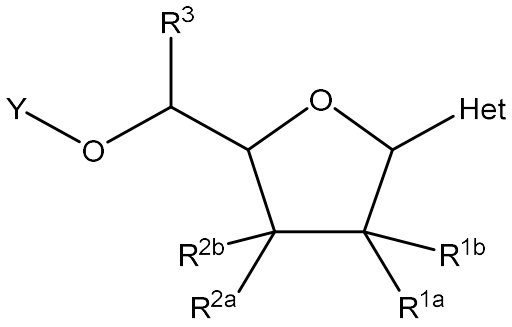
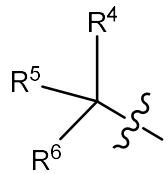
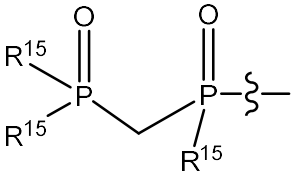
Claims:

1. A compound of formula (I):



(I)

or a pharmaceutically acceptable salt and/or prodrug thereof, wherein

Y is  or  ;

Het is an optionally substituted purinyl ring an optionally substituted 5-methyl-pyrimdin-2, 4-dione ring~~heterocyclyl or heteroaryl~~;

R^{1a} is selected from H, halo, hydroxy, cyano, azido, amino, C_{1-6}alkyl, hydroxyC_{1-6}alkyl, amino-C_{1-6}alkyl, -O-C(O)-O-C_{1-6}alkyl, C_{1-6}acyloxy, C_{1-6}alkoxy, C_{2-6}alkenyl, and C_{2-6}alkynyl;

R^{1b} is selected from H, halo, C_{1-6}alkyl, hydroxy-C_{1-6}alkyl, amino-C_{1-6}alkyl, C_{2-6}alkenyl, and C_{2-6}alkynyl;

R^{2a} is selected from halo, hydroxy, cyano, azido, amino, C_{1-6}alkyl, hydroxy-C_{1-6}alkyl, amino-C_{1-6}alkyl, C_{1-6}acyloxy, -O-C(O)-O-C_{1-6}alkyl, C_{1-6}alkoxy, C_{2-6}alkenyl, and C_{2-6}alkynyl;

R^{2b} is ~~selected from halo, C_{1-6}alkyl,~~ C_{2-6}alkenyl~~, and C_{2-6}alkynyl, preferably substituted or unsubstituted C_2alkynyl, most preferably unsubstituted C_2alkynyl~~;

R^3 is selected from H and alkyl;

R^4 is selected from H, alkyl, CN, aryl, heteroaryl, -C(O)OR^9, -C(O)$NR^{11}R^{12}$, -$S(O)_2R^{10}$, -P(O)(OR^{11})(OR^{12}), and -P(O)(OR^{11})($NR^{13}R^{14}$);

R^5 is aralkyl or heteroaralkyl wherein the aralkyl is substituted with one or more substituents selected from ~~H~~halo, ~~cyano~~haloalkyl, alkyl, ~~cycloalkylalkyl, heterocyclylalkyl,~~

~~aralkyl, heteroaralkyl, and -C(O)OR^9~~alkoxy, carbonyl, aryl, amino, amido, cycloalkyl, heterocyclyl, and heteroaryl;

R^6 is selected from -C(O)OR^9, -C(O)N$R^{16}R^{17}$, and -P(O)(OR^{11})(OR^{12});

R^9 is independently selected from H, alkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl;

R^{10} is independently selected from alkyl, alkenyl, alkynyl, amino, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl; and

each R^{11} and R^{12} is independently selected from H, alkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl; or

R^{11} and R^{12}, together with the nitrogen atom to which they are attached, form a 5- to 7-membered heterocyclyl;

R^{13} is, independently for each occurrence, H or alkyl;

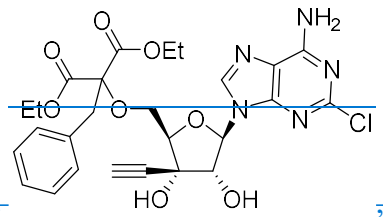
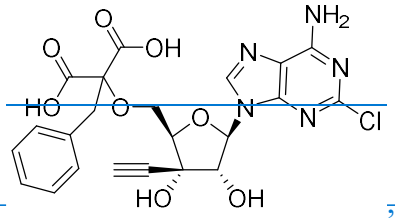
R^{14} is, independently for each occurrence, alkyl or aralkyl;

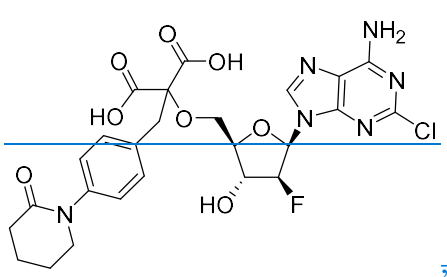
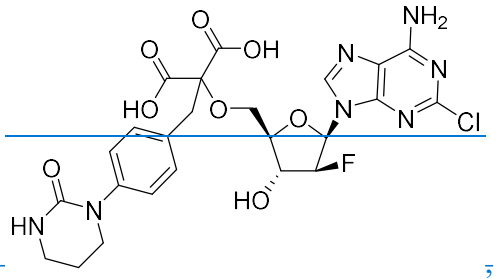
each R^{15} is independently selected from hydroxy, alkoxy acyloxy and N$R^{13}R^{14}$;

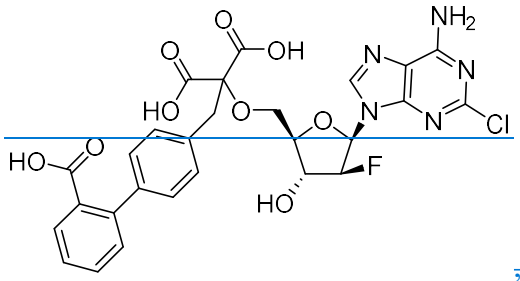
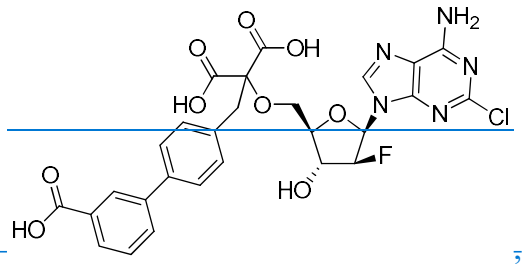
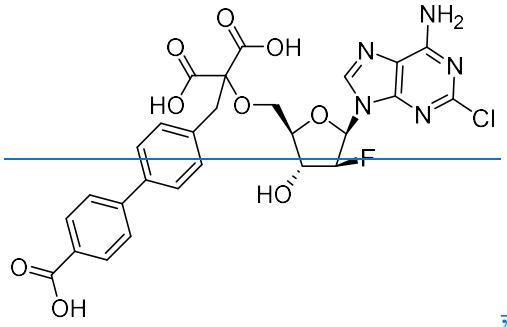
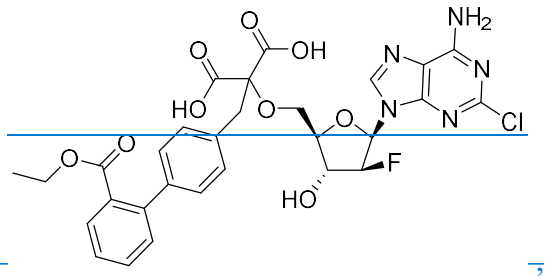
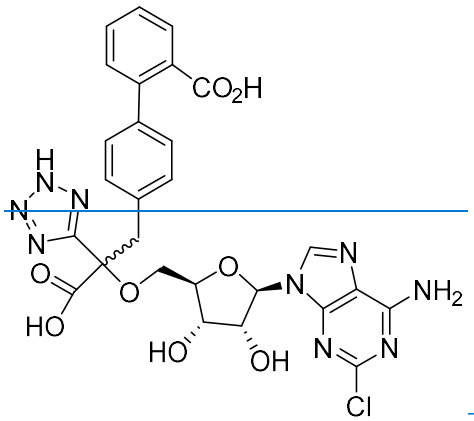
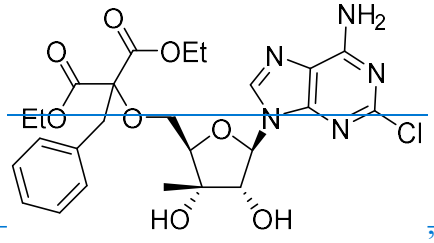
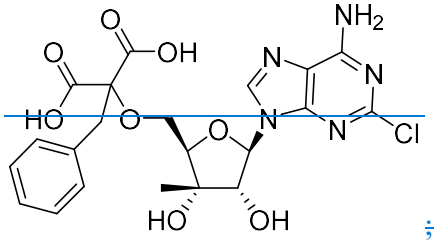
each R^{16} and R^{17} is independently selected from H, hydroxy, alkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl; or

R^{16} and R^{17}, together with the nitrogen atom to which they are attached, form a 5- to 7-membered heterocyclyl.

2. The compound of claim 1, wherein ~~a) and b); or a) and c):~~

~~a) the compound is not~~  ,  ;

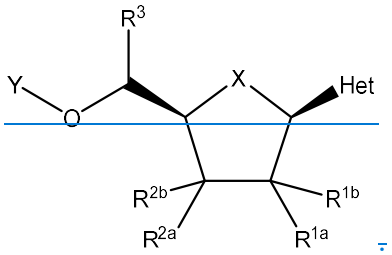
 ,  ;

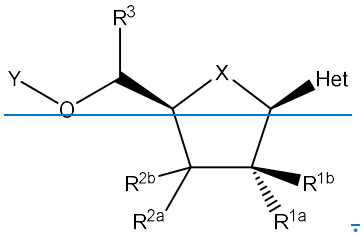
~~b~~a) if R^4 and R^6 are each -C(O)OH and R^5 is benzyl substituted on the phenyl ring with a heterocyclyl or heteroaryl substituent, then the heterocyclyl or heteroaryl substituent is selected from unsubstituted or substituted pyrrolidinyl, piperazinonyl, piperidonyl, tetrahydropyrimidonyl, pyridonyl, and pyridyl; and

~~c~~b) if R^4 is -C(O)OH or tetrazolyl, R^6 is -C(O)OH, and R^5 is benzyl substituted on the phenyl ring with a second phenyl ring, then either the benzyl phenyl ring or the second phenyl ring is substituted with $-C(O)OR^9$ where R^9 is H or alkyl.

~~3. The compound of claim 1 or 2, having the following structure:~~



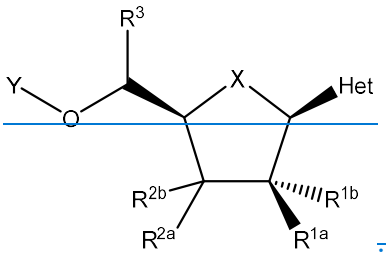
~~4. The compound of claim 3, wherein the compound of Formula (I) has the structure (IA):~~



~~(IA)~~

~~5. The compound of any one of claims 1-4, wherein R^{1a} is in the β-configuration.~~

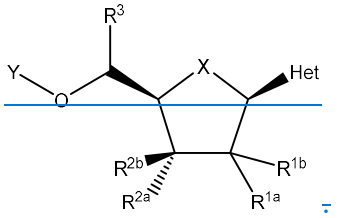
~~6. The compound of claim 5, wherein the compound of Formula (I) has the structure (IB):~~



~~(IB)~~

~~7. The compound of any preceding claim, wherein R^{2a} is in the α-configuration.~~

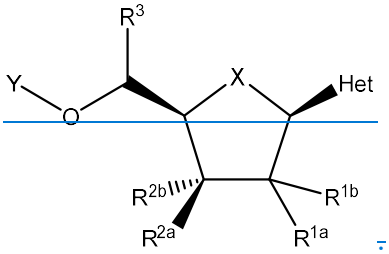
~~8. The compound of claim 7, wherein the compound of Formula (I) has the structure (IC):~~



~~(IC)~~

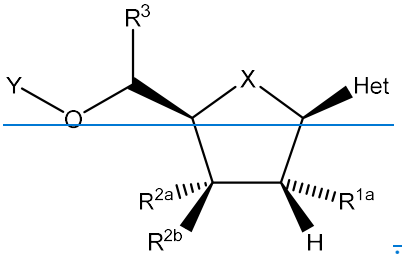
~~9. The compound of any one of claims 1-6, wherein R^{2a} is in the β-configuration.~~

~~10. The compound of claim 9, wherein the compound of Formula (I) has the structure (ID):~~



~~(ID)~~

~~11. The compound of claim 3, wherein the compound of Formula (I) has the structure (IE):~~

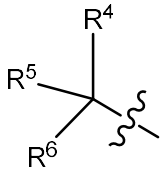


~~(IE)~~

~~12~~3. The compound of ~~any one of claims 1-11~~claim 1, wherein

R^5 is aralkyl or heteroaralkyl with a para substituent on the aryl or heteroaryl ring selected from heterocyclyl, heteroaryl, and aryl; and

R^{2b} is methyl, ethyl, or $C_{2\text{-}6}$alkynyl.

~~134~~. The compound of ~~any one of claims 1-12~~claim 1, wherein Y is 

.

~~14. The compound of any preceding claim, wherein R^5 is selected from H, alkyl, aralkyl and heteroaralkyl.~~

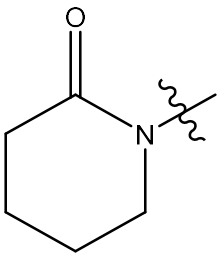
~~15. The compound of claim 14, wherein each alkyl, aralkyl and heteroaralkyl at R^5 is unsubstituted or substituted with one or more substituents selected from halo, alkyl, alkoxy, carbonyl, amino, amido, cycloalkyl, heterocyclyl, and heteroaryl.~~

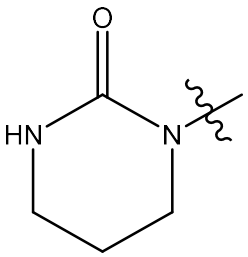
~~16. The compound of claim 15, wherein the substituents on the alkyl, aralkyl and heteroaralkyl at R^5 are selected from halo, haloalkyl, alkoxy, amino, carbonyl, aryl, heterocyclyl, and heteroaryl.~~

~~175~~. The compound of ~~any one of claims 1-11~~claim 1, wherein R^5 is benzyl substituted on the phenyl ring ~~(e.g., at a para position)~~ with a heterocyclyl or heteroaryl substituent~~, e.g., wherein:~~

~~the phenyl ring substituent is selected from substituted piperidonyl, piperazinonyl, tetrahydropyrimidonyl, pyridonyl, and pyridyl, and, optionally,~~

~~the piperidonyl, tetrahydropyrimidonyl, pyridonyl, or pyridyl is substituted with one or more of alkyl, hydroxyalkyl or alkoxyalkyl~~.

~~186~~. The compound of ~~any one of claims 1-14~~claim 1, wherein R^5 is benzyl substituted on the phenyl ring ~~(e.g., at the 4-position)~~ with 

