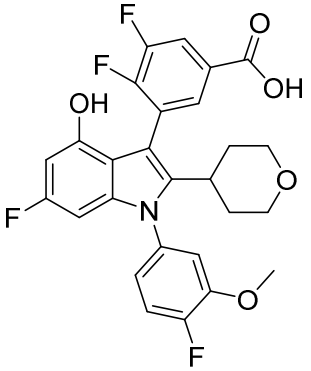
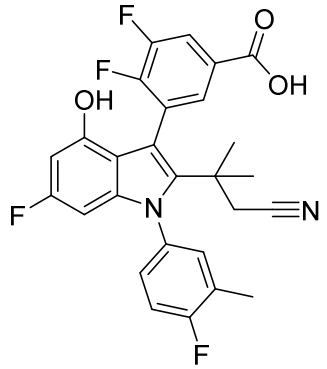
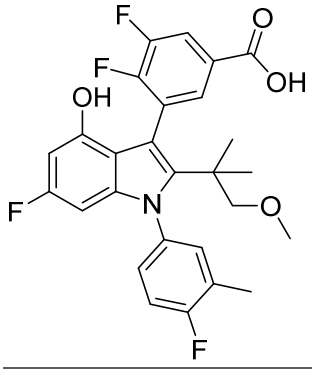
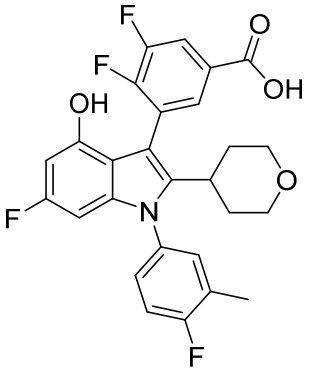
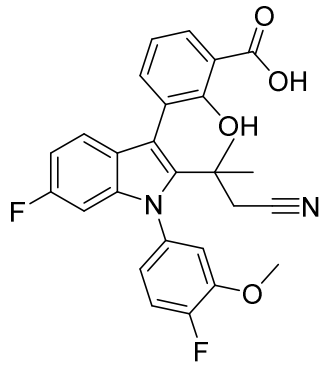
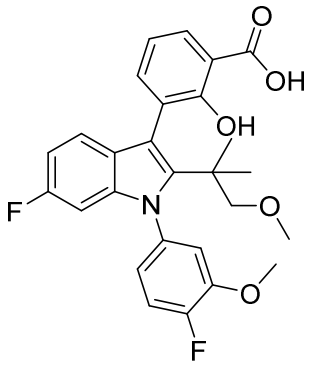
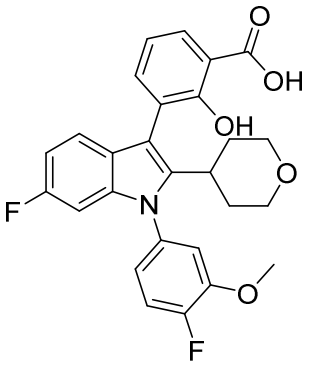
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Compound P43	Compound P44	Compound P45
		

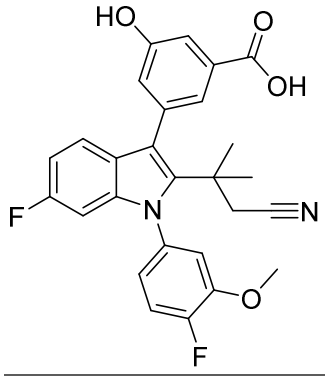
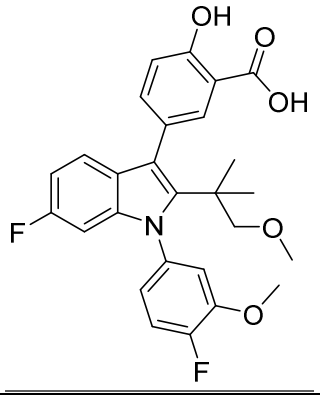
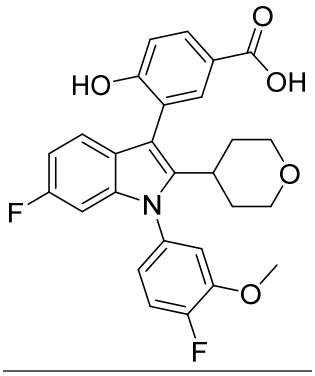
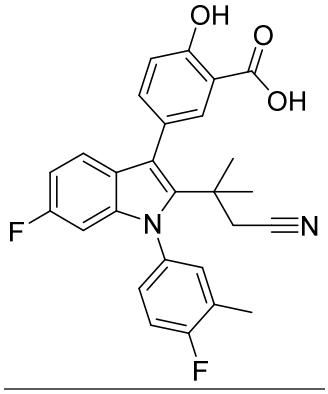
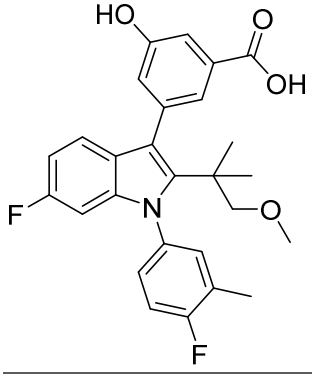
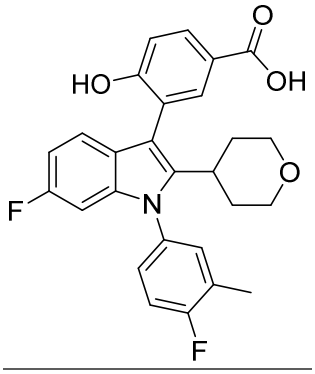
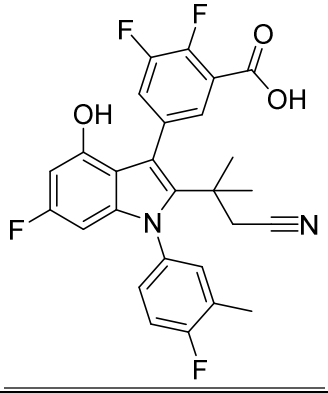
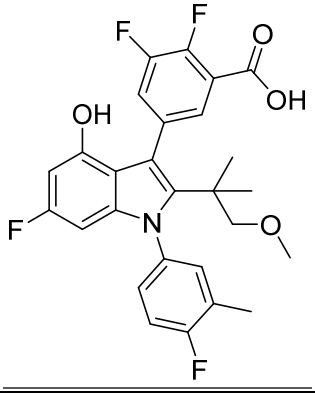
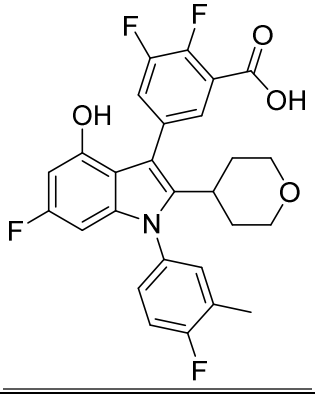
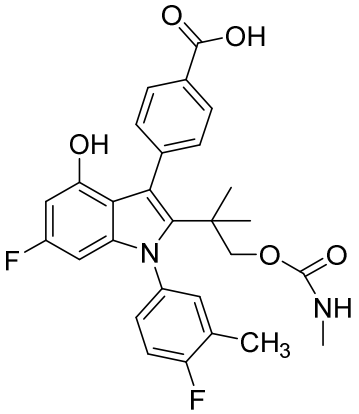
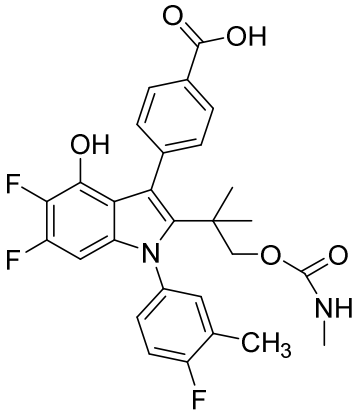
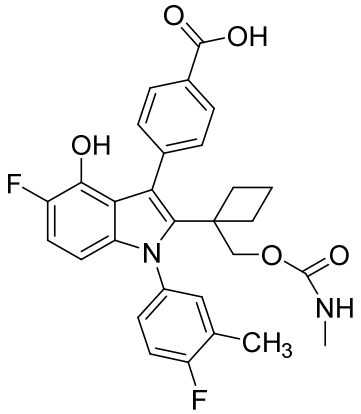
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Compound P49	Compound P50	Compound P51
		