, 

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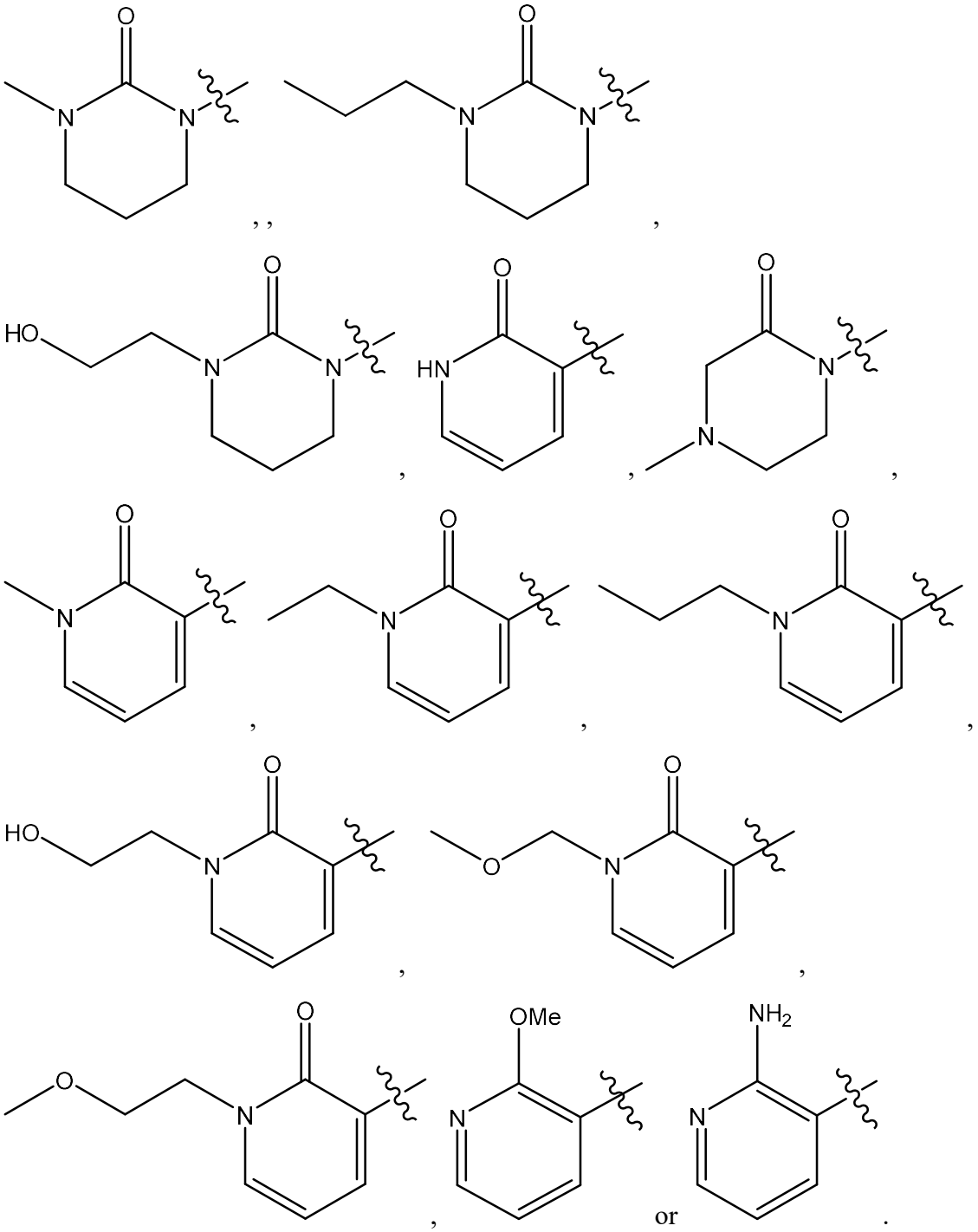
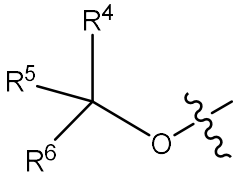
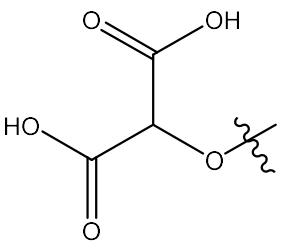
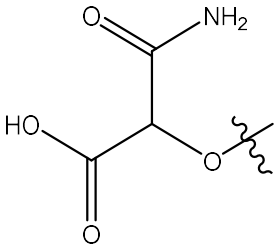
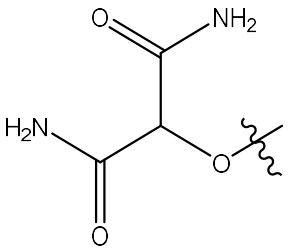
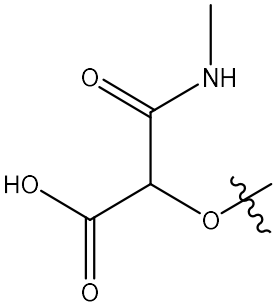
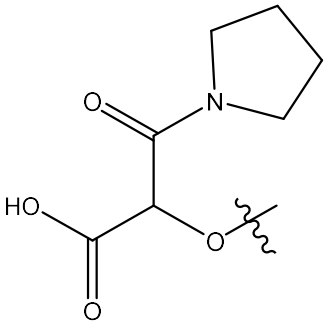
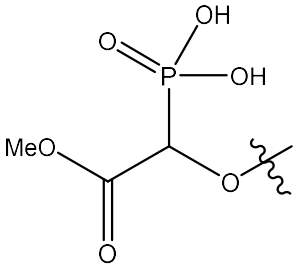
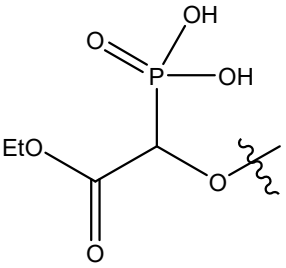
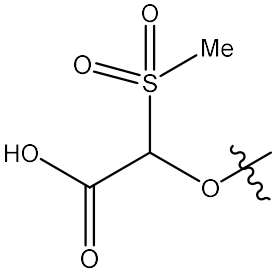
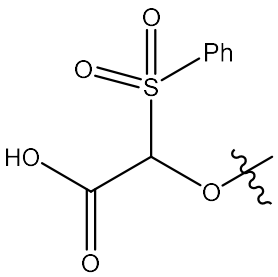
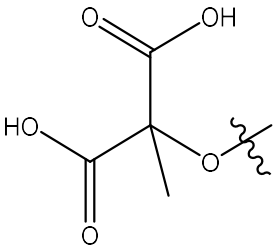
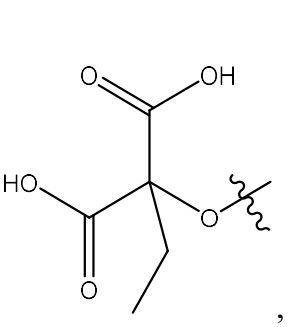
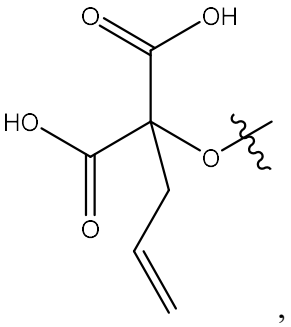
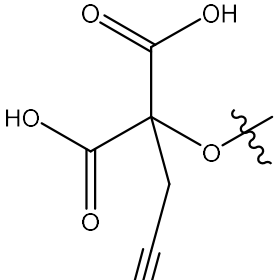
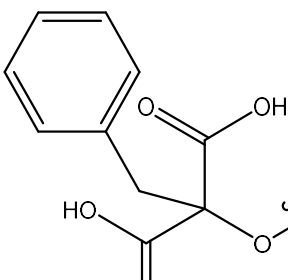
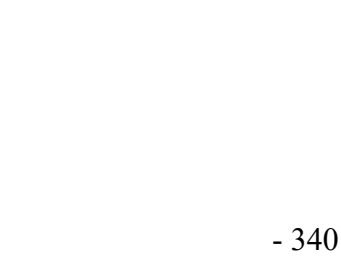
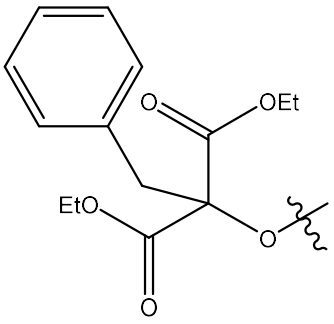


~~197~~. The compound of ~~any one of claims 1-18~~claim 1, wherein


represents  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  , ,  , .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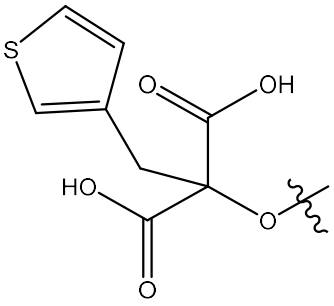
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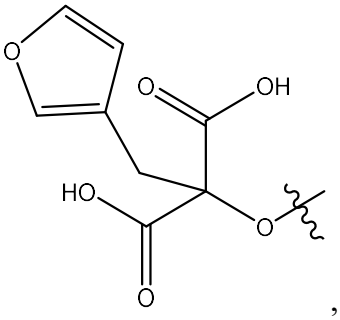
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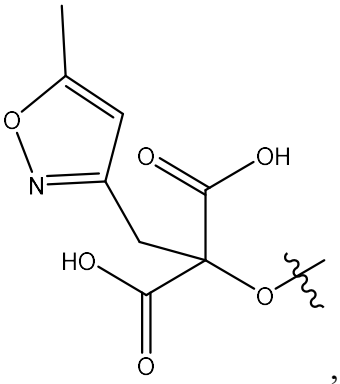
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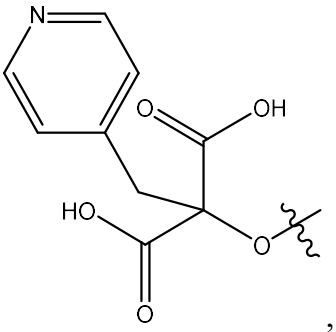
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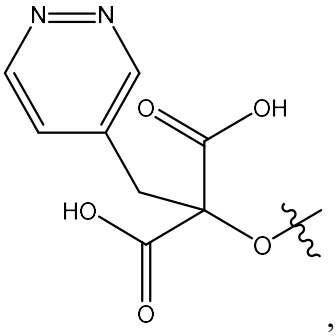
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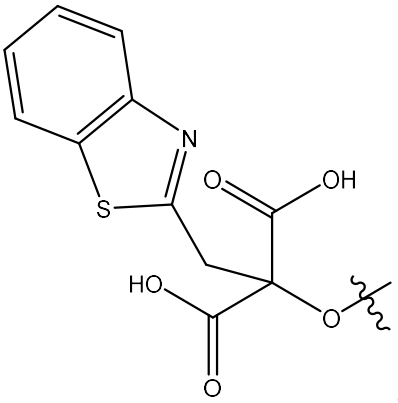
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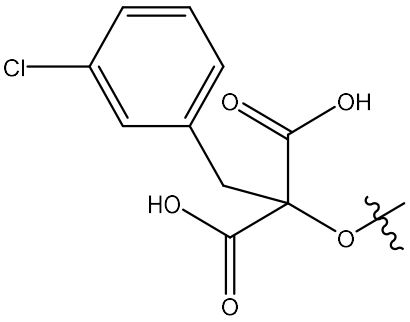
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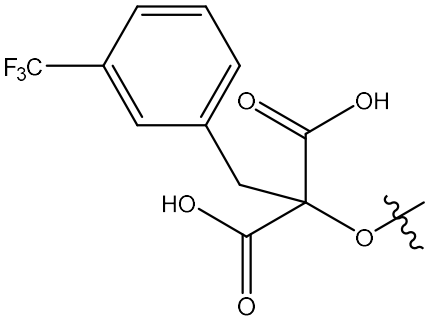
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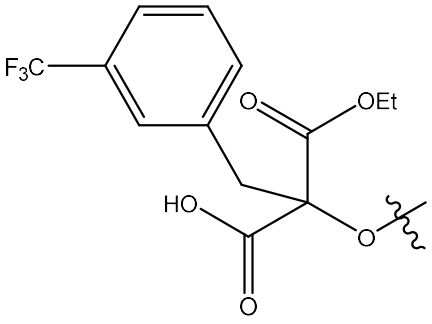
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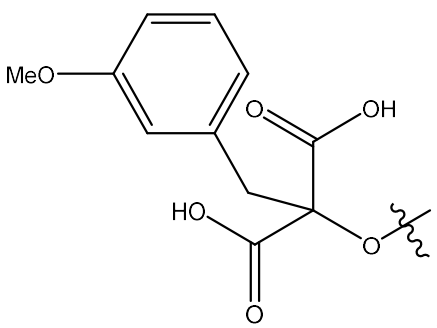
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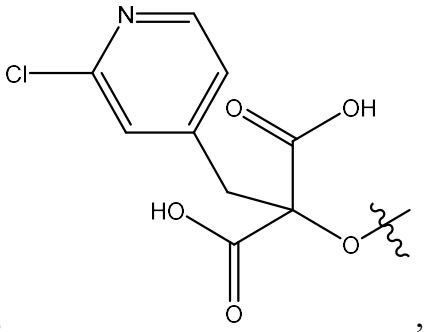
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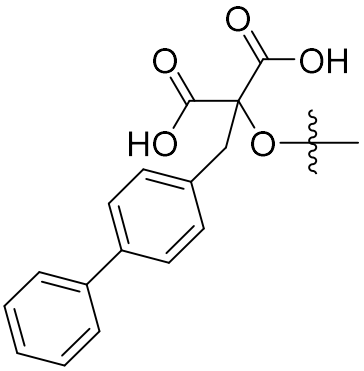
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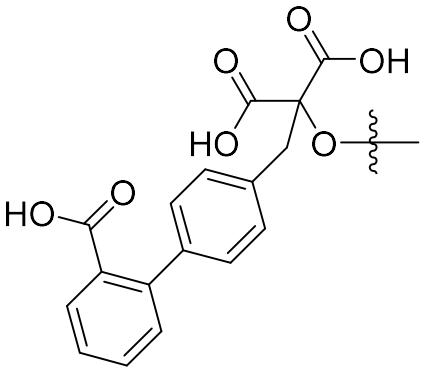
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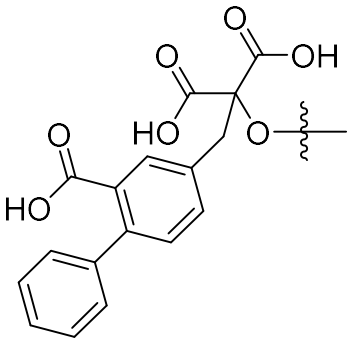
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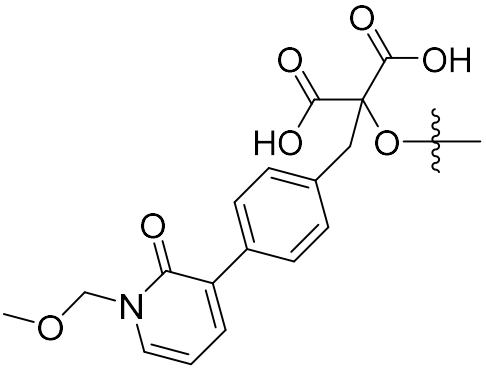
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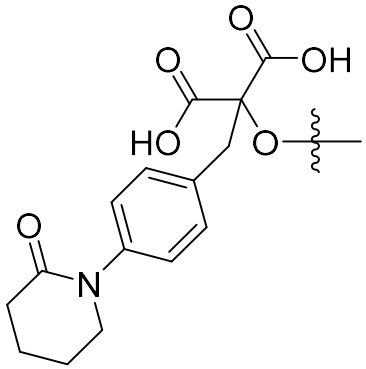
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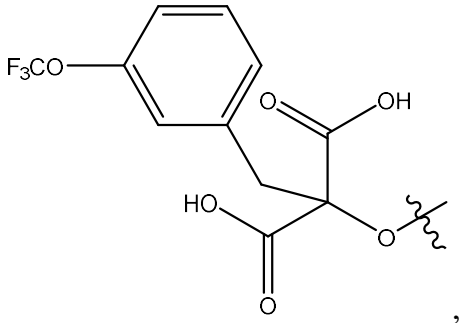
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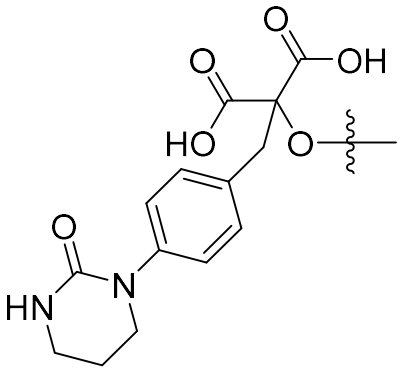
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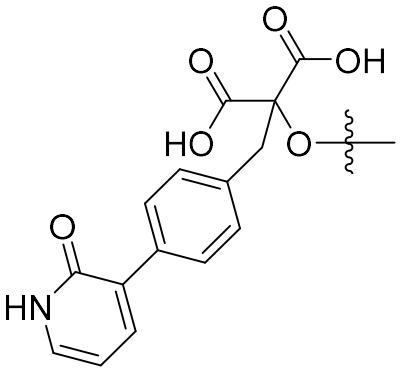
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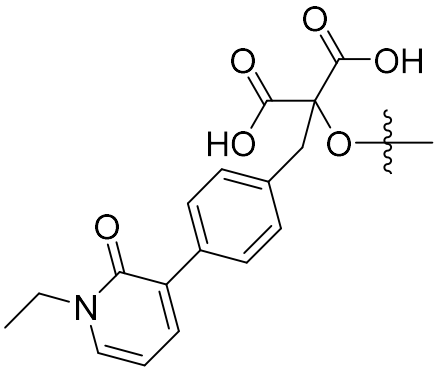
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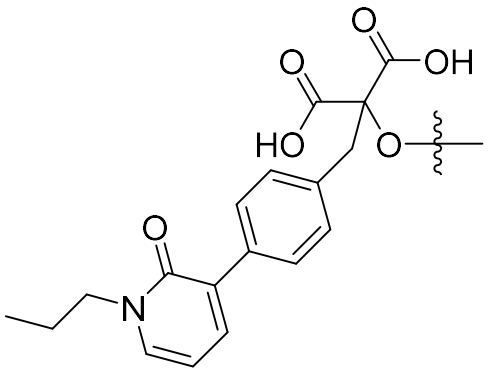
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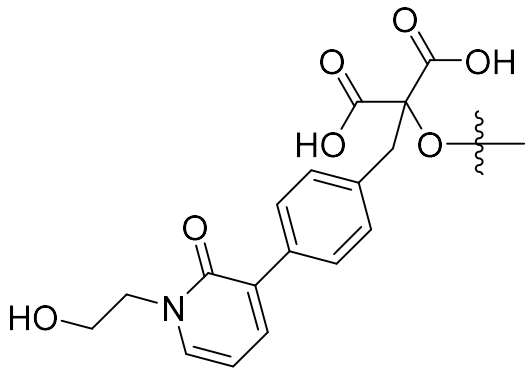
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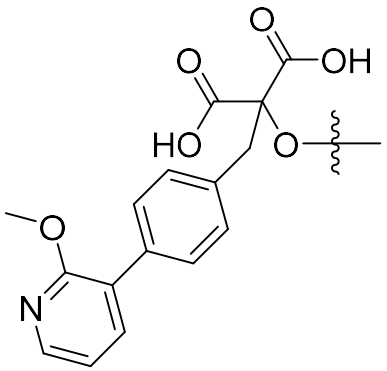
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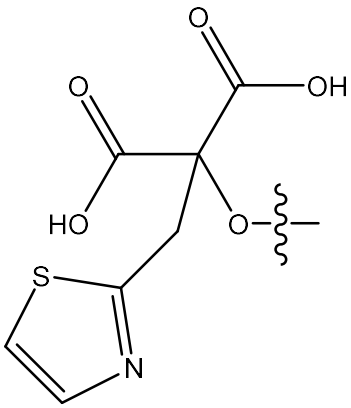
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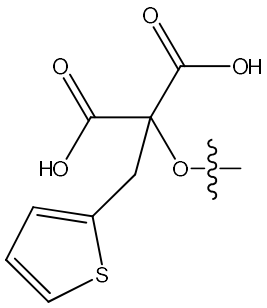
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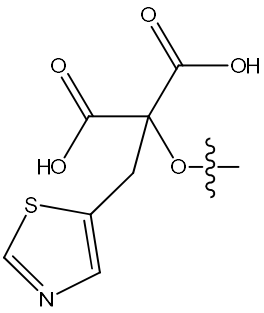
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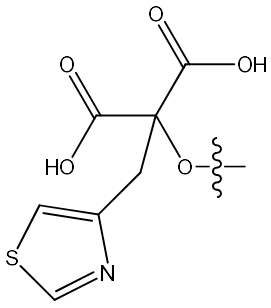
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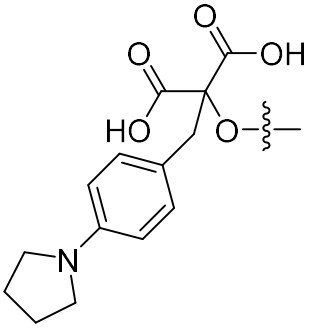
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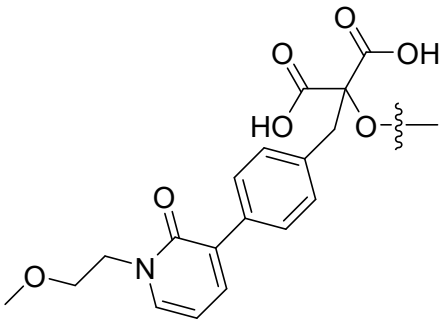
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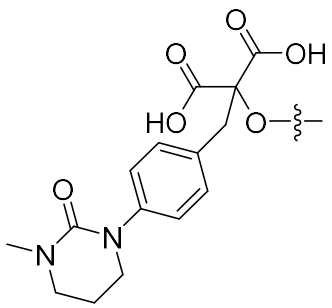
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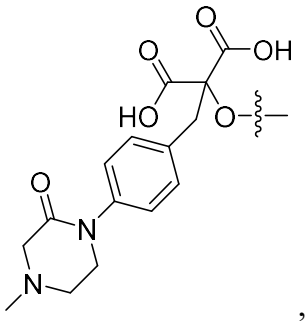
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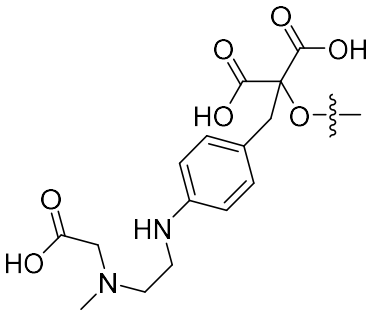
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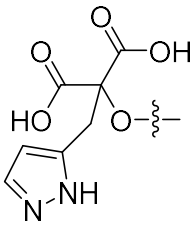
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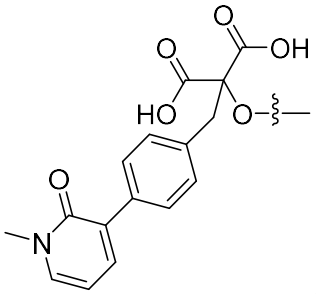
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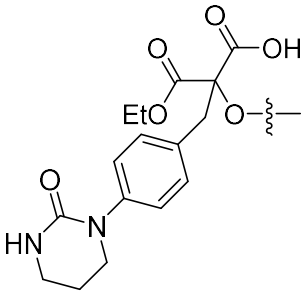
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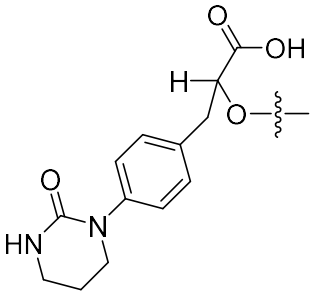
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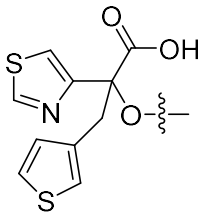
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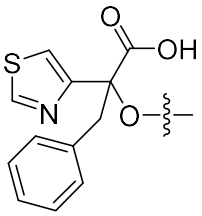
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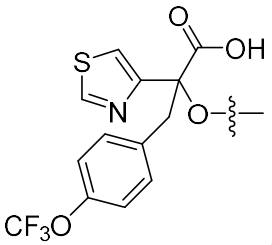
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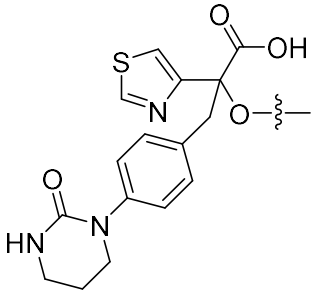
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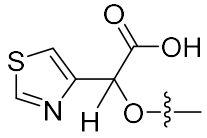
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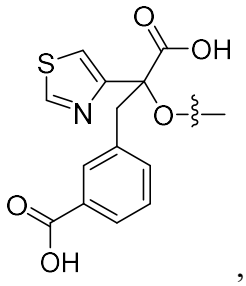
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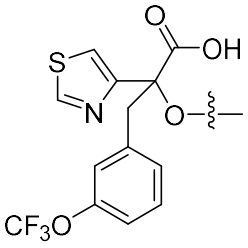
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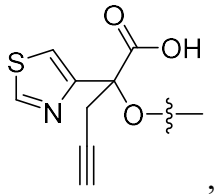
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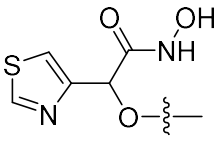
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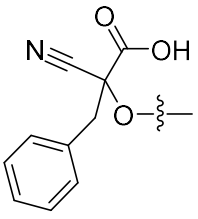
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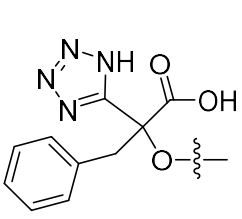
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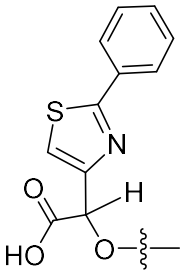
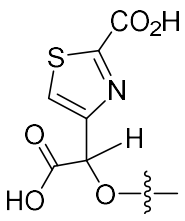
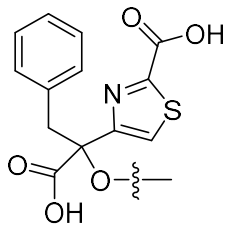
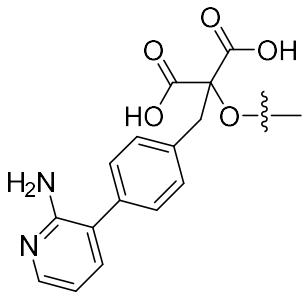
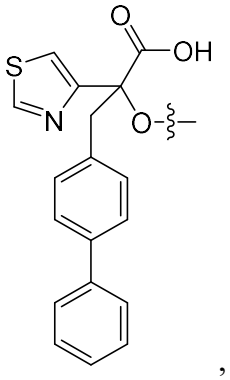
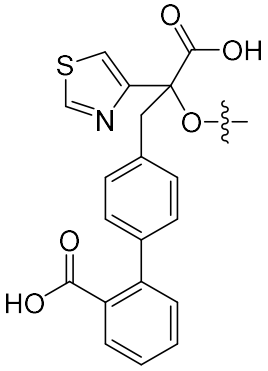
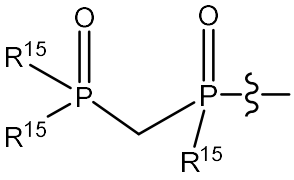
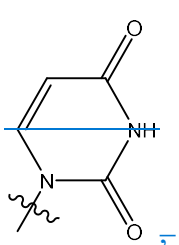
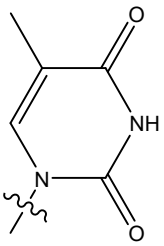
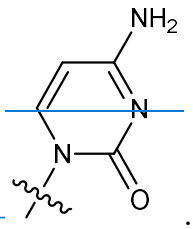
 ,  ,  ,  ,  ,

and  .

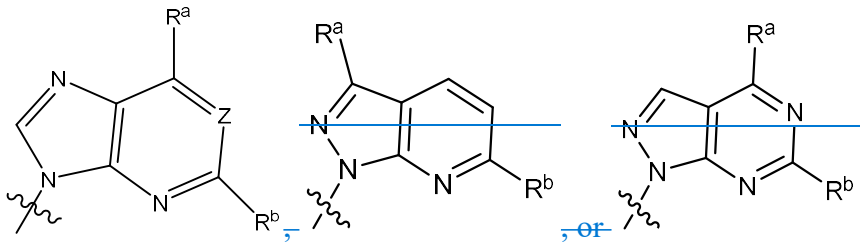
~~20~~8. The compound of ~~any one of claims 1-19~~claim 1, wherein Y is  .

~~21~~9. The compound of claim ~~20~~8, wherein each R^{15} is hydroxy.

~~22~~10. The compound of ~~any one of claims 1-21~~claim 1, wherein Het is ~~selected from~~

 ,  , ~~, and~~  .

~~23~~11. The compound of ~~any one of claims 1-21~~claim 1, wherein Het is



wherein

Z is ~~CH or~~ N;

R^a is selected from H, halo, hydroxy, alkyl, thiophenyl, -NR^7R^8, aralkyl, aryl, and heteroaryl~~, preferably from H, Cl, -NR^7R^8, and phenyl~~;

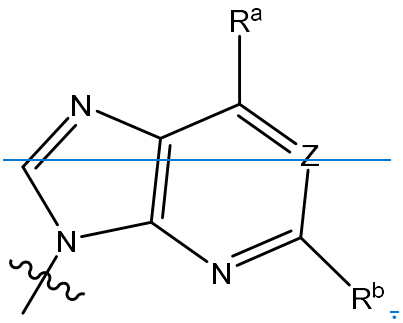
R^b is selected from halo, alkyl, haloalkyl, hydroxyalkyl, alkylthio, amido, carbonyl, amido, and heteroaryl; and

R^7 is selected from H, hydroxy, alkyl, aralkyl, heteroaralkyl, cycloalkyl, and heterocyclyl; and

R^8 is H or alkyl; or

R^7 and R^8, together with the nitrogen atom to which they are attached, form a 4- to 7-membered heterocyclyl ring.

~~24. The compound of claim 23, wherein Het is~~

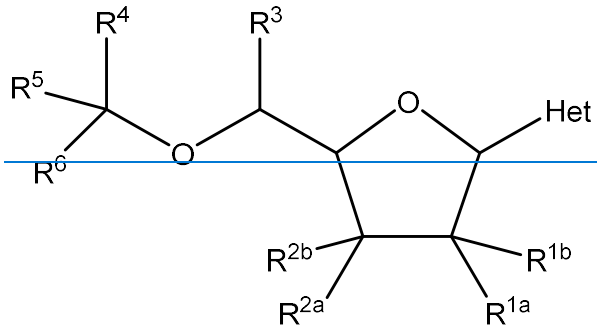


~~25~~12. The compound of ~~claim 23 or 24~~claim 11, wherein R^a is selected ~~from H, halo, alkyl, thienyl, -NR^7R^8, aryl, and heteroaryl, preferably~~ from H, Cl, -NR^7R^8, and phenyl.

~~26~~13. The compound of ~~claim 23-25~~claim 11, wherein R^b is selected from ~~halo, alkyl, hydroxyalkyl, haloalkyl, amido~~C1, -CF_3, carbonyl, ~~amido,~~ and ~~heteroaryl~~-$CONH_2$.

~~27~~14. The compound of ~~claim 23-26~~claim 11, wherein R^7 is selected from H, alkyl, aralkyl, heteroaralkyl, cycloalkyl, and heterocyclyl.

28. A compound of formula (II):



(II)

or a pharmaceutically acceptable salt and/or prodrug thereof, wherein

Het is heterocyclyl or heteroaryl;

R^{1a} is selected from H, halo, hydroxy, cyano, azido, amino, C_{1-6}alkyl, hydroxyC_{1-6}alkyl, amino-C_{1-6}alkyl, -O-C(O)-O-C_{1-6}alkyl, C_{1-6}acyloxy, C_{1-6}alkoxy, C_{2-6}alkenyl, and C_{2-6}alkynyl;

R^{1b} is selected from H, halo, C_{1-6}alkyl, hydroxy-C_{1-6}alkyl, amino-C_{1-6}alkyl, C_{2-6}alkenyl, and C_{2-6}alkynyl;

R^{2a} is selected from halo, hydroxy, cyano, azido, amino, C_{1-6}alkyl, hydroxy-C_{1-6}alkyl, amino-C_{1-6}alkyl, C_{1-6}acyloxy, -O-C(O)-O-C_{1-6}alkyl, C_{1-6}alkoxy, C_{2-6}alkenyl, and C_{2-6}alkynyl;

R^{2b} is selected from H, halo, C_{1-6}alkyl, C_{2-6}alkenyl, and C_{2-6}alkynyl;

R^{3} is selected from H and alkyl;

R^{4} is selected from alkyl, aryl, heteroaryl, $-C(O)OR^{9}$, $-C(O)NR^{11}R^{12}$, $-S(O)_2R^{10}$, $-P(O)(OR^{11})(OR^{12})$, and $-P(O)(OR^{11})(NR^{13}R^{14})$;

R^{5} is selected from H, cyano, alkyl, cycloalkylalkyl, heterocyclylalkyl, aralkyl, heteroaralkyl, and $-C(O)OR^{9}$;

R^{6} is selected from $-C(O)OR^{9}$, $-C(O)NR^{11}R^{12}$ and $-P(O)(OR^{11})(OR^{12})$;

R^{9} is independently selected from H, alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl;

R^{10} is independently selected from alkyl, alkenyl, alkynyl, amino, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl; and

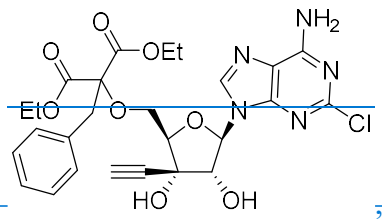
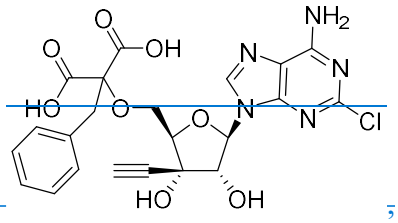
each R^{11} and R^{12} is independently selected from H, alkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl; or

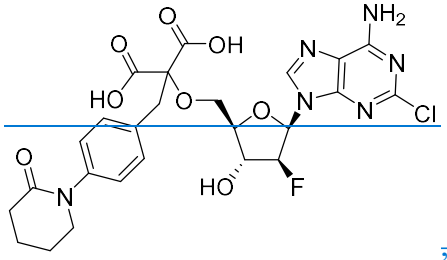
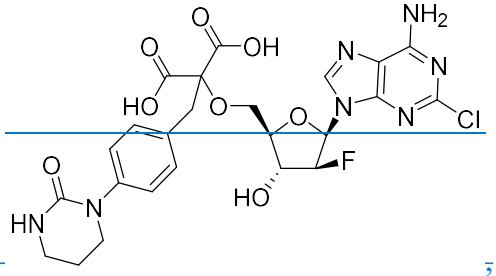
~~R^{11} and R^{12}, together with the nitrogen atom to which they are attached, form a 5- to 7-membered heterocyclyl;~~

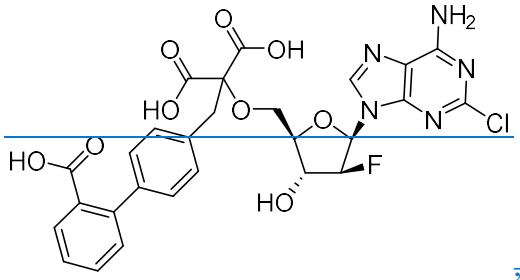
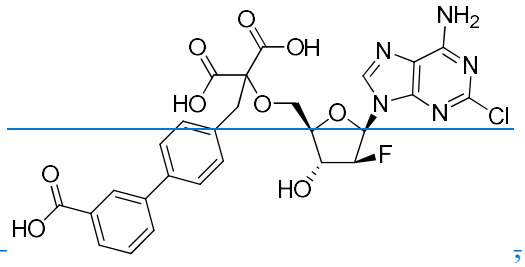
~~R^{13} is H or alkyl; and~~

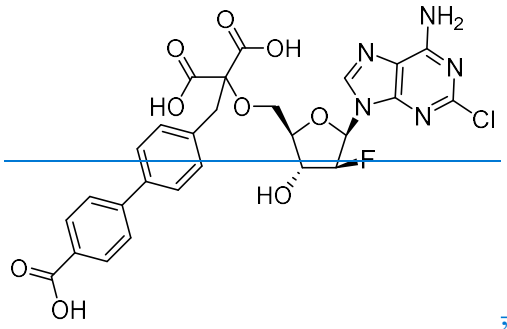
~~R^{14} is alkyl or aralkyl;~~

~~provided that a), b) and c); or a), b) and d);~~

~~a) the compound is not~~  ,  ,

 ,  ,

 ,  ,



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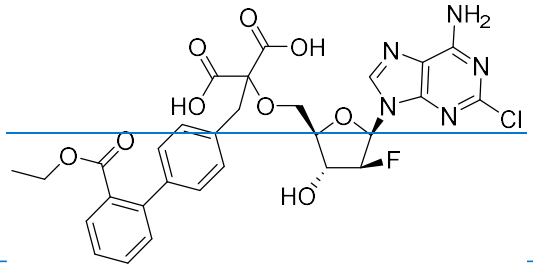
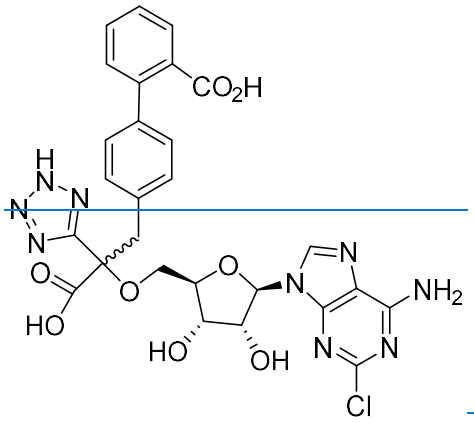


~~, or~~



~~; and~~

~~b) R_{2b} is selected from halo, C_{2-6}alkyl, C_{2-6}alkenyl, and C_{2-6}alkynyl, preferably substituted or unsubstituted C_2alkynyl, most preferably unsubstituted C_2alkynyl,~~

~~c) if R^4 and R^6 are each -C(O)OH and R^5 is benzyl substituted on the phenyl ring with a heterocyclyl or heteroaryl substituent, then the phenyl ring substituent is selected from unsubstituted or substituted piperidonyl, tetrahydropyrimidonyl, pyridonyl, and pyridyl; and~~

~~d) if R^4 is -C(O)OH or tetrazolyl, R^6 is -C(O)OH, and R^5 is benzyl substituted on the phenyl ring with a second phenyl ring, then either the benzyl phenyl ring or the second phenyl ring is substituted with -C(O)OR^9 where R^9 is H or alkyl.~~

~~29. The compound of any one of claims 1-28, wherein R^{1a} is H or hydroxy.~~

~~30. The compound of any one of claims 1-29, wherein R^{1b} is H or hydroxy.~~

~~31~~15. The compound of ~~any one of claims 1-29~~claim 1, wherein R^{1a} and R^{2a} are each hydroxy.