Compound P52	Compound P53	Compound P54
		

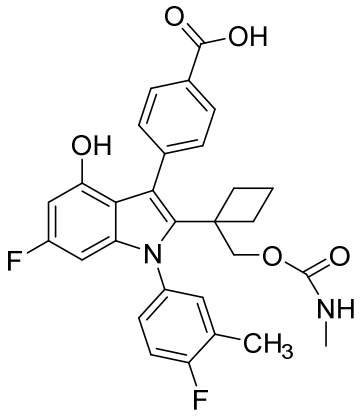
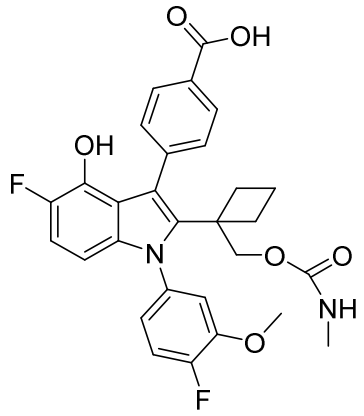
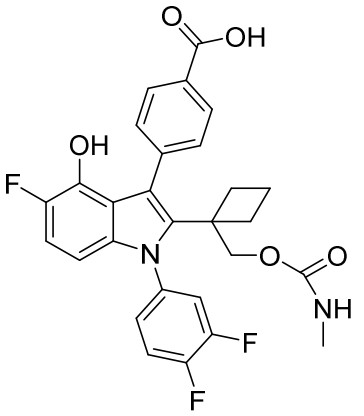
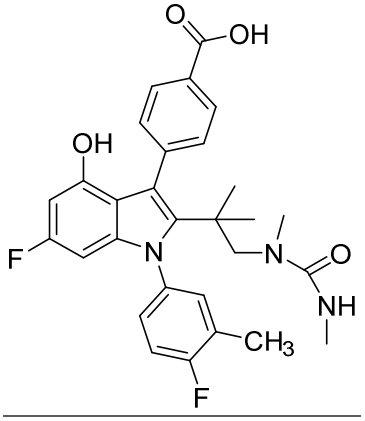
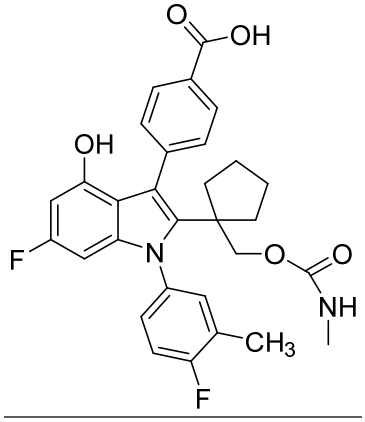
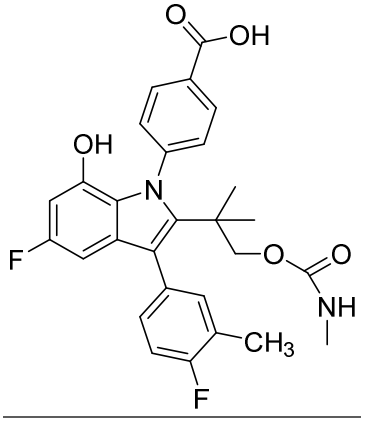
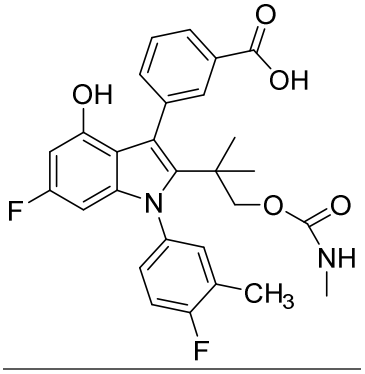
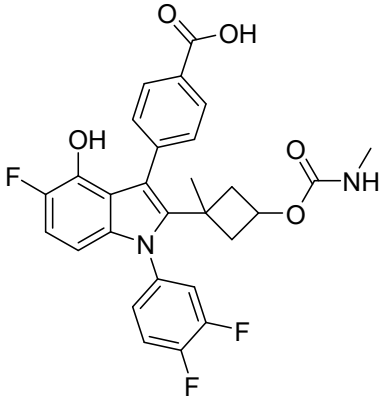
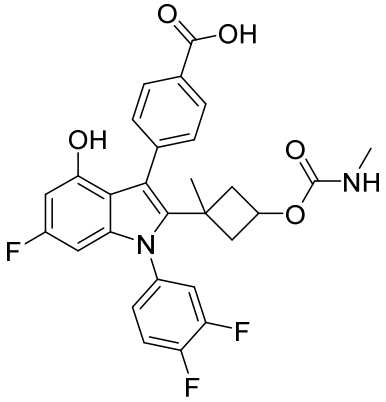
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Compound P58	Compound P59	Compound P60
		
Compound P61	Compound P62	Compound P63
		

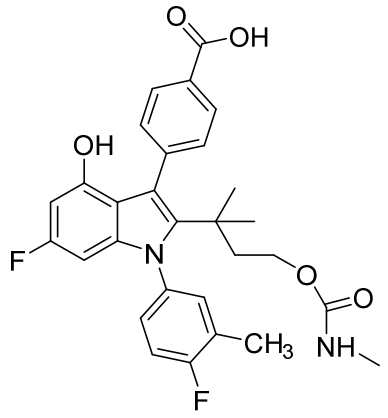
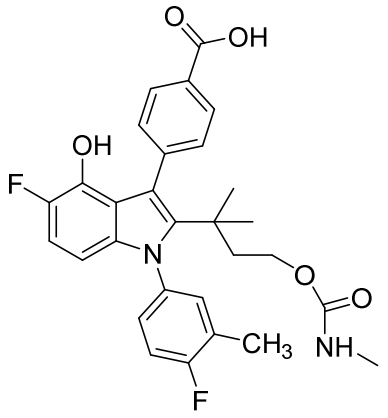
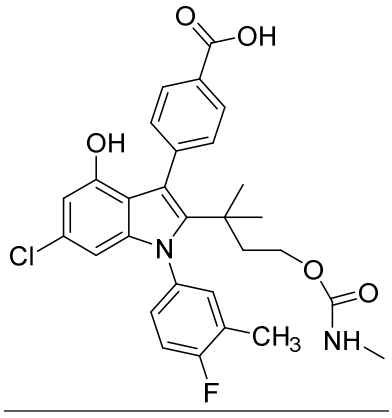
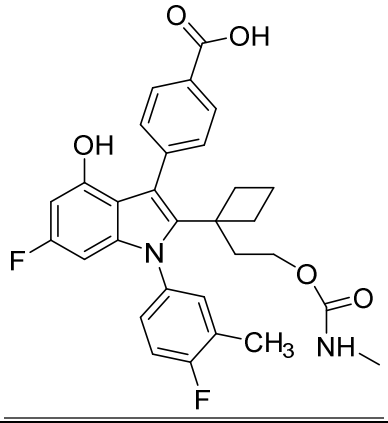
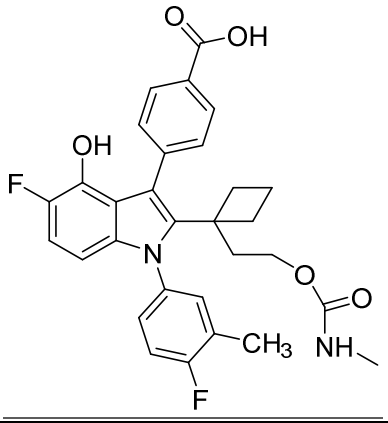
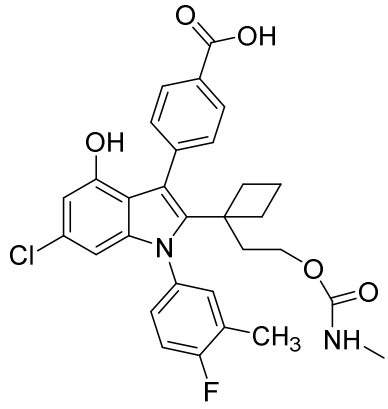
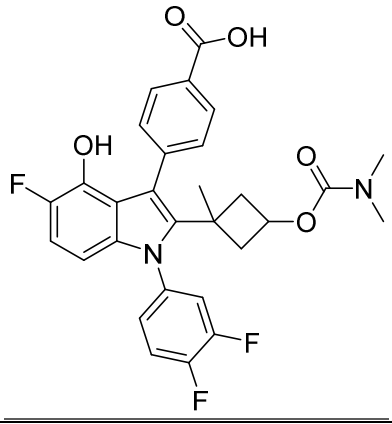
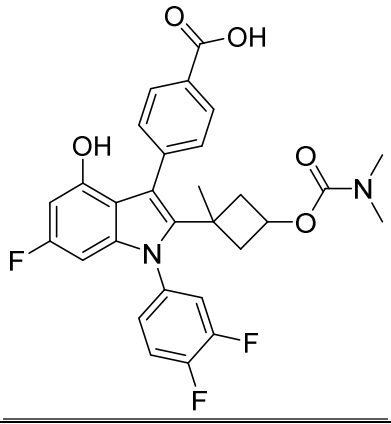
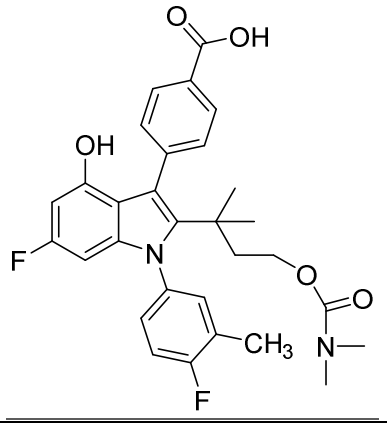
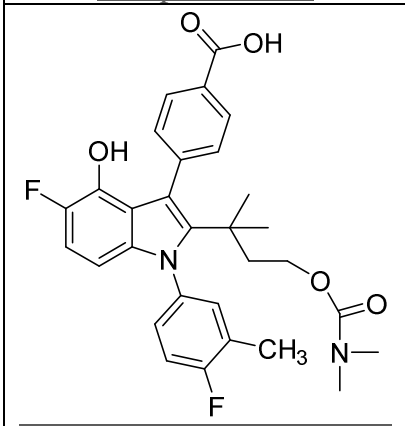
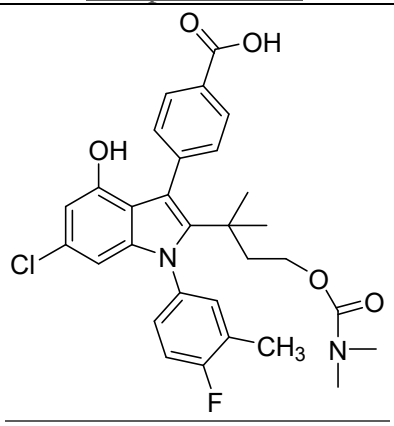
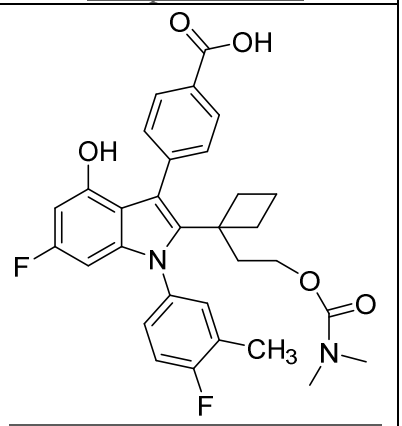
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Compound P67	Compound P68	Compound P69
		