~~32~~16. The compound of ~~any one of claims 1-29~~claim 1, wherein R^{1a} is hydroxy and R^{1b} is H.

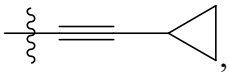
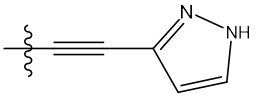
~~33~~17. The compound of ~~any one of claims 1-32~~claim 1, wherein R^{2a} is hydroxy or C_{1-6}alkyl.

~~34~~18. The compound of ~~any one of claims 1-33~~claim 1, wherein R^{2b} is ~~C_{2-6}alkyl, C_{2-6}alkenyl or~~ substituted or unsubstituted C_{2-6}alkynyl.

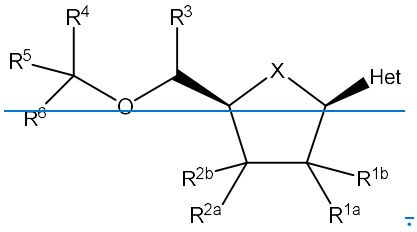
~~35~~19. The compound of ~~any one of claims 1-32~~claim 1, wherein R^{2a} is Me and R^{2b} is ethynyl.

~~36. The compound of any one of claims 1-32, wherein R^{2a} is hydroxy and R^{2b} is ethyl or vinyl.~~

~~37~~20. The compound of ~~any one of claims 1-32~~claim 1, wherein R^{2a} is hydroxy and R^{2b} is ethynyl.

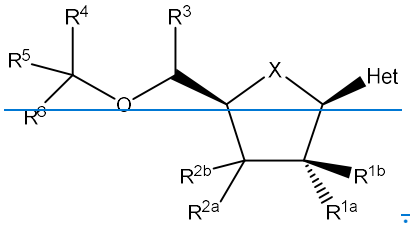
~~38~~21. The compound of claim ~~34~~1, wherein R^{2b} is propynyl, butynyl,  , or unsubstituted or substituted  .

~~39. The compound of any one of claims 1-38, wherein the compound of Formula II has the structure:~~



~~40. The compound of any one of claims 1-39, wherein R^{1a} is in the α-configuration.~~

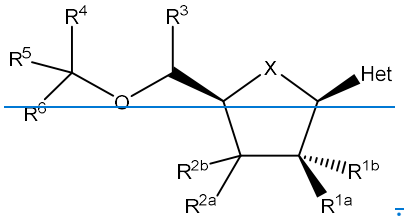
~~41. The compound of claim 40, wherein the compound of Formula (II) has the structure (IIAa):~~



~~(IIAa)~~

~~42. The compound of any one of claims 1-41, wherein R^{1a} is in the β-configuration.~~

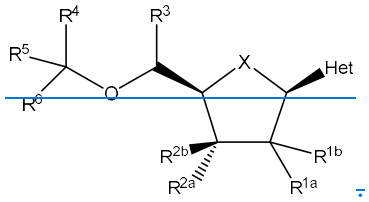
~~43. The compound of claim 42, wherein the compound of Formula (II) has the structure (IIB):~~



~~(IIBa)~~

~~44. The compound of any one of claims 1-43, wherein R^{2a} is in the α-configuration.~~

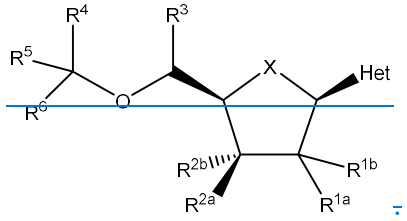
~~45. The compound of claim 44, wherein the compound of Formula (II) has the structure (IICa):~~



~~(IICa)~~

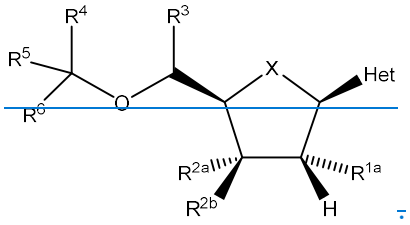
~~46. The compound of any one of claims 1-43, wherein R^{2a} is in the β-configuration.~~

~~47. The compound of claim 46, wherein the compound of Formula (II) has the structure (IIDa):~~



~~(IID)~~

~~48. The compound of claim 39, wherein the compound of Formula (II) has the structure (IIEa):~~



~~(IIEa)~~

~~49. The compound of any preceding claim, wherein R^3 is H.~~

~~50~~22. The compound of ~~any one of claims 1-49~~claim 1, wherein R^4 is selected from -C(O)OR^9, -C(O)$NR^{11}R^{12}$, -S(O)$_2R^{10}$, and -P(O)(OR^{11})(OR^{12}).

~~51~~23. The compound of claim ~~50~~22, wherein R^4 is -C(O)OR^9 and R^9 is H or alkyl.

~~52~~24. The compound of claim ~~50~~22, wherein R^4 is -C(O)$NR^{11}R^{12}$.

~~53~~25. The compound of claim ~~52~~24, wherein each R^{11} and R^{12} is independently selected from H and alkyl; or R^{11} and R^{12}, together with the nitrogen atom to which they are attached, form a 5- to 7-membered heterocyclyl.

~~54. The compound of claim 50, wherein R^4 is -S(O)$_2R^{10}$ and R^{10} is alkyl or aryl.~~

~~55. The compound of any one of claims 28-54, wherein R^5 is selected from H, alkyl, aralkyl and heteroaralkyl.~~

~~56. The compound of claim 55, wherein each alkyl, aralkyl and heteroaralkyl at R^5 is unsubstituted or substituted with one or more substituents selected from halo, alkyl, alkoxy, carbonyl, amino, amido, cycloalkyl, heterocyclyl, and heteroaryl.~~

~~57. The compound of claim 56, wherein the substituents on the alkyl, aralkyl and heteroaralkyl at R^5 are selected from halo, haloalkyl, alkoxy, carbonyl, aryl, heterocyclyl, and heteroaryl.~~

~~58. The compound of claim 56, wherein R^5 is aralkyl substituted on the aryl ring (e.g., at a para position) with a 5- to 7-membered heterocyclyl or a 5- to 7-membered heteroaryl.~~

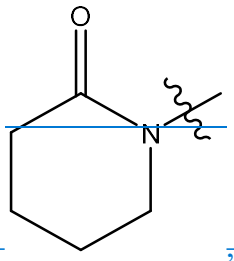
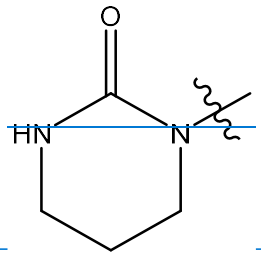
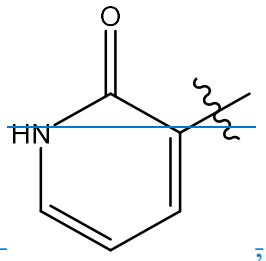
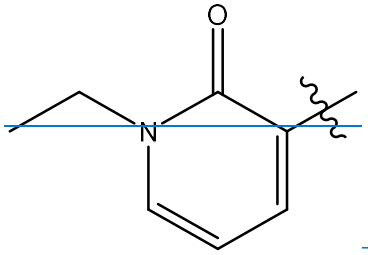
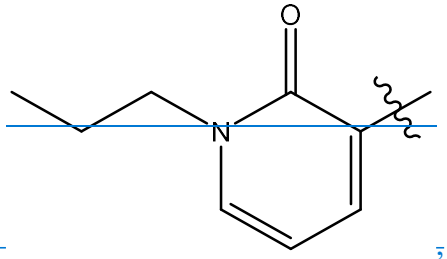
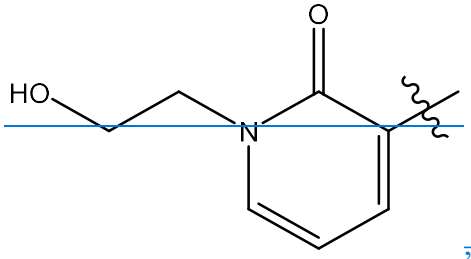
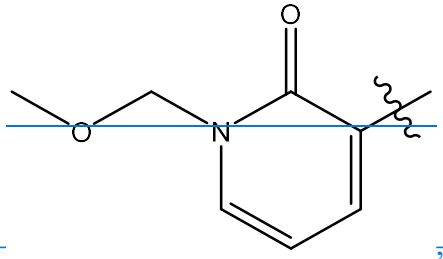
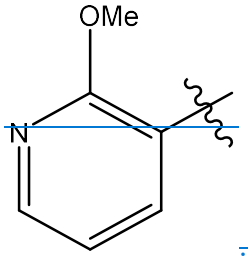
~~59. The compound of any one of claims 28-58, wherein R^5 is selected from H, methyl, ethyl, -CH_2-ethynyl, and -CH_2-vinyl.~~

60. The compound of claim 55, wherein R^5 is selected from benzyl, -CH_2-pyridyl, -CH_2-pyridazinyl, -CH_2-oxazolyl, -CH_2-thiophenyl, -CH_2-furanyl, -CH_2-thiazolyl, and -CH_2-benzothiazolyl, preferably from benzyl and -CH_2-thiophenyl.

61. The compound of claim 55, wherein R^5 is benzyl substituted on the phenyl ring with a heterocyclyl or heteroaryl substituent, e.g., wherein:

the phenyl ring substituent is selected from substituted piperidonyl, tetrahydropyrimidonyl, pyridonyl, and pyridyl, and, optionally,

the piperidonyl, tetrahydropyrimidonyl, pyridonyl, or pyridyl is substituted with one or more of alkyl, hydroxyalkyl or alkoxyalkyl.

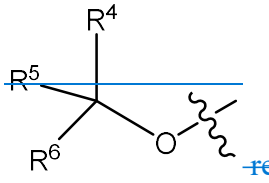
62. The compound of claim 61, wherein R^5 is benzyl substituted on the phenyl ring (e.g., at the 4-position) with  ,  ,  ,  ,  ,  ,  , or  .

6326. The compound of ~~any preceding~~ claim 1, wherein R^6 is -C(O)OR^9 and R^9 is H or alkyl.

6427. The compound of ~~any one of claims 1-62~~claim 1, wherein R^6 is -C(O)$NR^{16}R^{17}$.

6528. The compound of ~~any one of claims 1-63~~claim 1, wherein R^4 and R^6 are each -C(O)OH~~, preferably wherein R^5 is benzyl~~.

~~66. The compound of any one of claims 28-49, wherein~~



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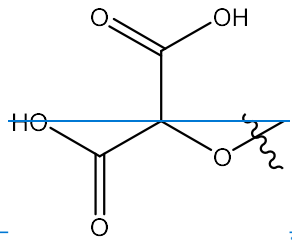

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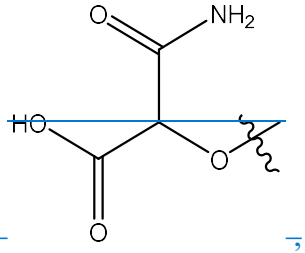

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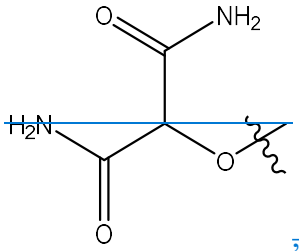

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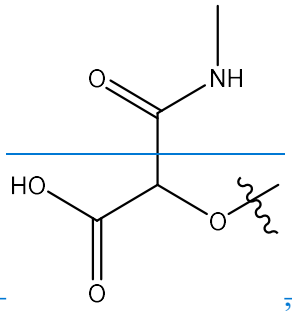

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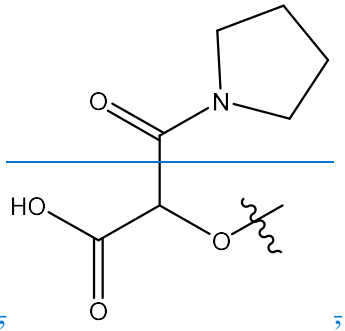

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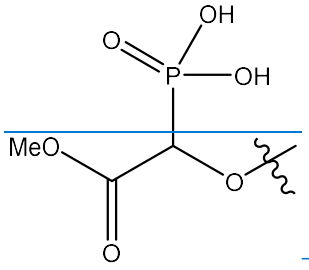

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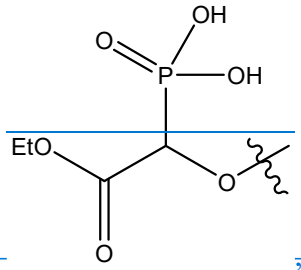

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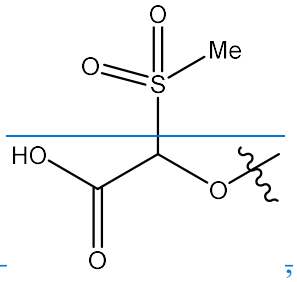

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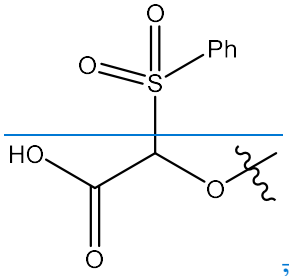

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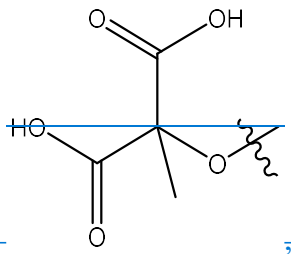

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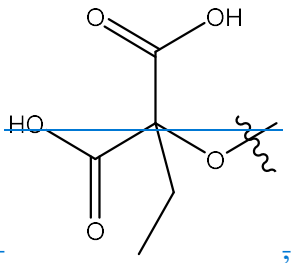

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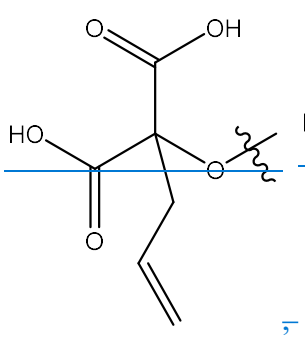
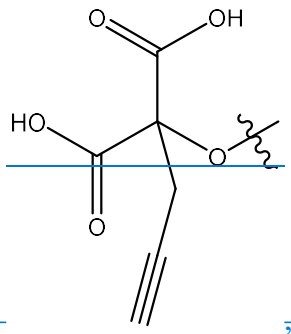
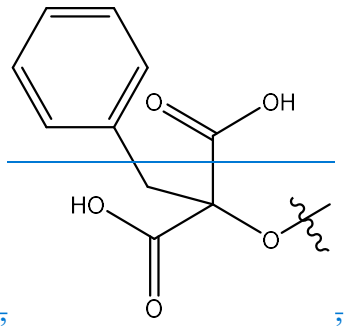
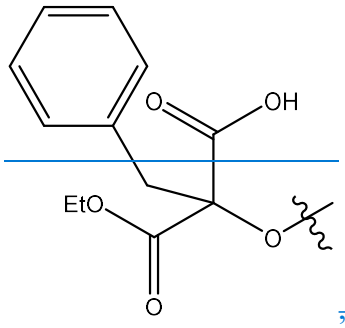
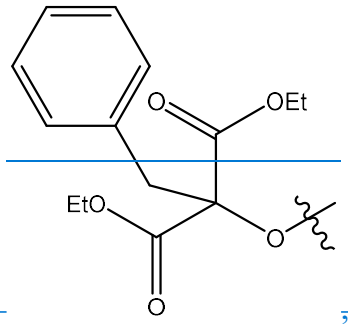
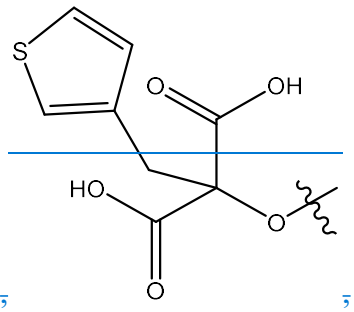
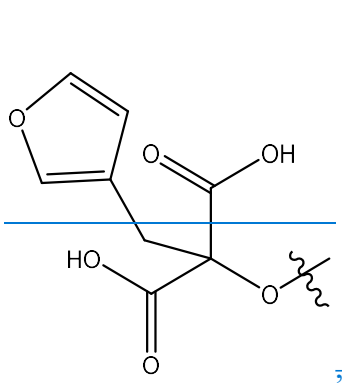
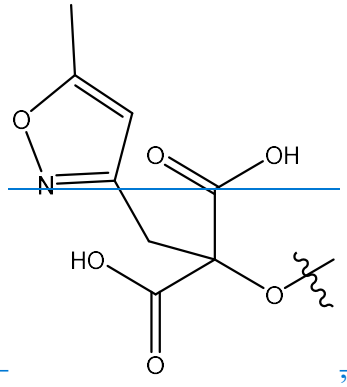
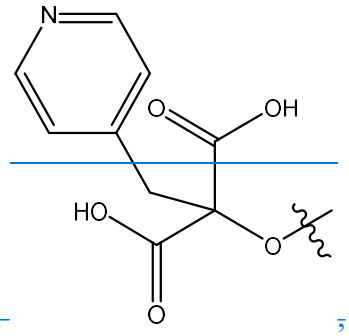
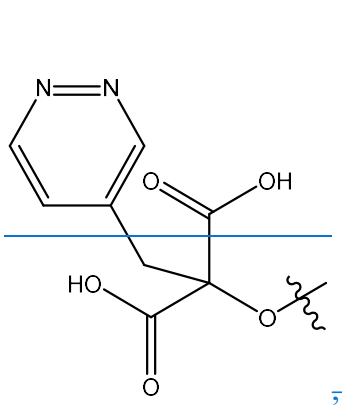
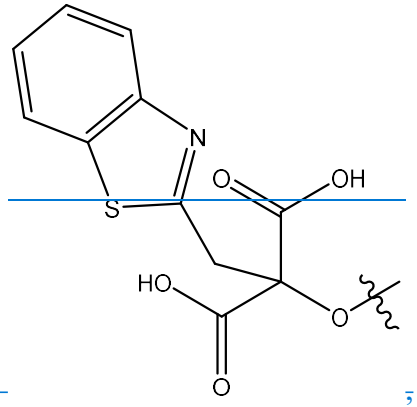
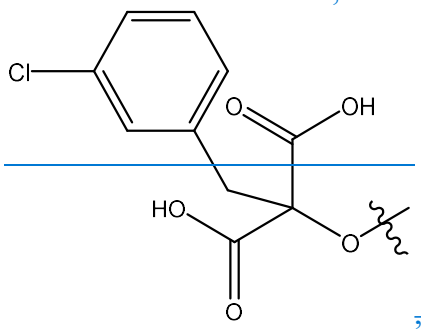
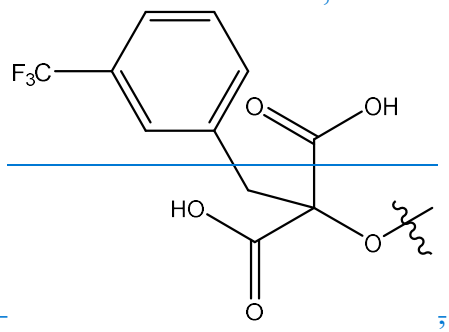
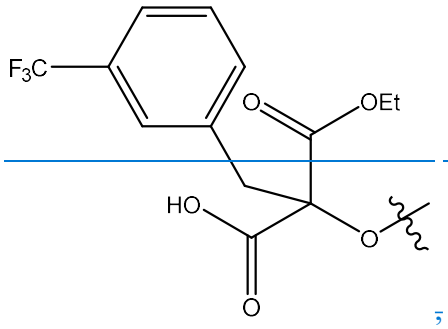
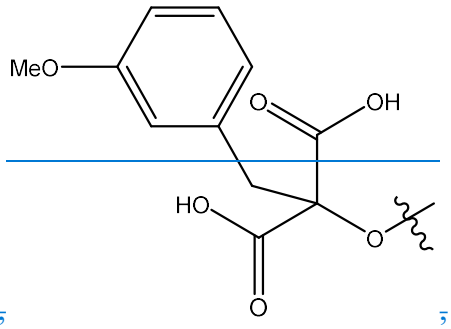
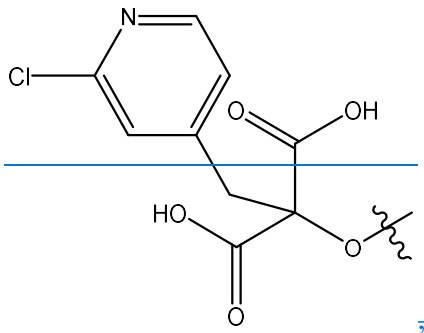
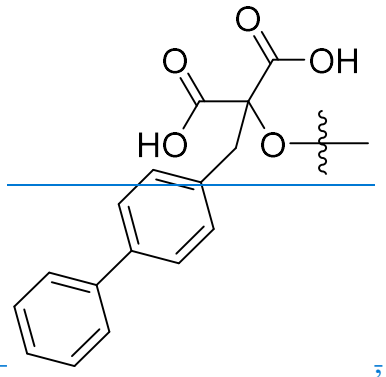
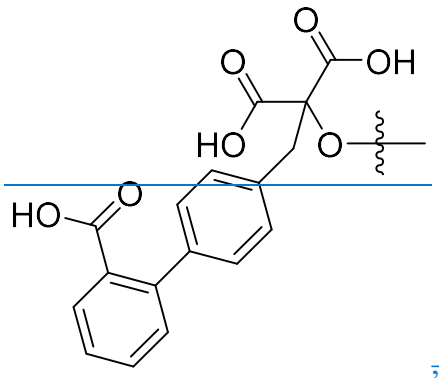
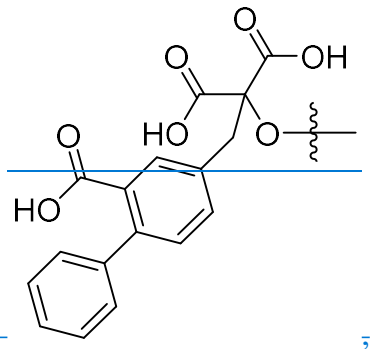
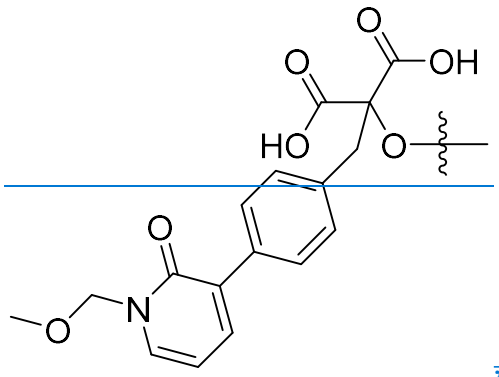
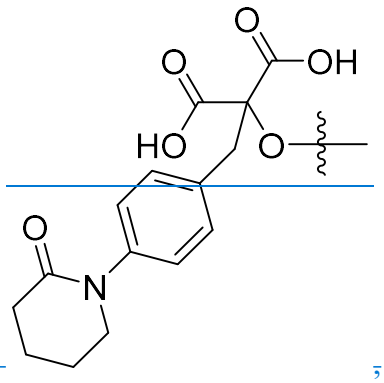
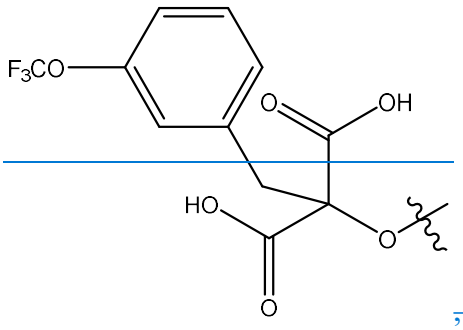
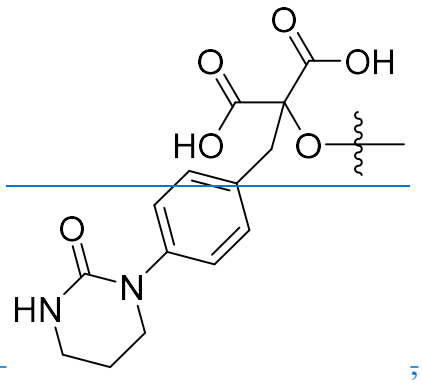
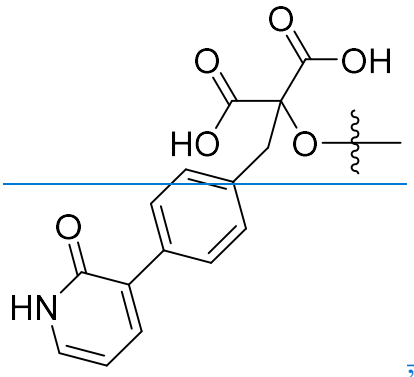
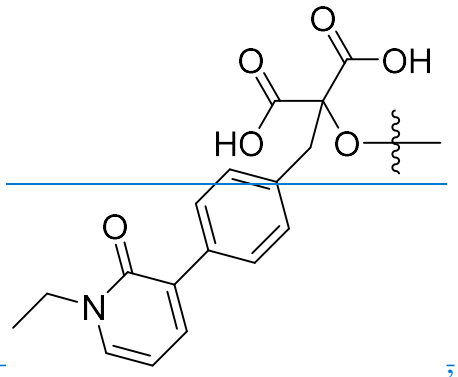
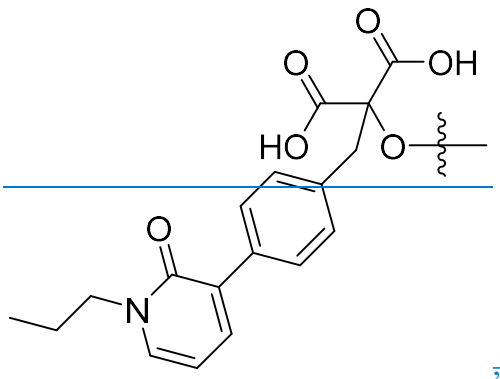
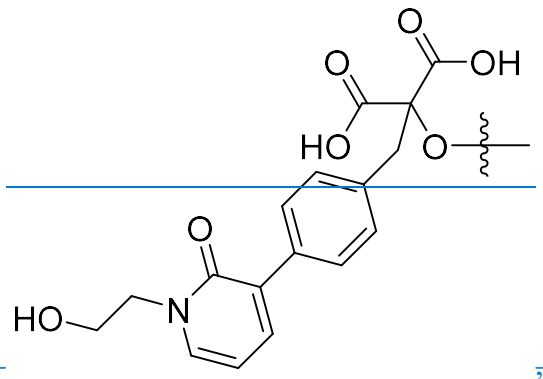
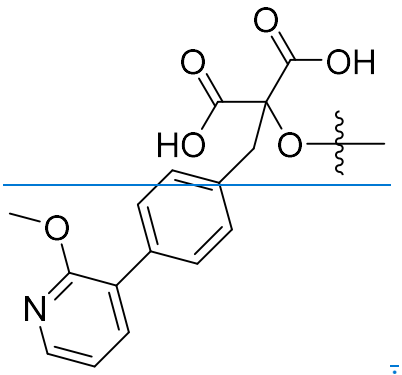














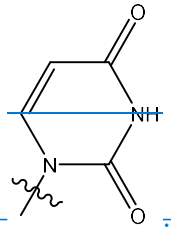
67. The compound of any preceding claim, wherein R^9 is H or C_{1-6}alkyl.

68. The compound of any one of claims 28-67, wherein Het is selected from a 6- to 10-membered aryl, a 5- to 8-membered heterocyclyl, a 5- to 8-membered monocyclic or 5- to

10-membered bicyclic heteroaryl and is unsubstituted or substituted with one or more substituents selected from halo, alkyl, haloalkyl, alkoxy, carbonyl, amino, amido, alkylthio, alkoxycarbonyl, cycloalkyl, aryl, heterocyclyl and heteroaryl.

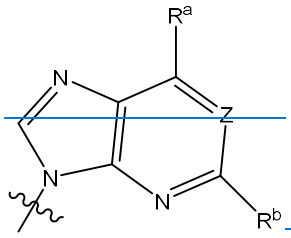
69. The compound of claim 68, wherein the Het substituents are selected from halo, alkyl, haloalkyl, amino, and heterocyclyl.

70. The compound of claim 68, wherein Het is a nitrogen-containing heterocyclyl or heteroaryl.

71. The compound of claim 68, wherein Het is 

.

72. The compound of any one of claims 1-68, wherein Het is



wherein

Z is CH or N;

R^a is selected from H, halo, alkyl, thiophenyl, $-NR^7R^8$, aryl, and heteroaryl, preferably from H, Cl, $-NR^7R^8$, and phenyl;

R^b is selected from halo, alkyl, haloalkyl, amido, carbonyl, amido, and heteroaryl;

R^7 is selected from H, alkyl, aralkyl, heteroaralkyl, cycloalkyl, and heterocyclyl; and

R^8 is H or alkyl; or

R^7 and R^8, together with the nitrogen atom to which they are attached, form a 4- to 7-membered heterocyclyl ring.

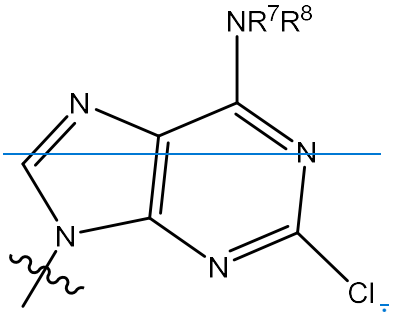
73. The compound of claim 72, wherein Z is CH.

74. The compound of claim 72, wherein Z is N.

75. The compound of any one of claims 72-74, wherein R^a is $-NR^7R^8$.

~~76. The compound of any one of claims 72-75, wherein R^b is selected from Cl, $-CF_3$, carbonyl and $-CONH_2$.~~

~~77. The compound of any one of claims 72-76, wherein, Het is~~



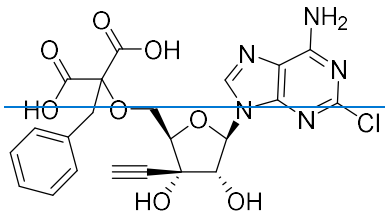
~~78. The compound of any one of claims 72-77, wherein R^7 is alkyl or cycloalkyl, where the alkyl or cycloalkyl is unsubstituted or substituted with one or more substituents selected from hydroxy, alkoxy, aryl, amino, and cycloalkyl.~~

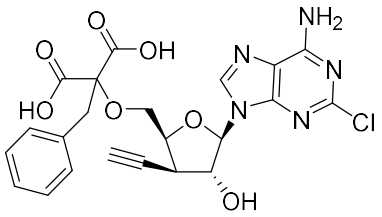
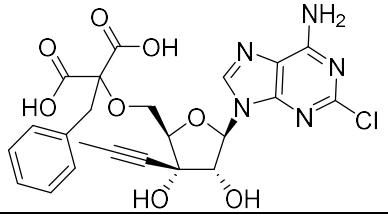
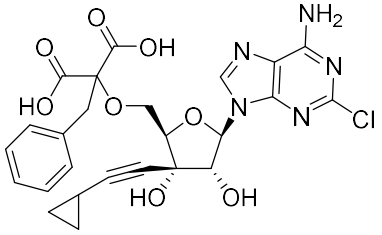
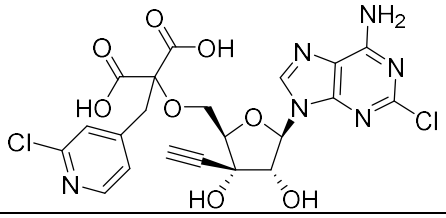
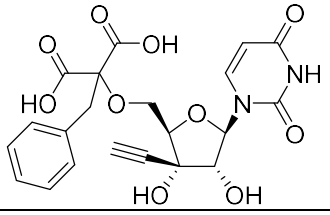
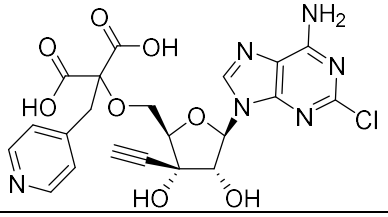
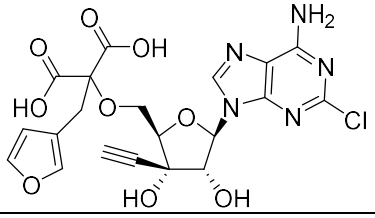
~~79. The compound of any one of claims 74-77, wherein R^7 is aralkyl or heteroaralkyl, where the aralkyl or heteroaralkyl is unsubstituted or substituted with halo or alkyl.~~

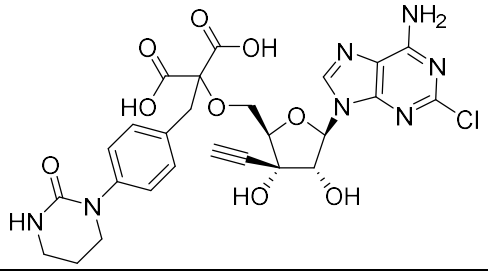
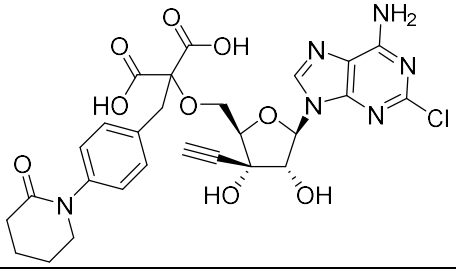
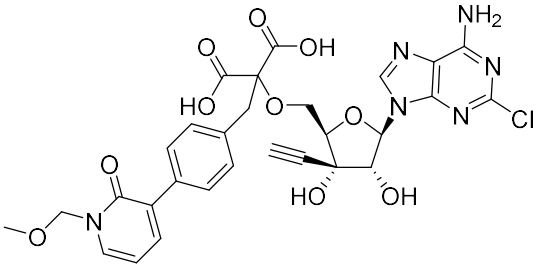
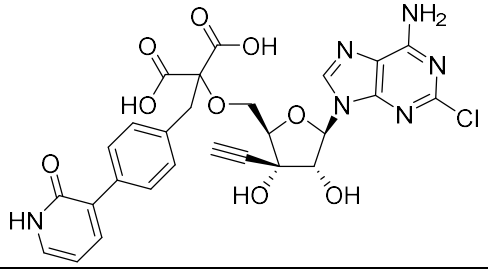
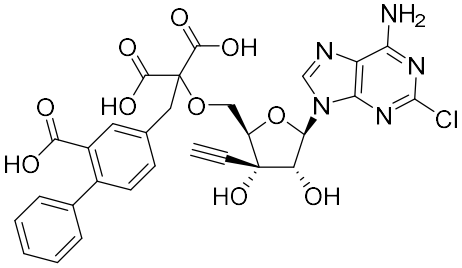
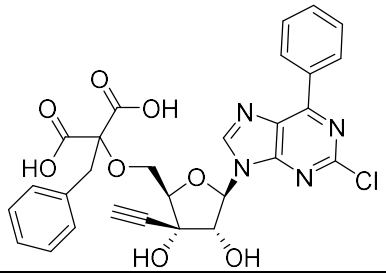
~~80. The compound of any one of claims 74-79, wherein R^8 is selected from H, methyl, and ethyl.~~