Compound P70	Compound P71	Compound P72
		

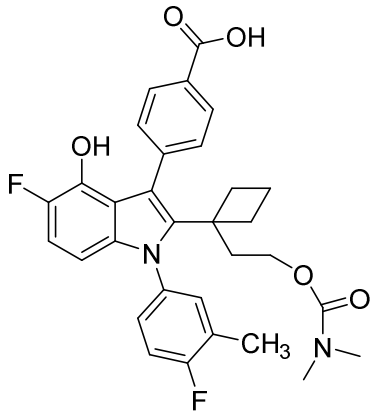
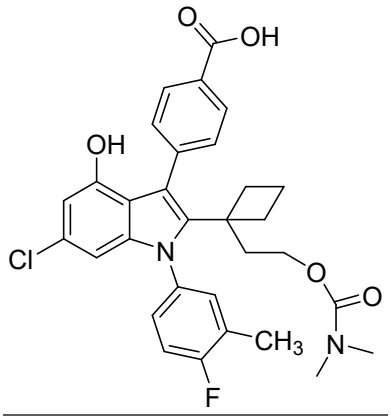
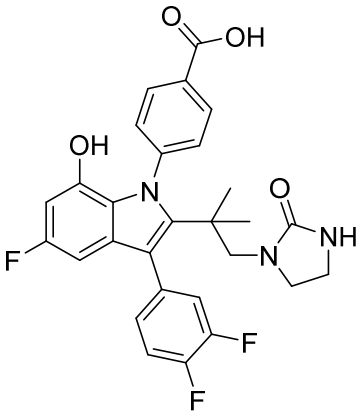
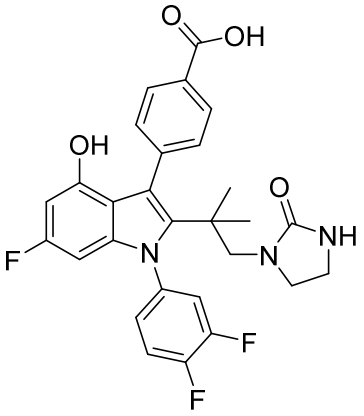
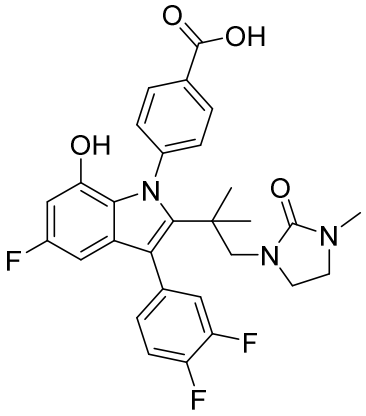
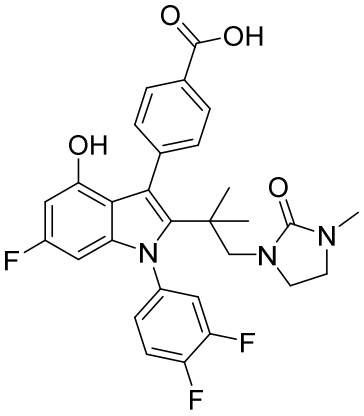
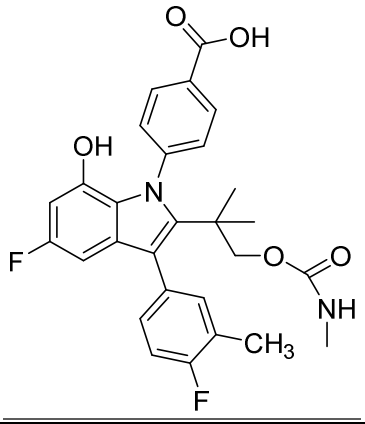
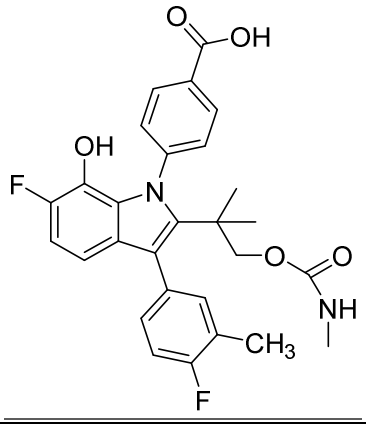
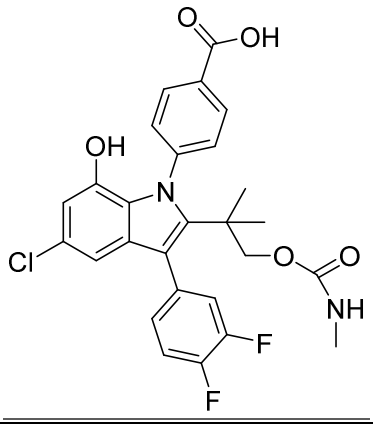
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Compound P79	Compound P80	Compound P81
		
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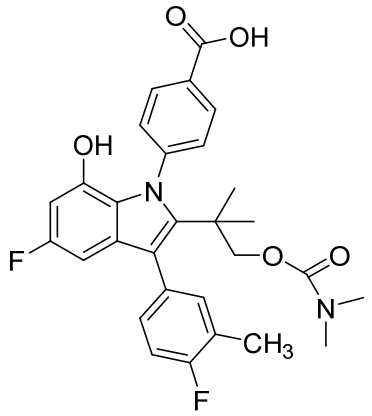
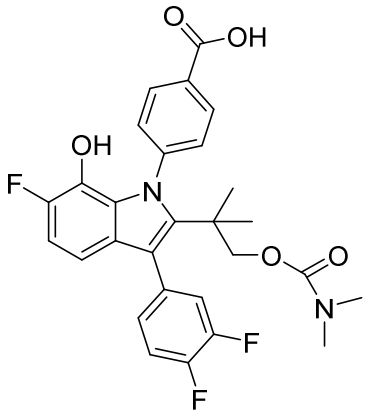
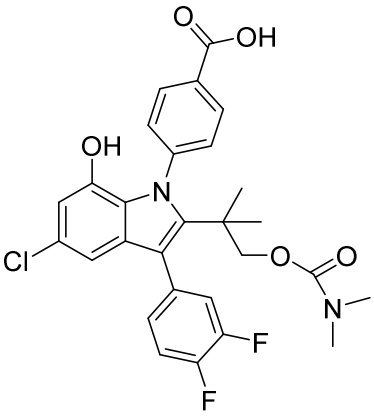
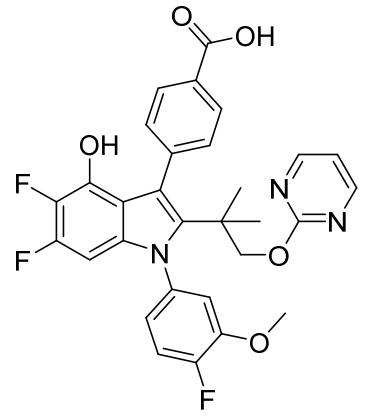
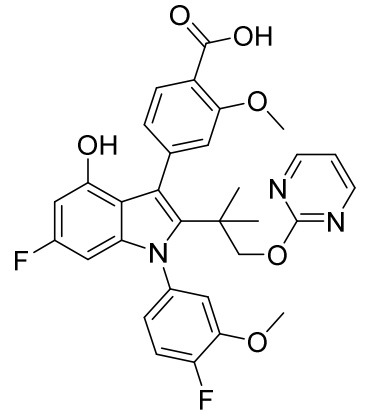
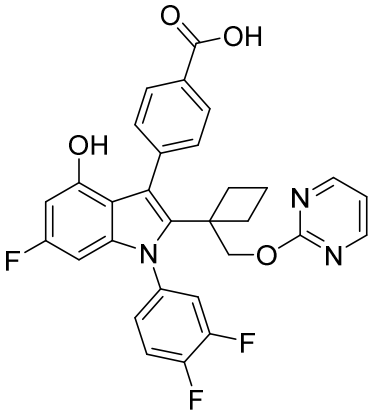
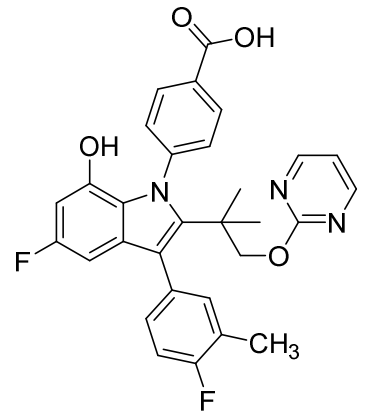
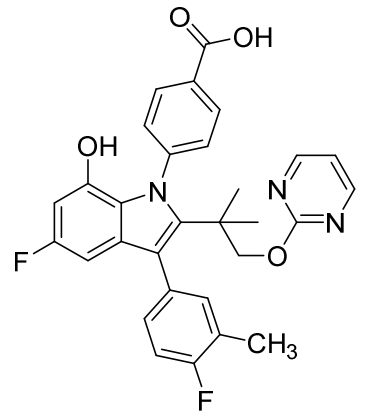
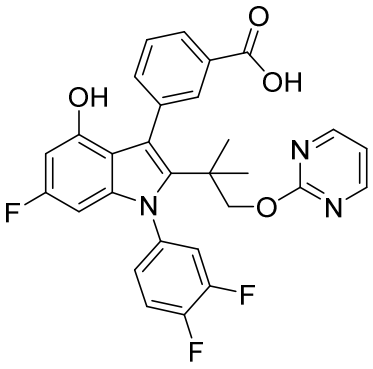
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Compound P88	Compound P89	Compound P90
		
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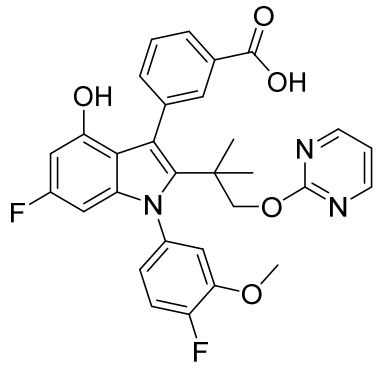
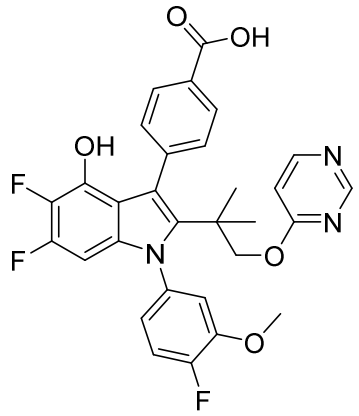
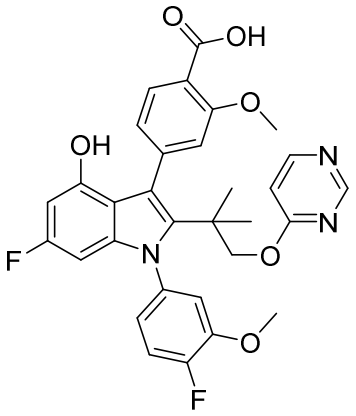
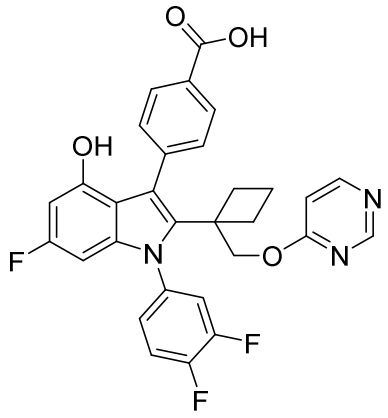
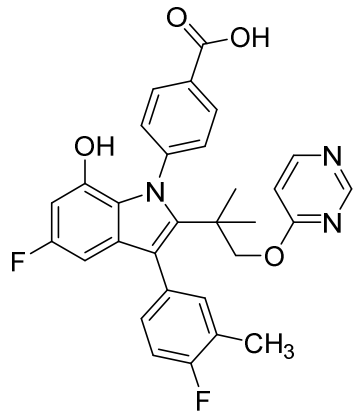
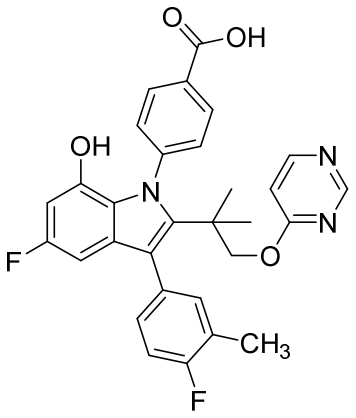
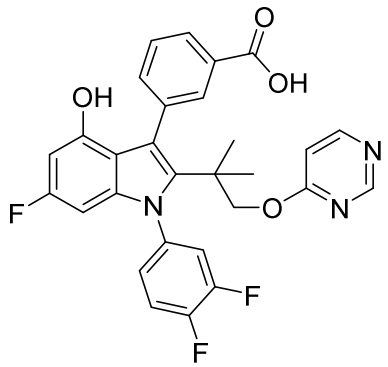
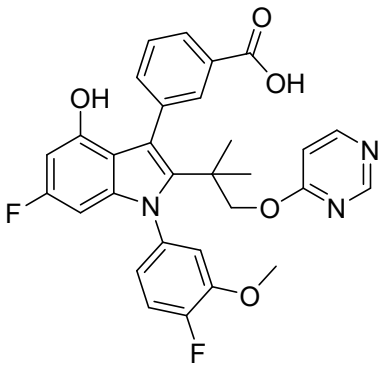
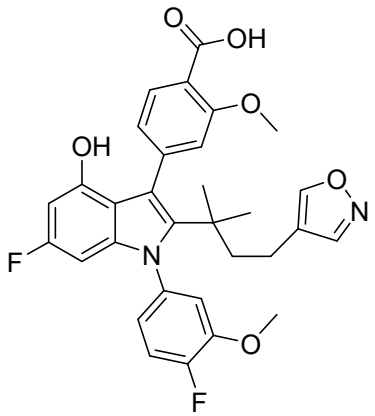
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Compound P103	Compound P104	Compound P105
		
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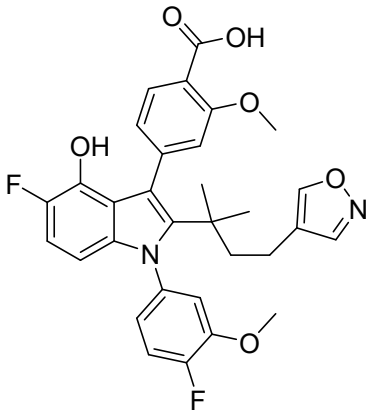
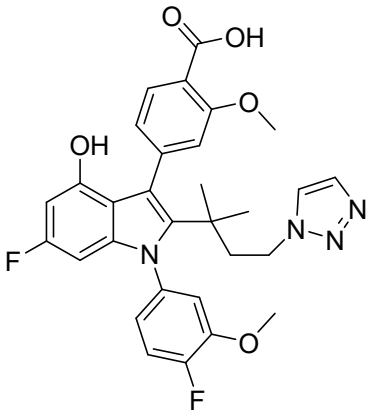
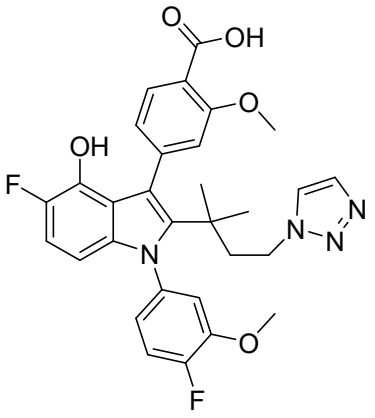
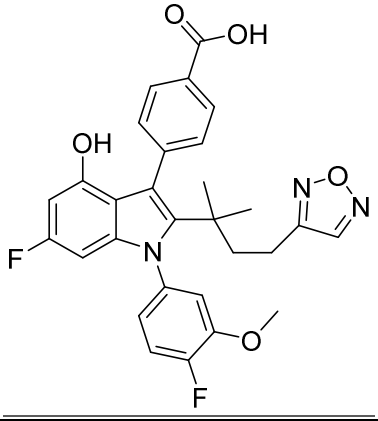
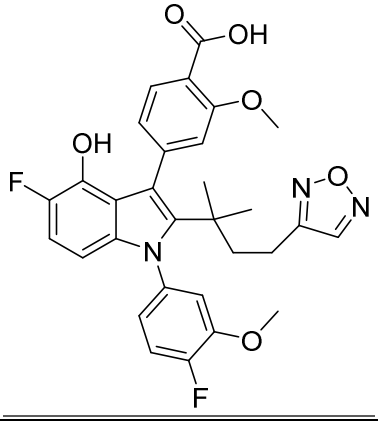
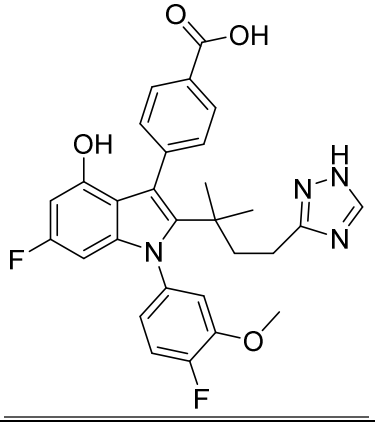
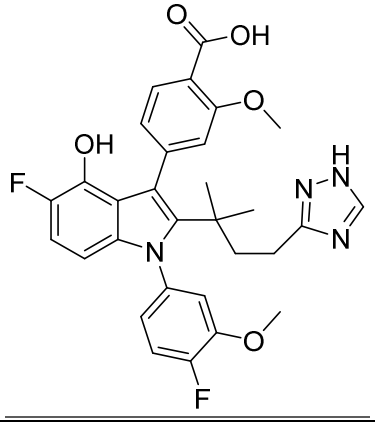
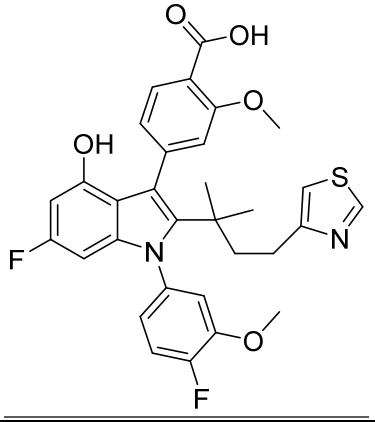
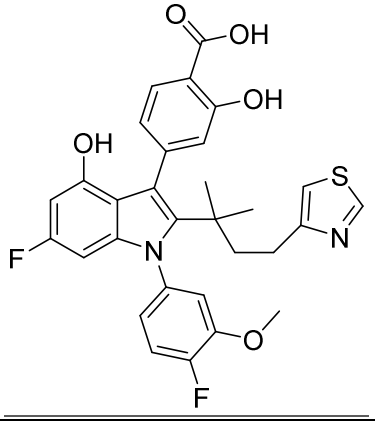
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Compound P112	Compound P113	Compound P114
		