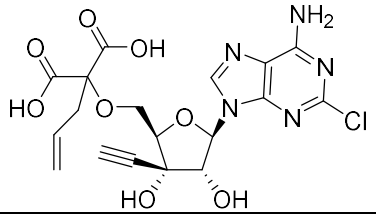
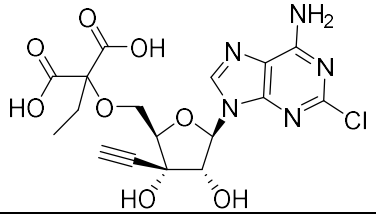
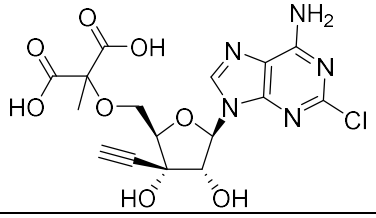
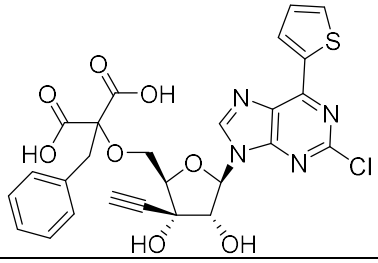
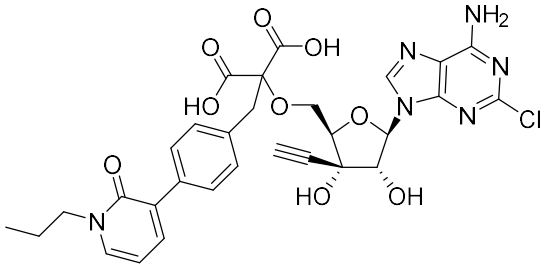
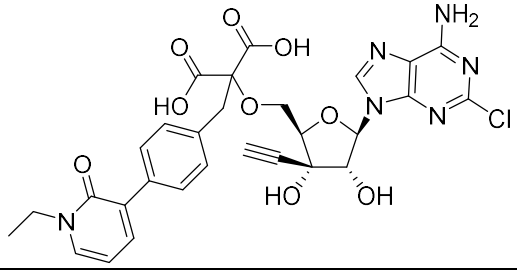
~~81. The compound of any one of claims 74-77, wherein R^7 and R^8, together with the nitrogen atom to which they are attached, form a heterocyclyl ring selected from azetidinyl, morpholino, pyrrolidinyl, and azepanyl.~~

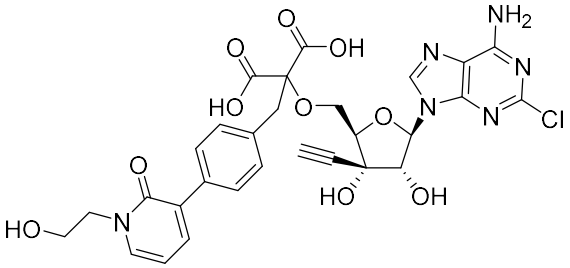
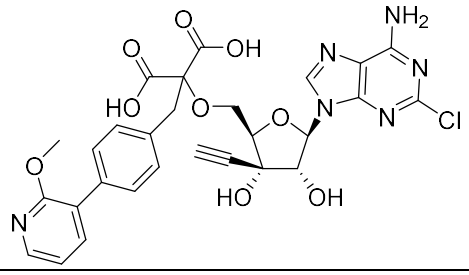
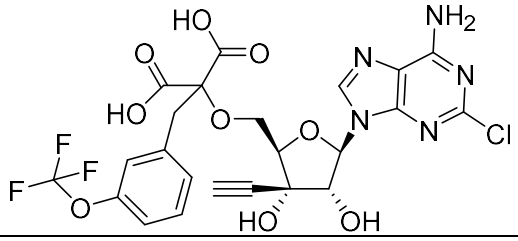
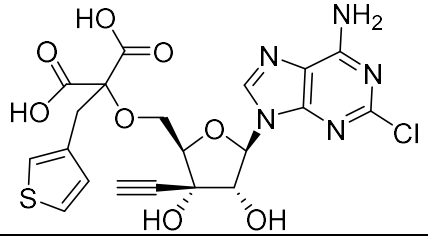
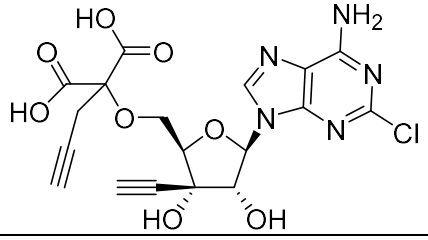
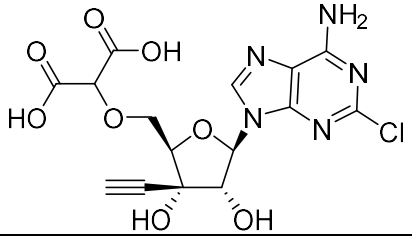
~~82~~29. A compound selected from:

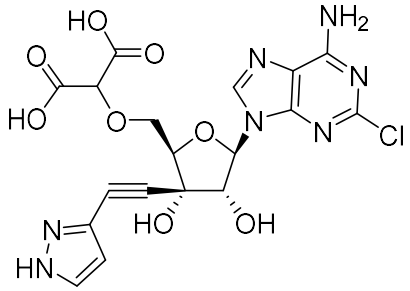
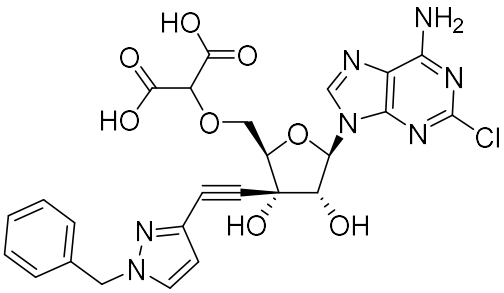
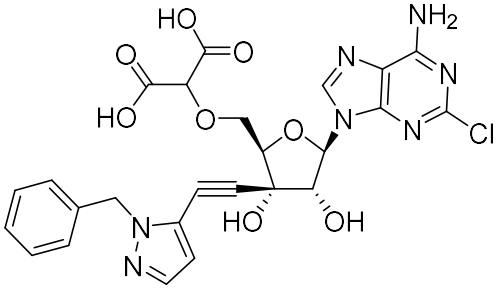
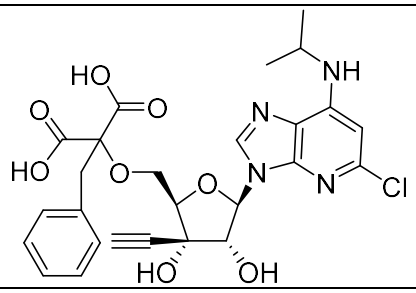
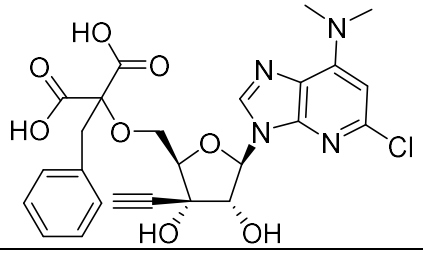
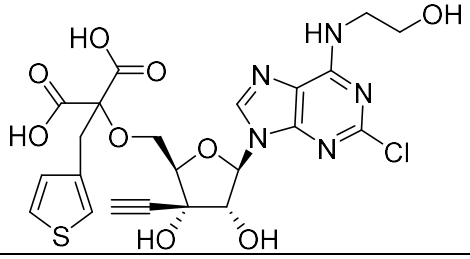
Example #	Compound
~~1~~	

Example #	Compound
2	
3	
4	
5	
6	
7	
8	

Example #	Compound
9	
10	
11	
12	
13	
14	

Example #	Compound
15	
16	
17	
18	
19	
20	

Example #	Compound
21	
22	
23	
24	
25	
26	

Example #	Compound
27	
28	
29	
30	
31	
32	

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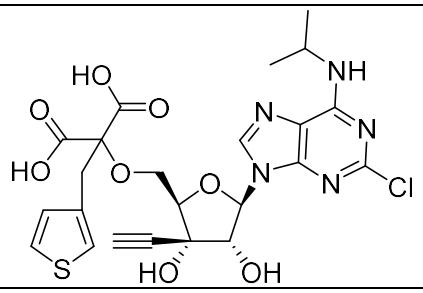
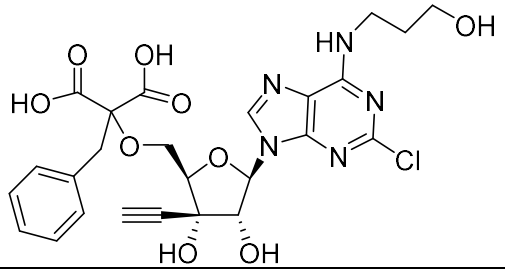
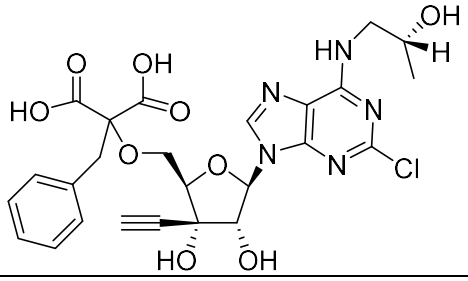
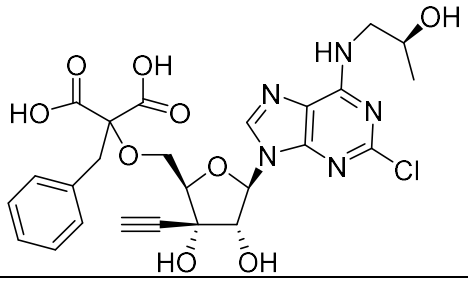
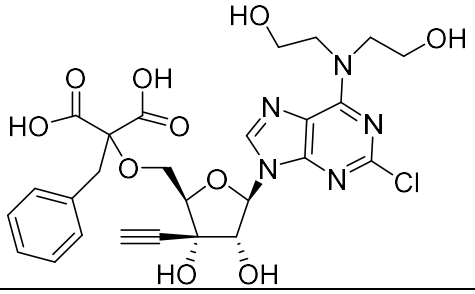
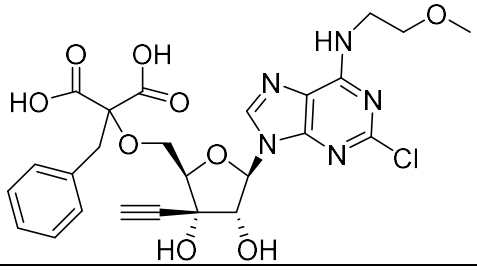
33	
34	
35	
36	
37	
38	

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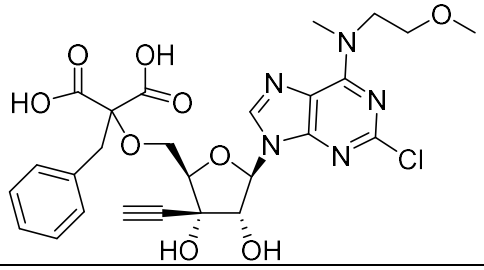
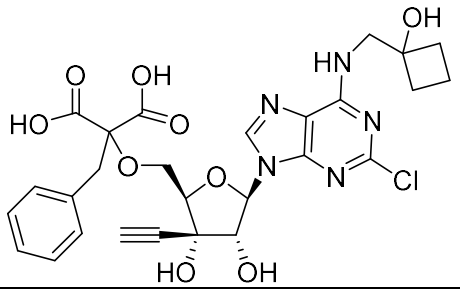
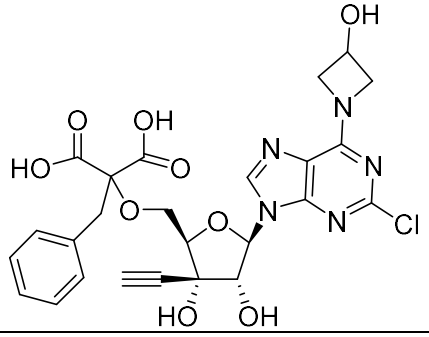
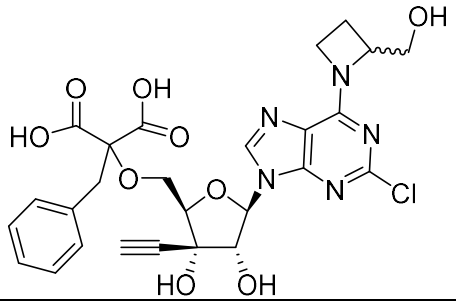
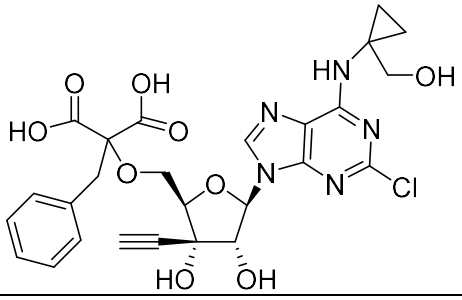
39	
40	
41	
42	
43	

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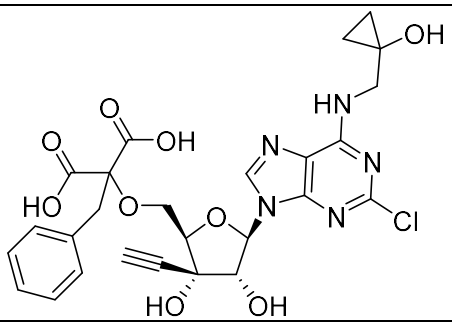
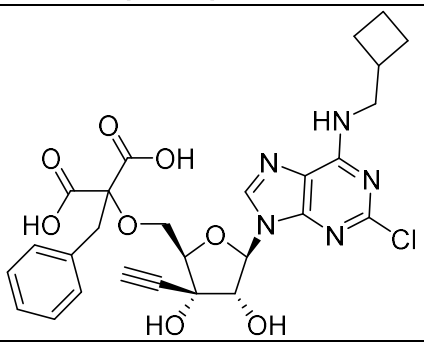
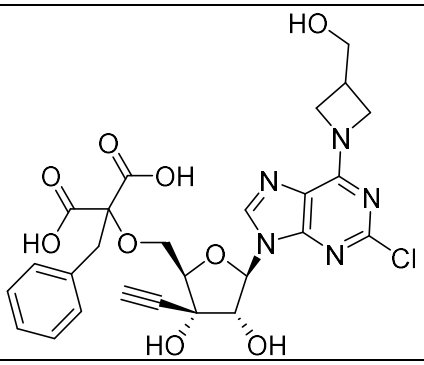
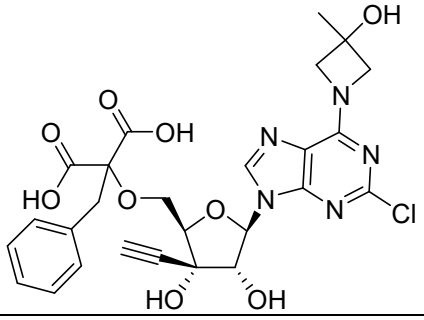
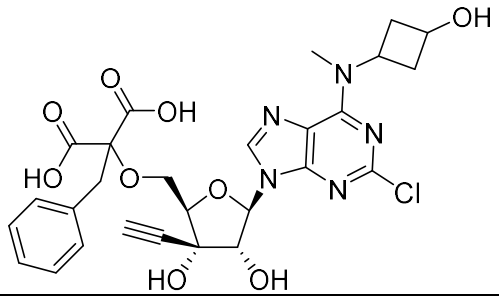
44	
45	
46	
47	
48	

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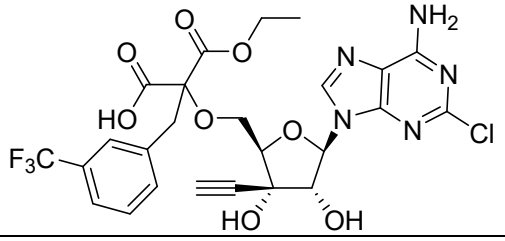
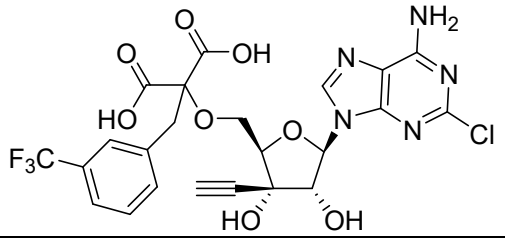
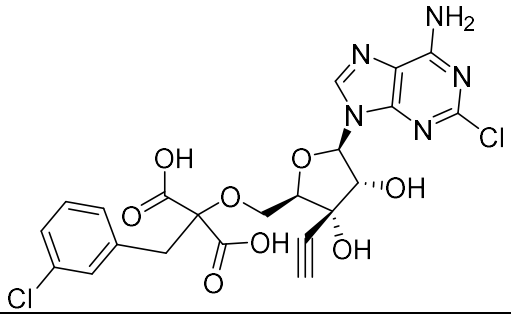
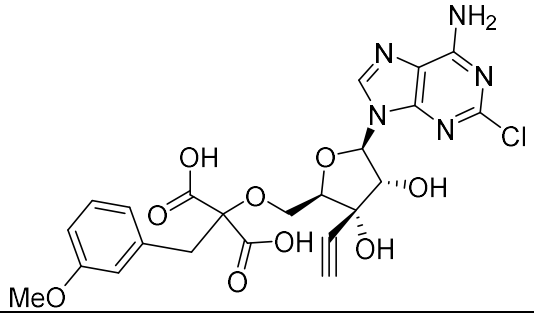
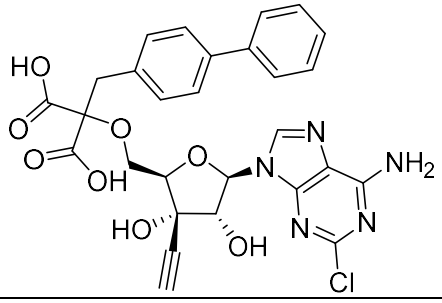
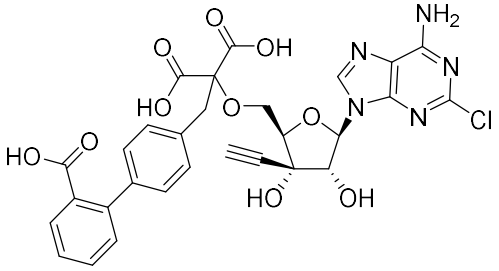
49	
50	
51	
52	
53	
54	

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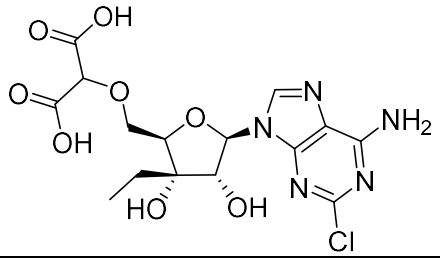
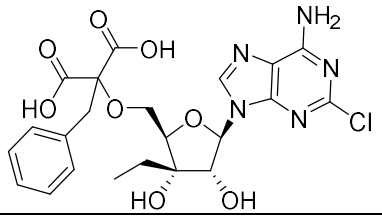
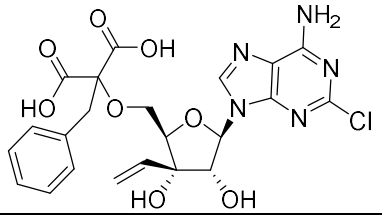
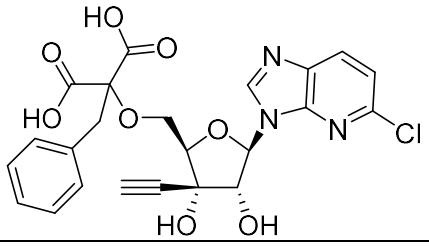
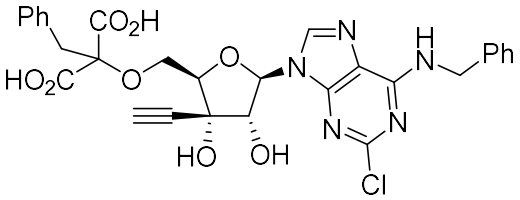
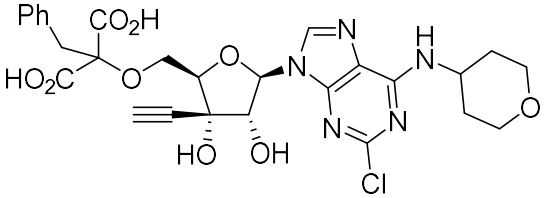
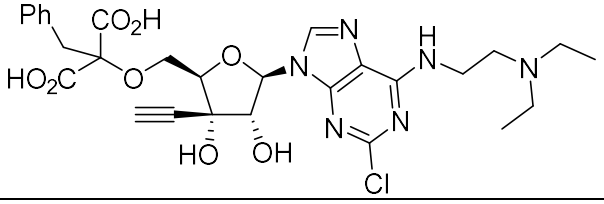
55	
56	
57	
58	
59	
60	
61	

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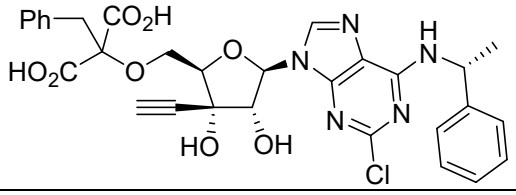
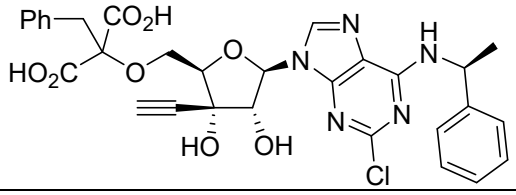
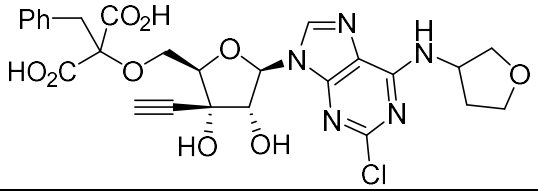
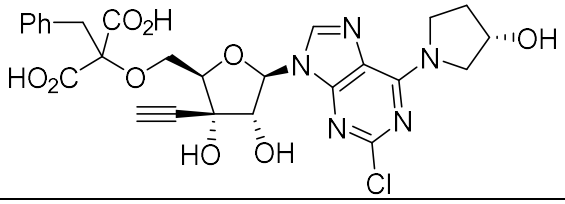
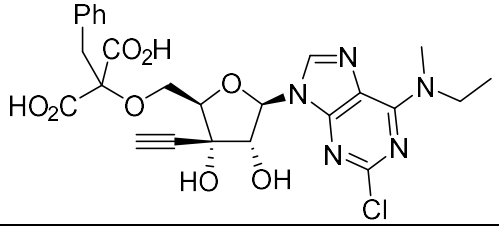
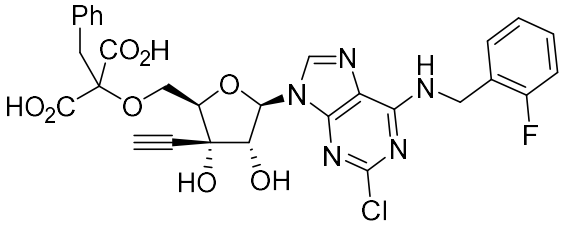
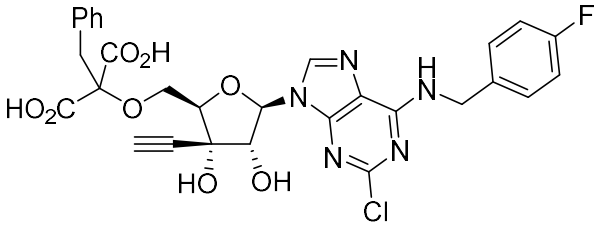
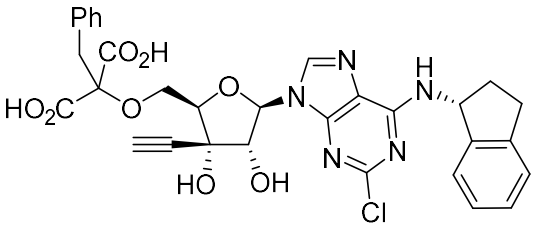
62	
63	
64	
65	
66	
67	
68	
69	

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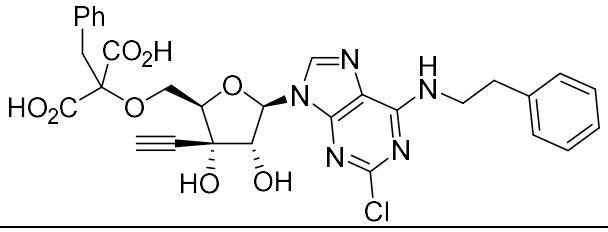
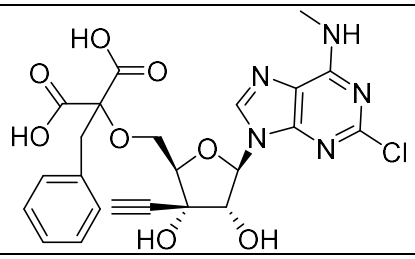
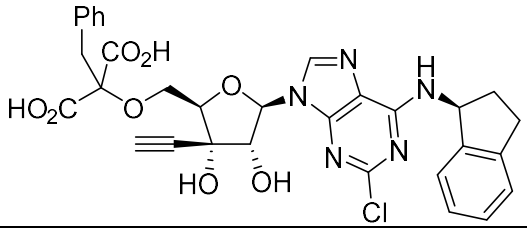
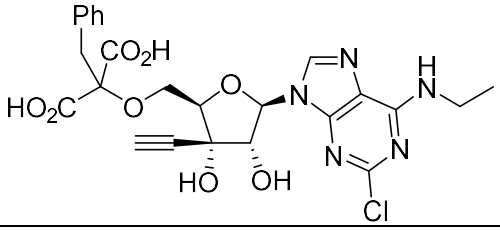
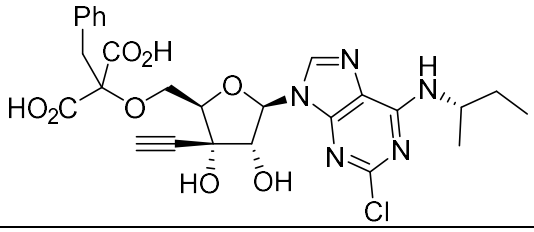
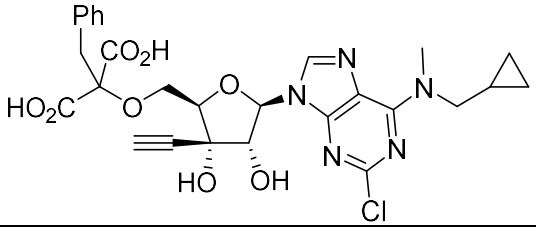
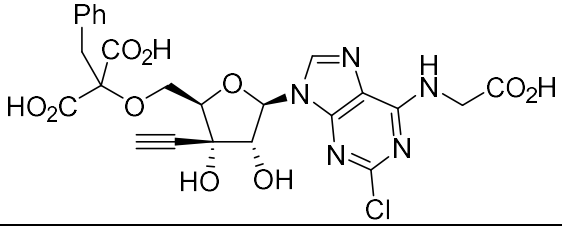
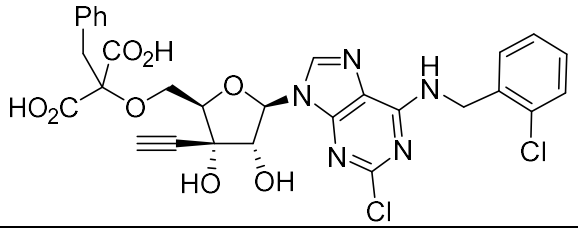
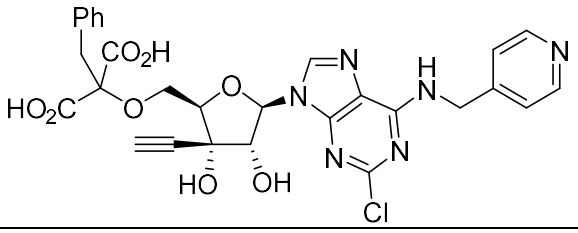
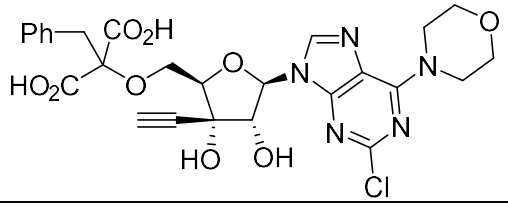
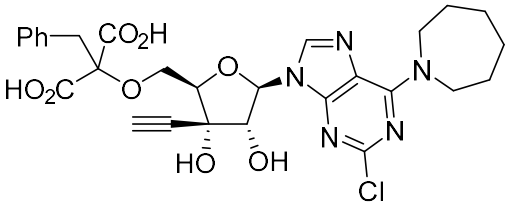
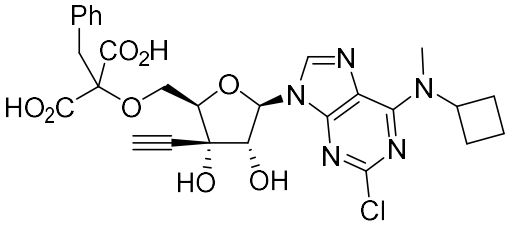
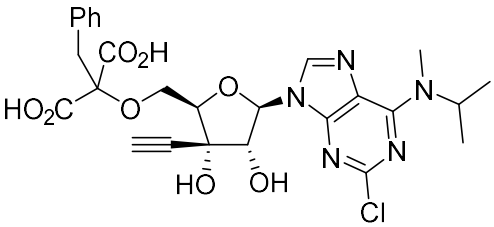
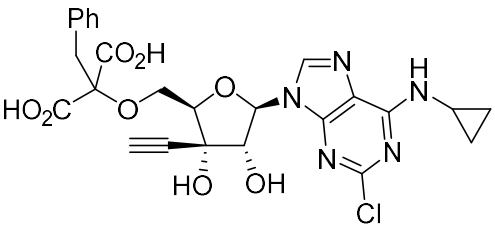
70	
71	
72	
73	
74	
75	
76	

Example #	Compound
77	
78	
79	
80	
81	
82	
83	

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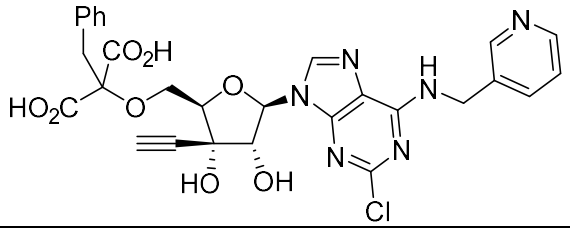
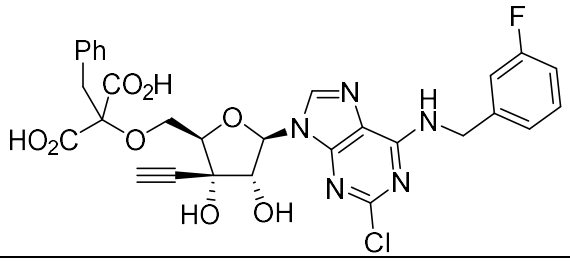
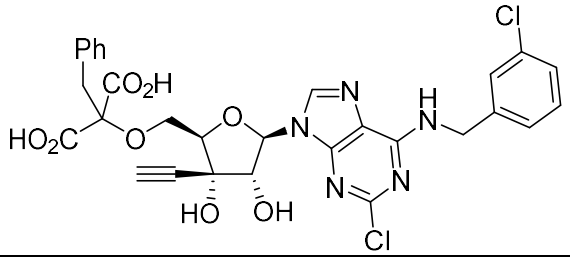
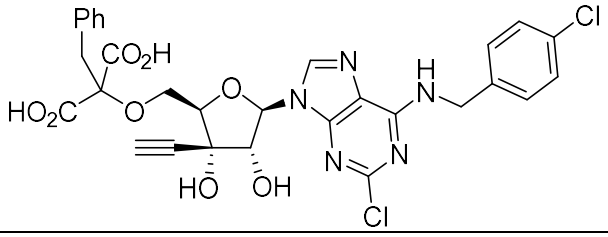
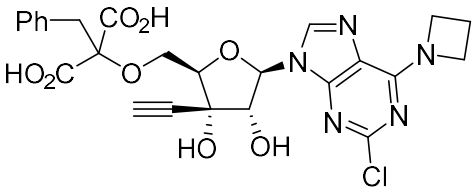
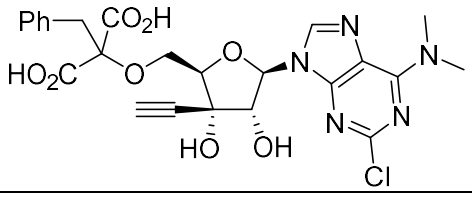
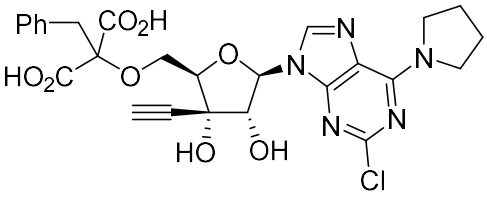
84	
85	
86	
87	
88	
89	
90	

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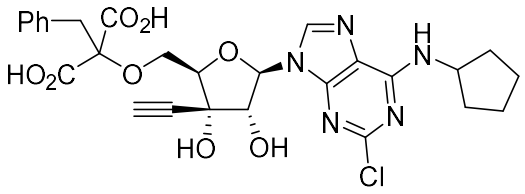
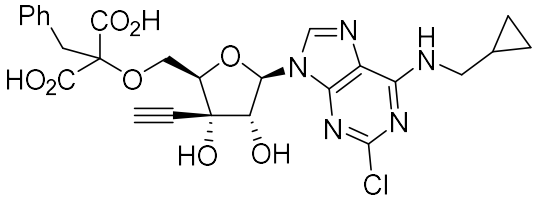
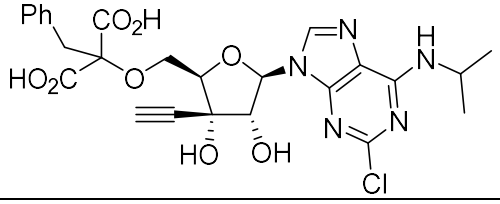
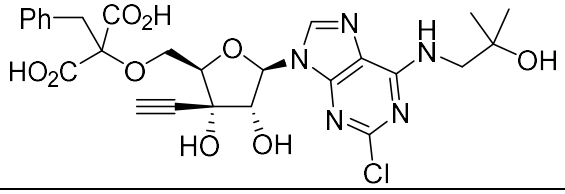
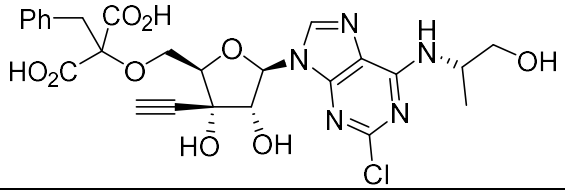
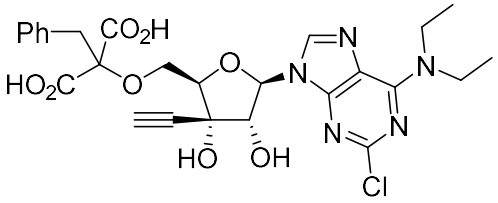
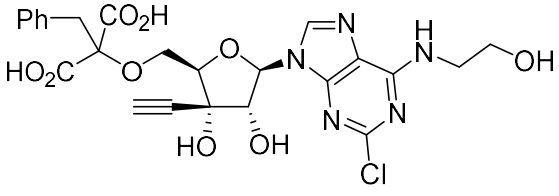
91	
92	
93	
94	
95	
96	
97	