Compound P115	Compound P116	Compound P117
		
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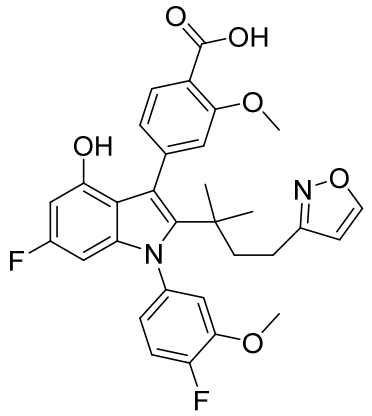
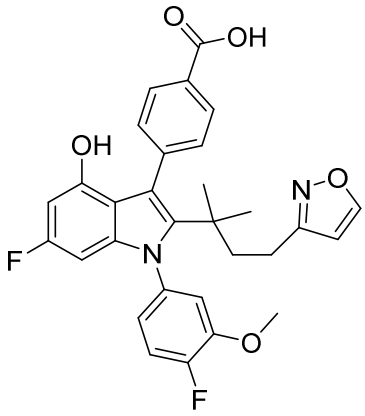
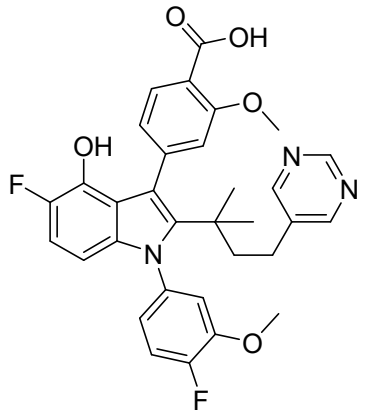
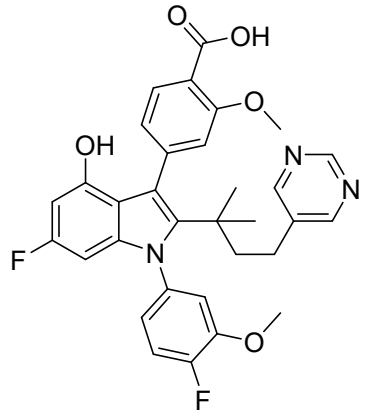
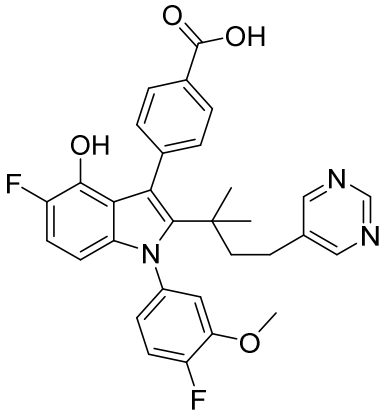
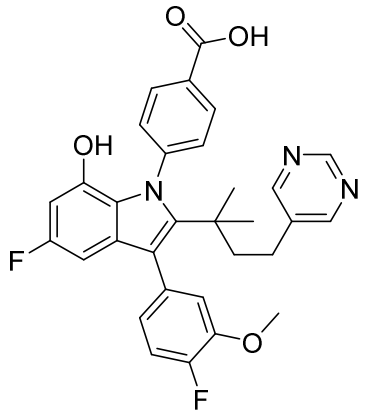
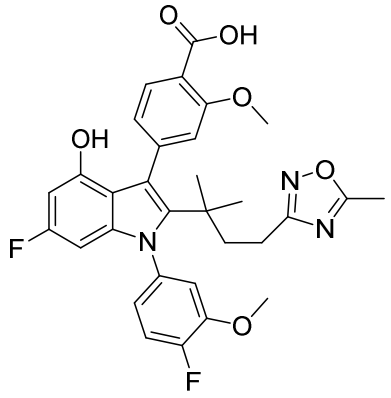
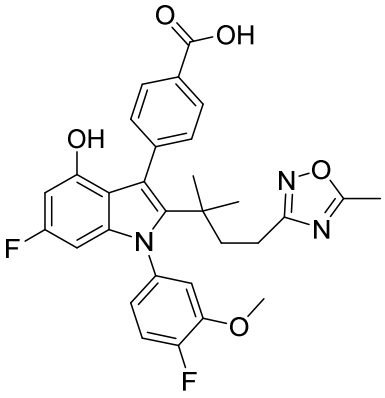
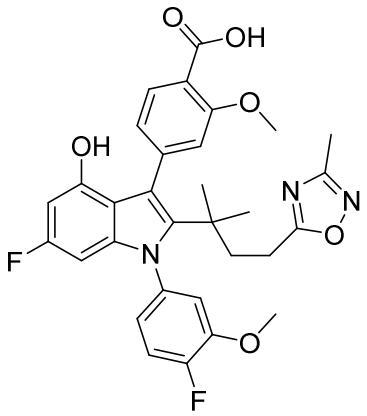
		
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Compound P124	Compound P125	Compound P126
		
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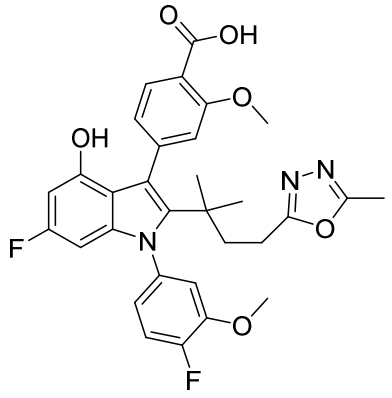
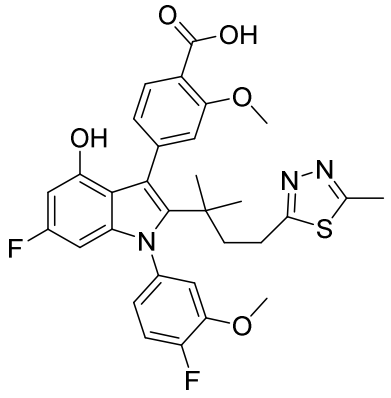
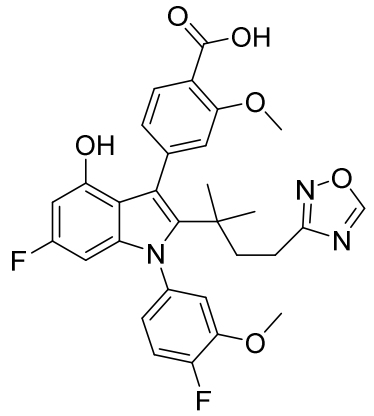
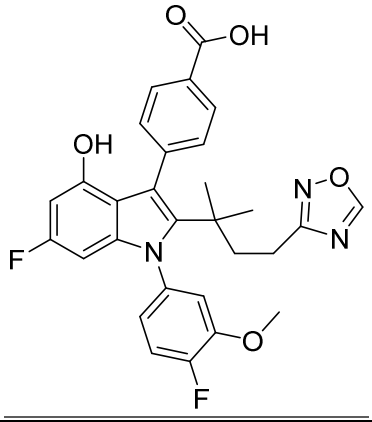
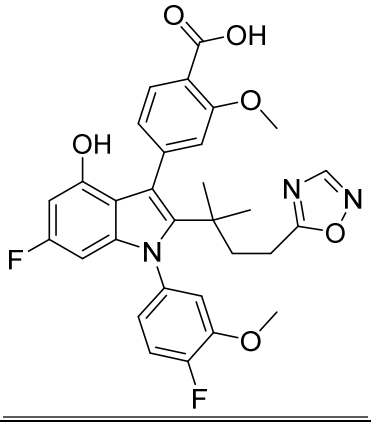
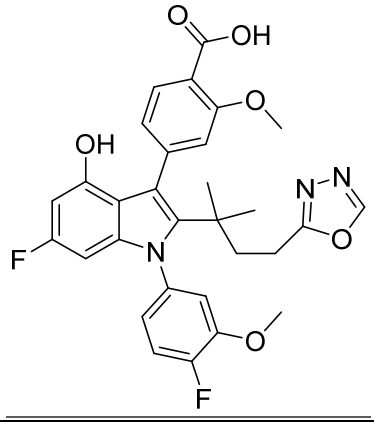
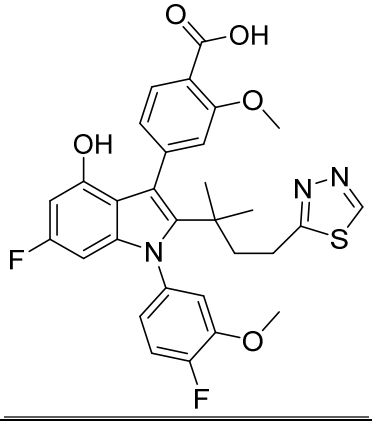
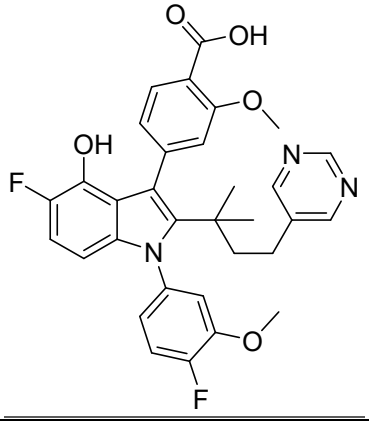
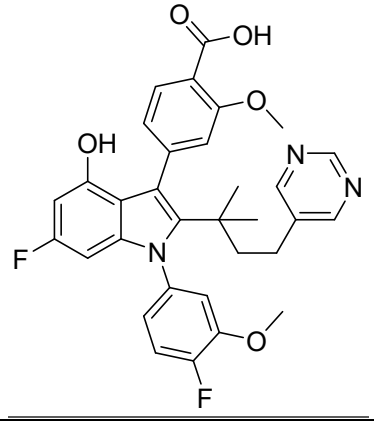
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Compound P133	Compound P134	Compound P135
		
Compound P136	Compound P137	Compound P138
		

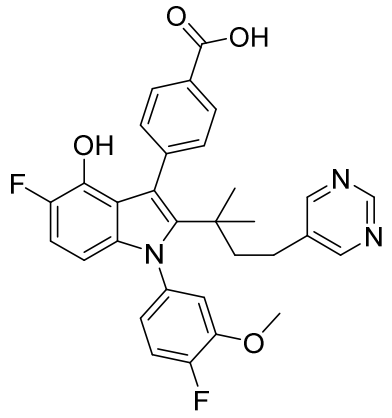
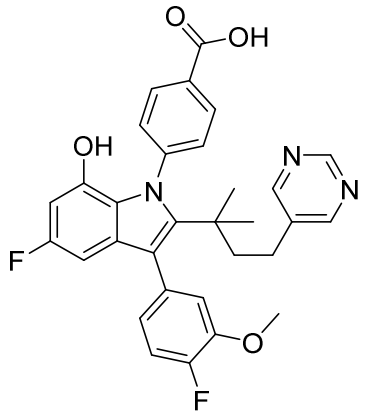
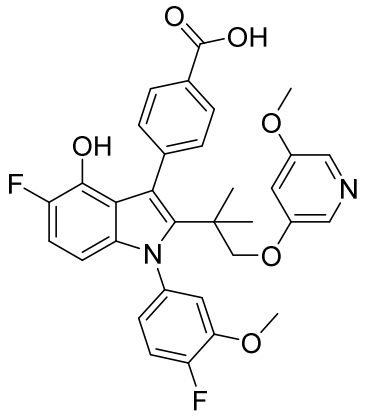
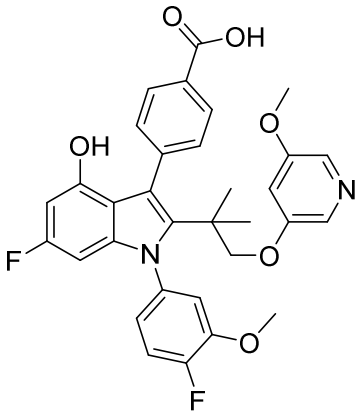
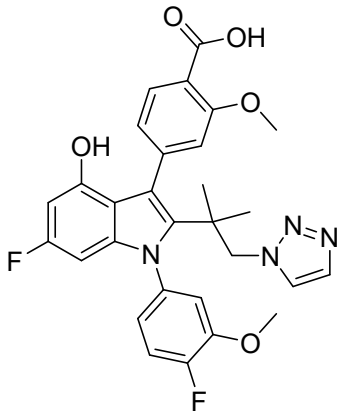
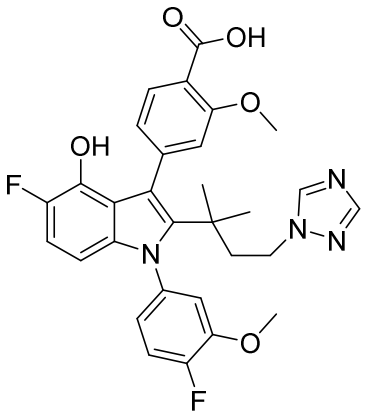
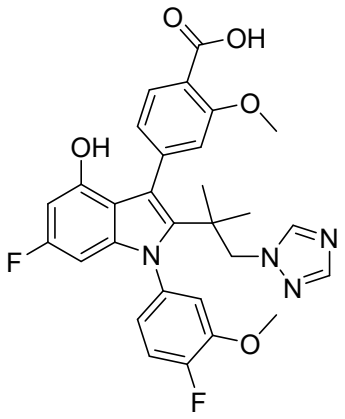
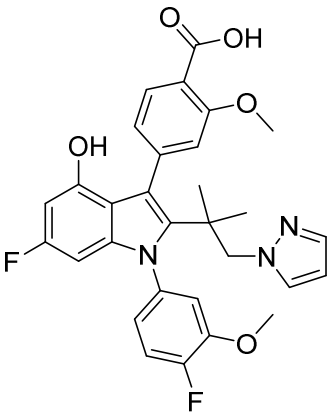
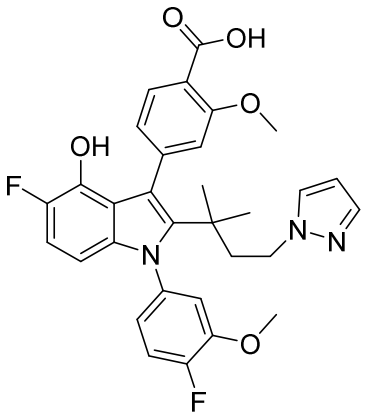
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Compound P142	Compound P143	Compound P144
		
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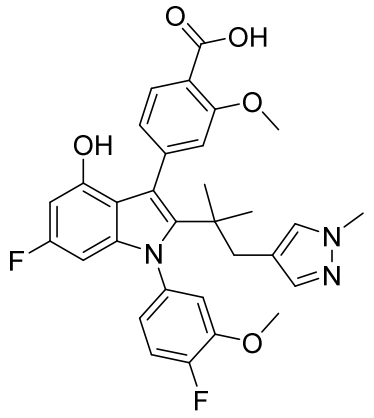
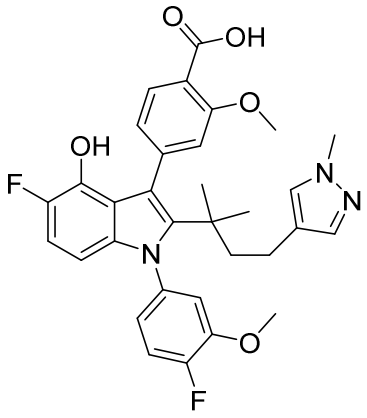
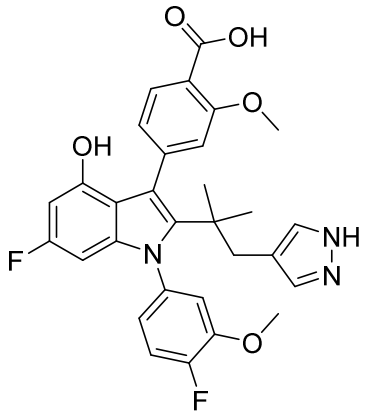
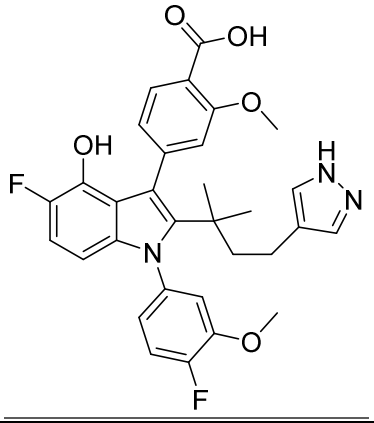
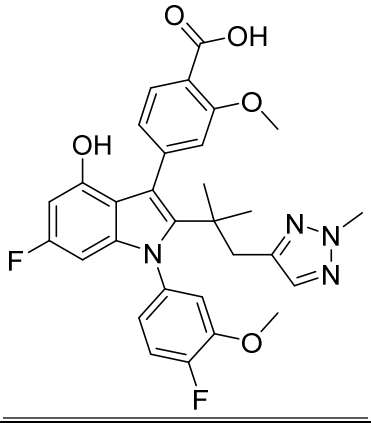
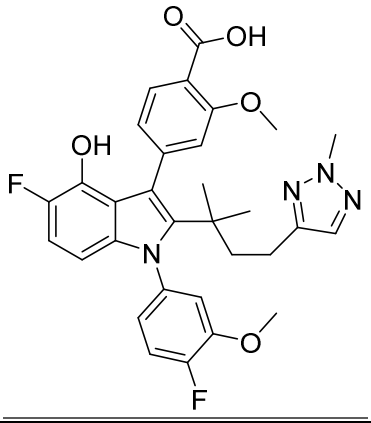
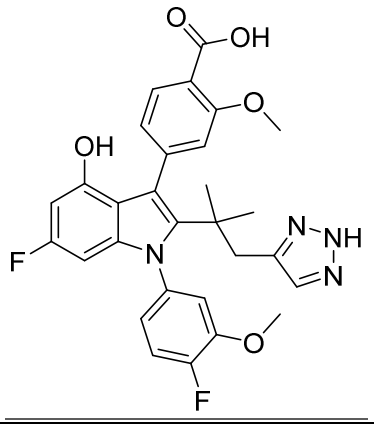
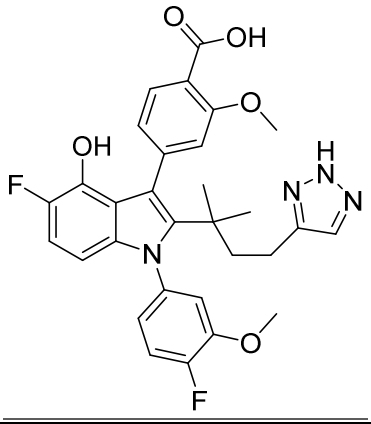
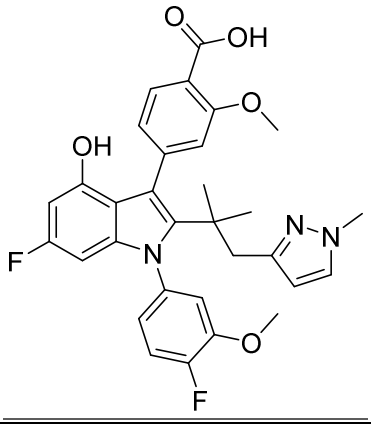
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Compound P151	Compound P152	Compound P153
		
Compound P154	Compound P155	Compound P156
		

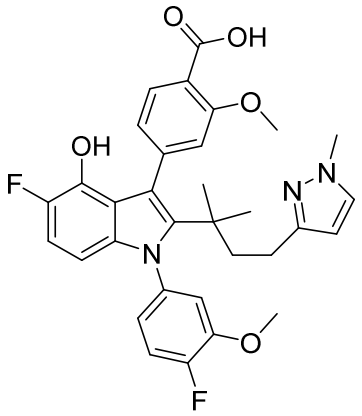
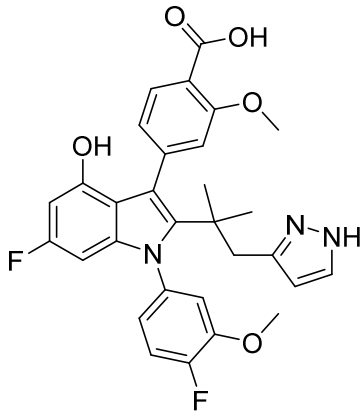
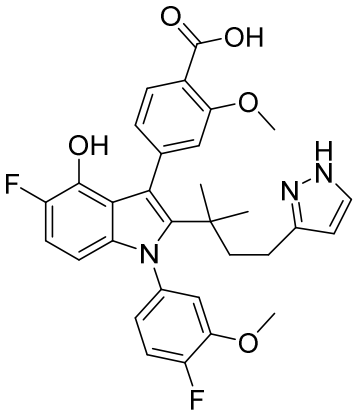
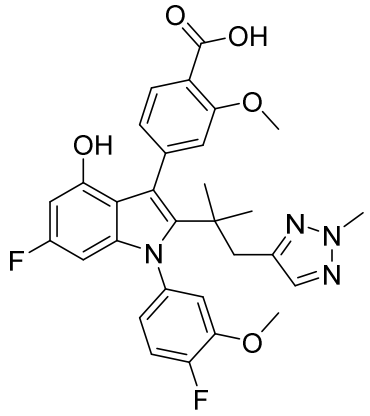
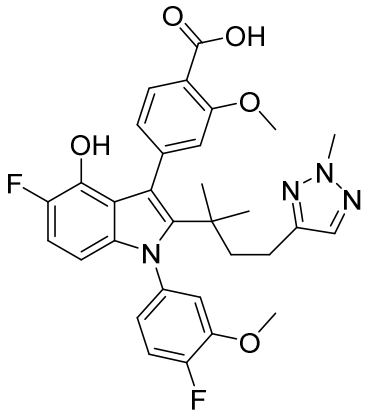
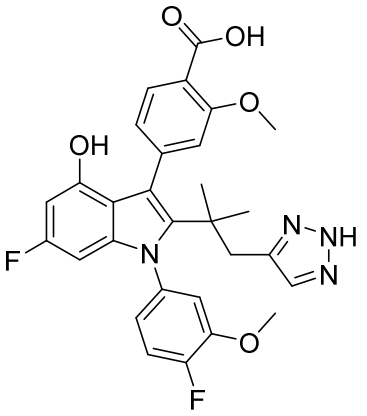
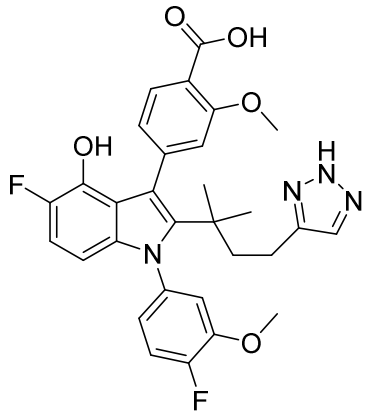
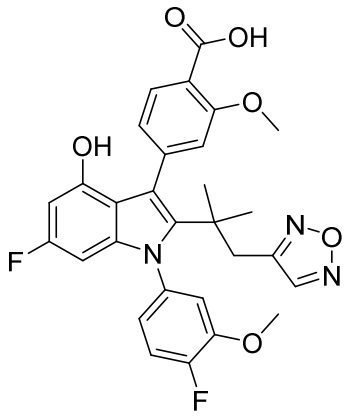
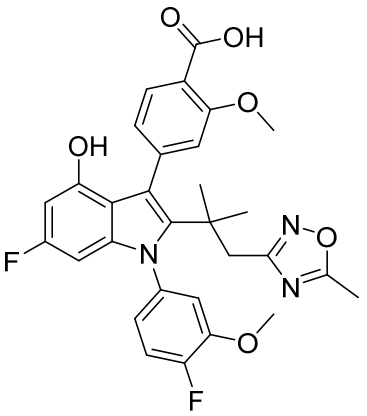
Compound P157	Compound P158	Compound P159
		
Compound P160	Compound P161	Compound P162
		
Compound P163	Compound P164	Compound P165
		

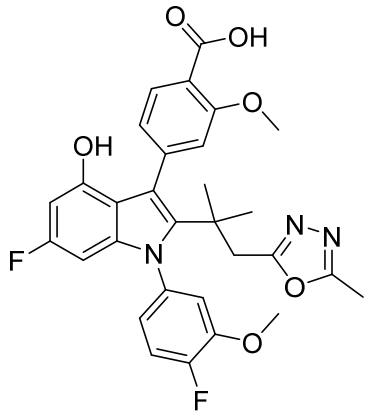
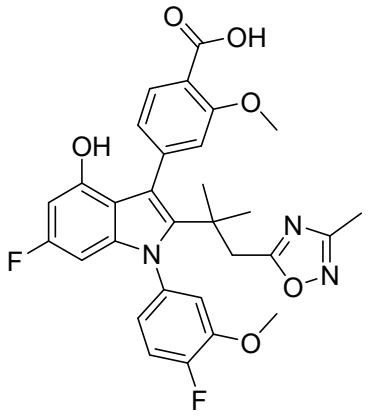
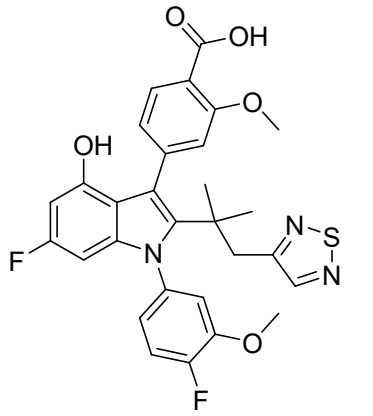
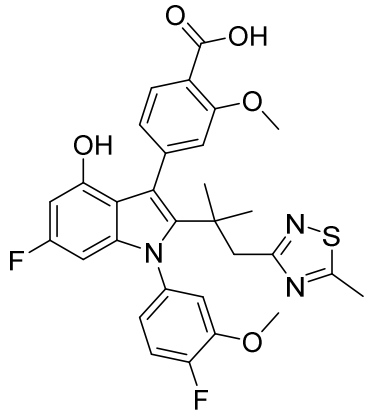
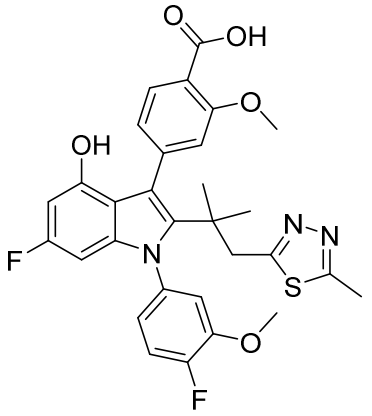
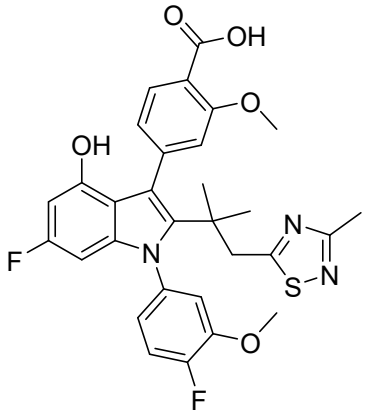
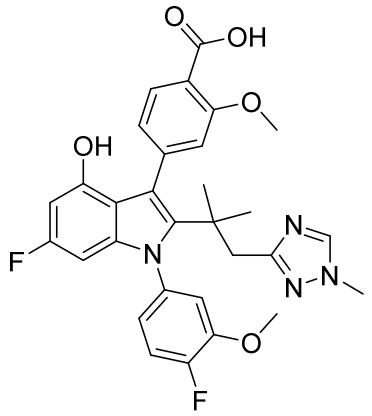
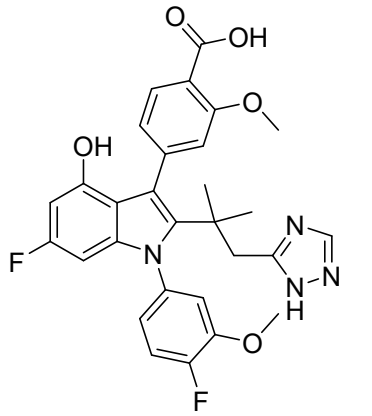
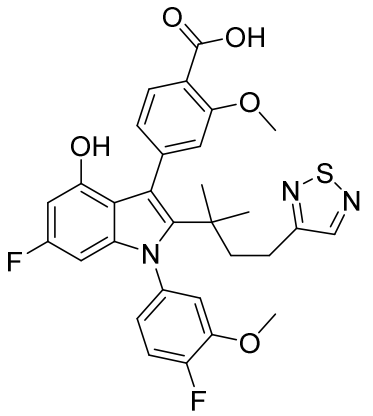
Compound P166	Compound P167	Compound P168
		
Compound P169	Compound P170	Compound P171
		
Compound P172	Compound P173	Compound P174
		

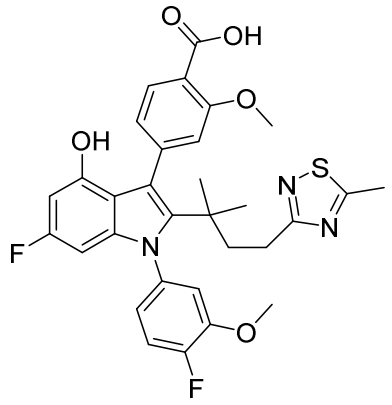
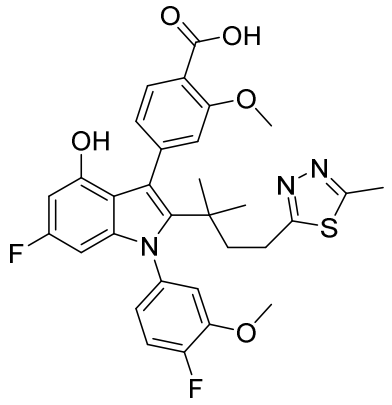
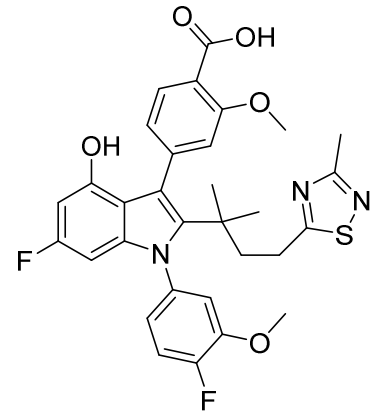
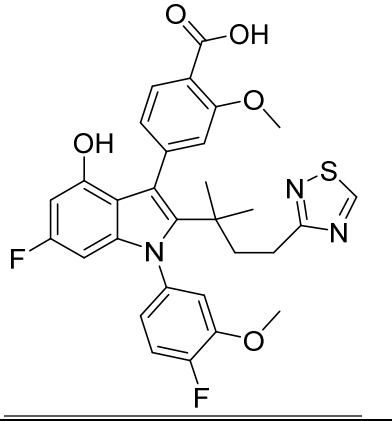
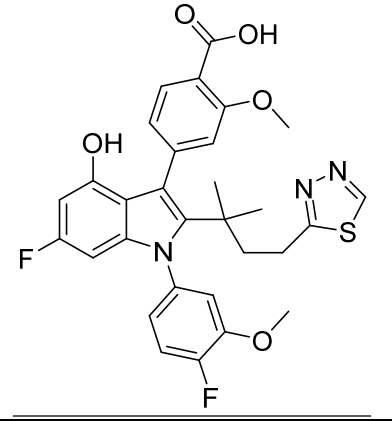
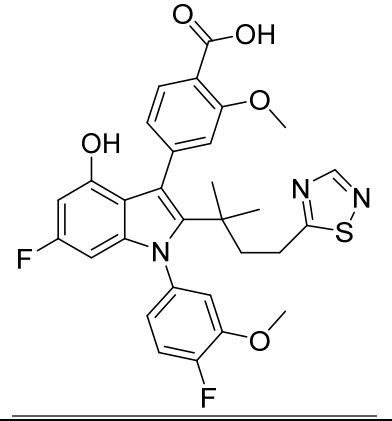
Compound P175	Compound P176	Compound P177
		
Compound P178	Compound P179	Compound P180
		
Compound P181	Compound P182	Compound P183
		

Compound P184	Compound P185	Compound P186
		
Compound P187	Compound P188	Compound P189
		
Compound P190	Compound P191	Compound P192
		

Compound P193	Compound P194	Compound P195
		
Compound P196	Compound P197	Compound P198
		
Compound P199	Compound P200	Compound P201
		

Compound P202	Compound P203	Compound P204
		
Compound P205	Compound P206	Compound P207
		
Compound P208	Compound P209	Compound P210
		

Compound P211	Compound P212	Compound P213
		
Compound P214	Compound P215	Compound P216
		
Compound P217	Compound P218	Compound P219
		

Compound P220	Compound P221	Compound P222
		
Compound P223	Compound P224	Compound P225
		

~~Compounds 1-457, Compounds 458-532, Compounds B1-B25, Compounds W1-W32, and Compounds P1-P225,~~ tautomers thereof, deuterated derivatives of those compounds and tautomers and pharmaceutically acceptable salts of the compounds, tautomers, and deuterated derivatives.

43~~47~~. A compound according to claim 42, wherein the compound is selected from Compounds 1-457, tautomers thereof, deuterated derivatives of those compounds and tautomers and pharmaceutically acceptable salts of the compounds, tautomers, and deuterated derivatives.

44~~48~~. A compound according to claim 42, wherein the compound is selected from Compounds 458-532, tautomers thereof, deuterated derivatives of those compounds and tautomers and pharmaceutically acceptable salts of the compounds, tautomers, and deuterated derivatives.

4549. A compound according to claim 42, wherein the compound is selected from Compounds B1-B25 and Compounds W1-W32, tautomers thereof, deuterated derivatives of those compounds and tautomers and pharmaceutically acceptable salts of the compounds, tautomers, and deuterated derivatives.

4650. A compound according to claim 42, wherein the compound is selected from Compounds P1-P225, tautomers thereof, deuterated derivatives of those compounds and tautomers and pharmaceutically acceptable salts of the compounds, tautomers, and deuterated derivatives.

4751. A pharmaceutical composition comprising a therapeutically effective amount of at least one compound according to any one of claims 1 to 4650, a tautomer thereof, a deuterated derivative of that compound or tautomer, or a pharmaceutically acceptable salt of the foregoing.

5248. ~~A~~ Use of therapeutically effective amount of a compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 46, or pharmaceutical composition according to claim 47, ~~method of treating~~ in the manufacture of a medicament for the treatment of alpha-1 antitrypsin (AAT) deficiency ~~comprising administering to a patient in need thereof a therapeutically effective amount of at least one compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 50, or a therapeutically effective amount of a pharmaceutical composition according to claim 51~~.

~~53. A method of modulating alpha-1 antitrypsin (AAT) activity comprising the step of contacting said AAT with a therapeutically effective amount of at least one compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 50, or a therapeutically effective amount of a pharmaceutical composition according to claim 51.~~

4954. The use~~method~~ of claim 4852 ~~or claim 53~~, wherein said therapeutically effective amount of the at least one compound, tautomer, deuterated derivative, or pharmaceutically

acceptable salt is ~~administered~~ to be administered in combination with AAT augmentation therapy and/or AAT replacement therapy.

50. A therapeutically effective amount of a compound, tautomer, deuterated derivative, or pharmaceutically acceptable salt according to any one of claims 1 to 46, or pharmaceutical composition according to claim 47, for use in the treatment of alpha-1 antitrypsin (AAT) deficiency.