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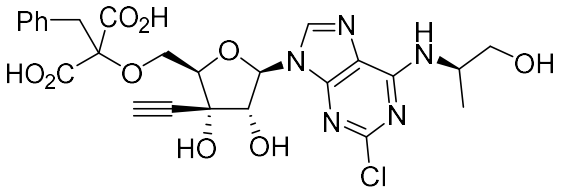
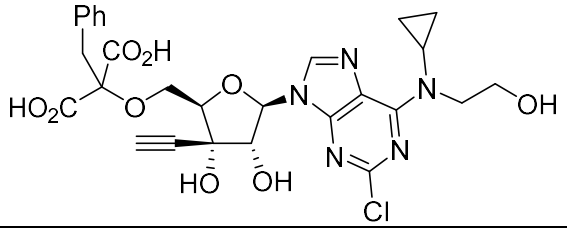
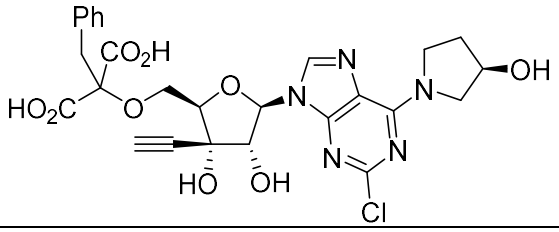
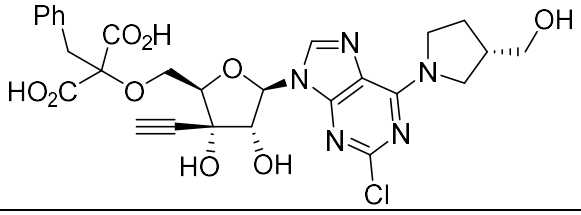
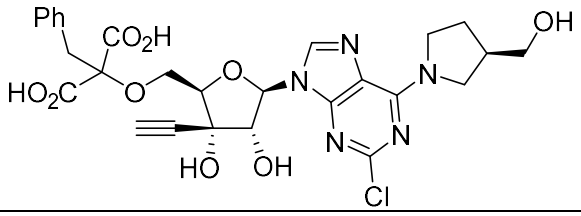
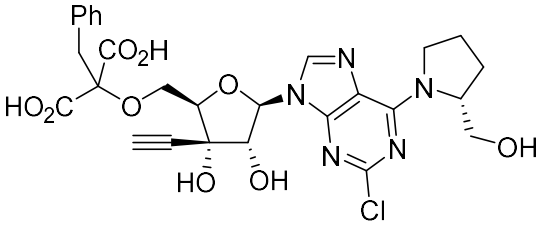
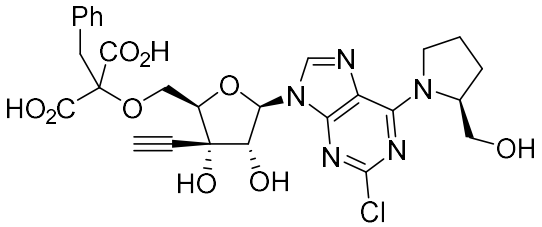
98	
99	
100	
101	
102	
103	
104	

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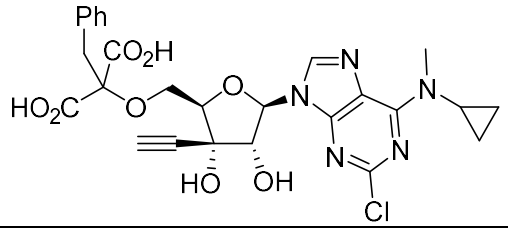
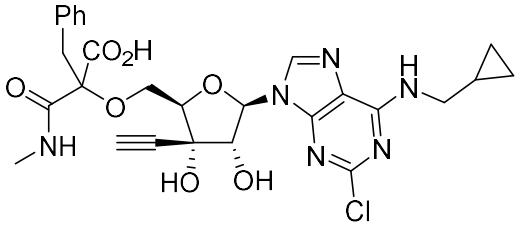
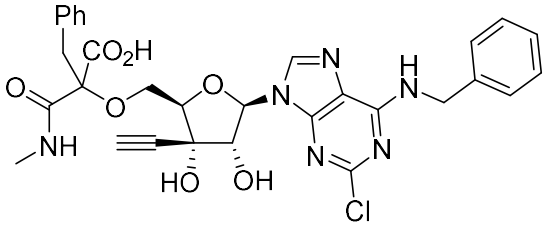
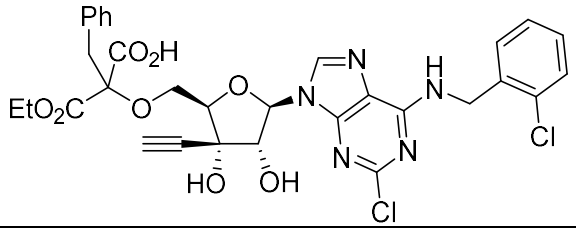
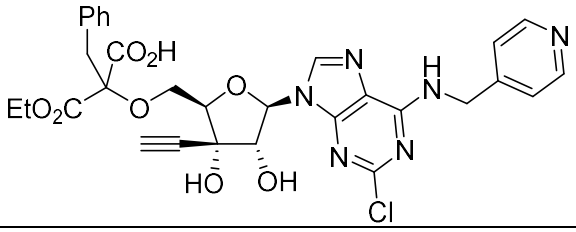
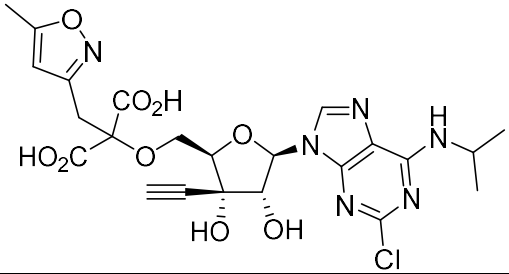
105	
106	
107	
108	
109	
110	

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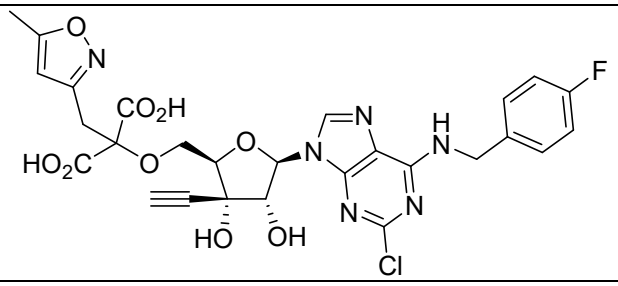
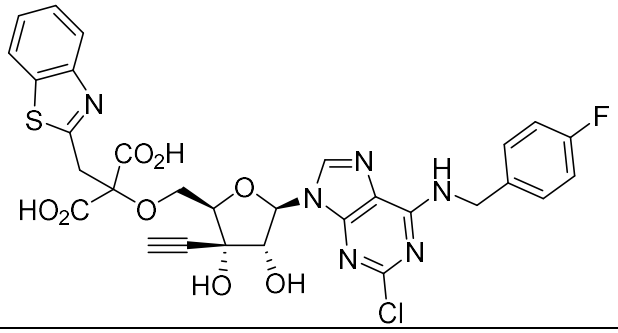
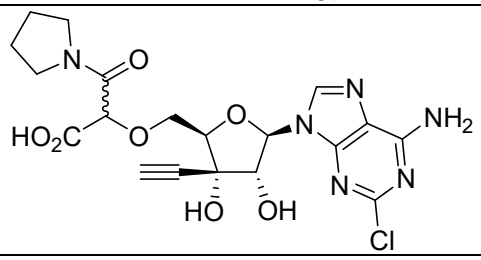
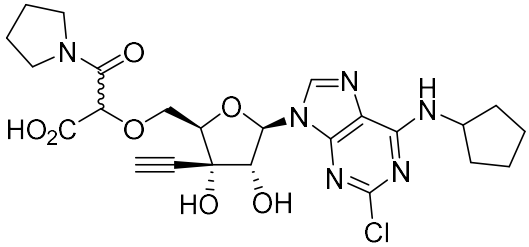
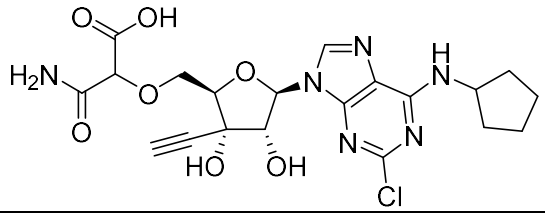
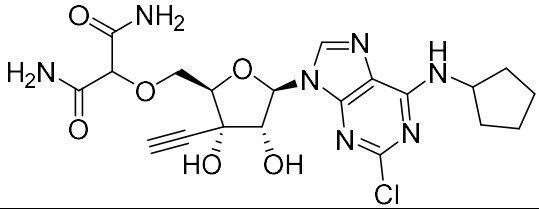
111	
112	
113	
114	
115	
116	

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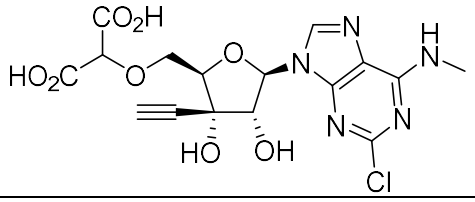
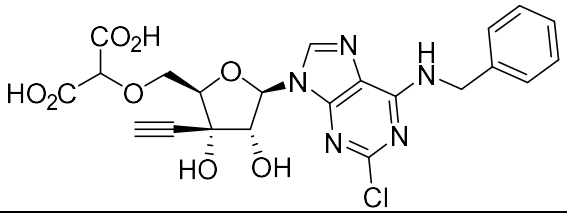
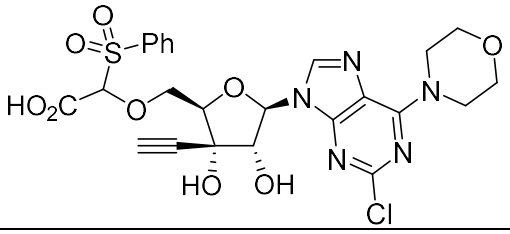
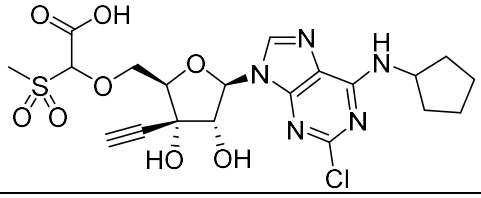
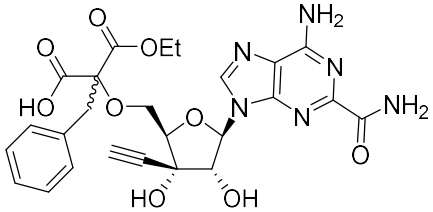
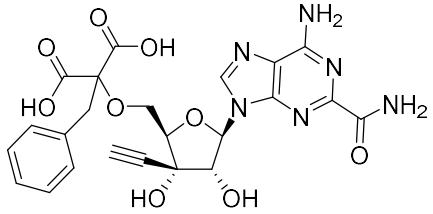
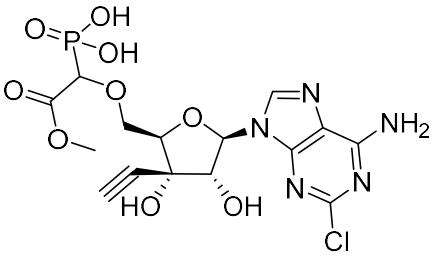
117	
118	
119	
120	
121	
122	
123	

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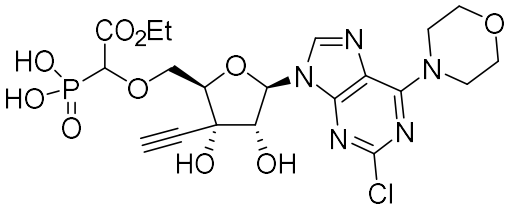
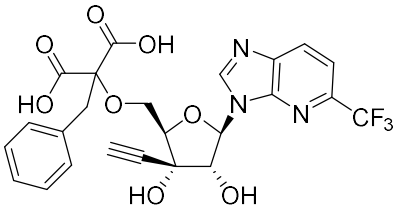
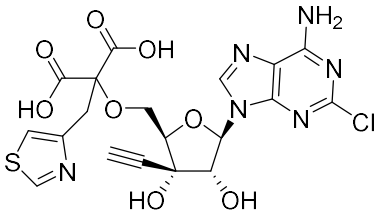
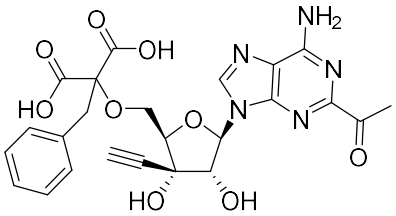
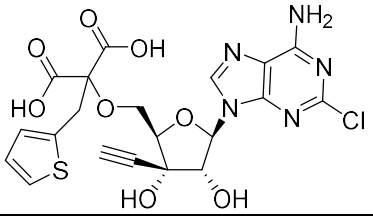
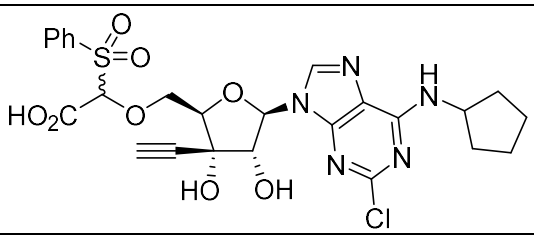
124	
125	
126	
127	
128	
129	

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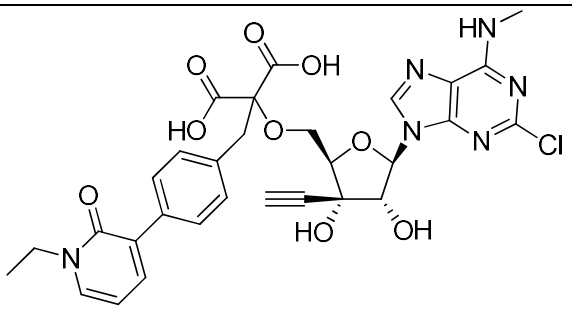
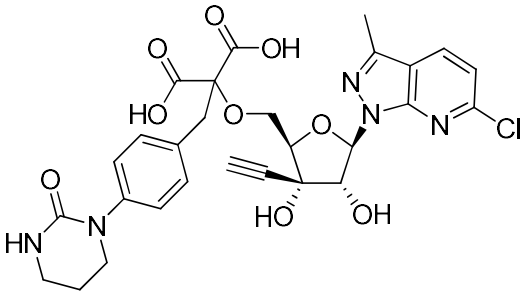
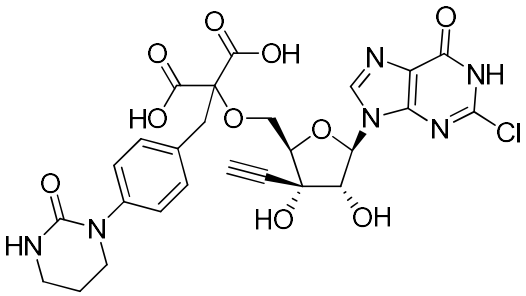
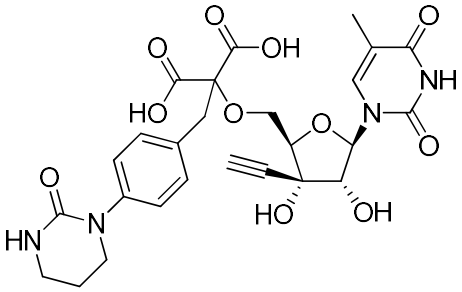
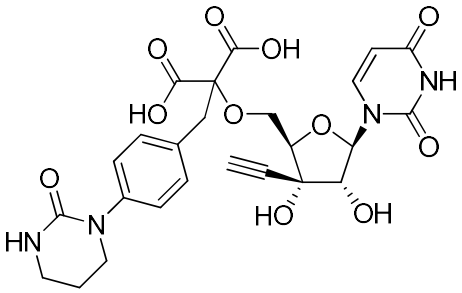
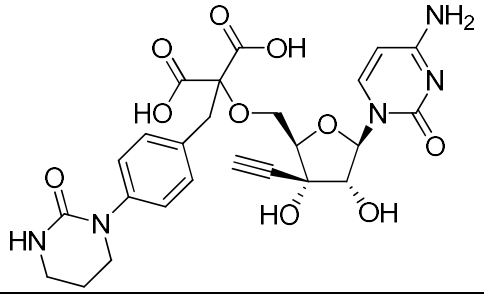
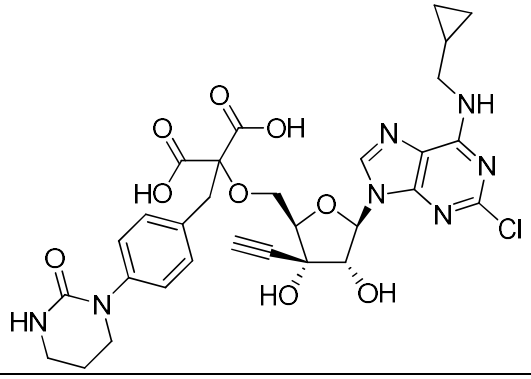
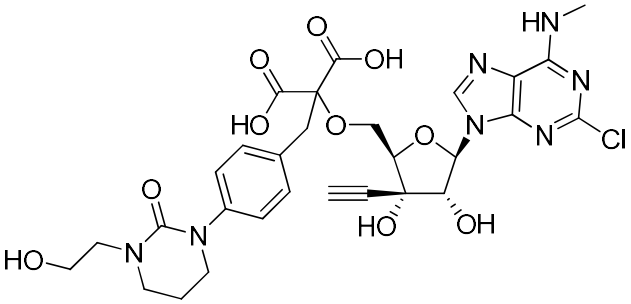
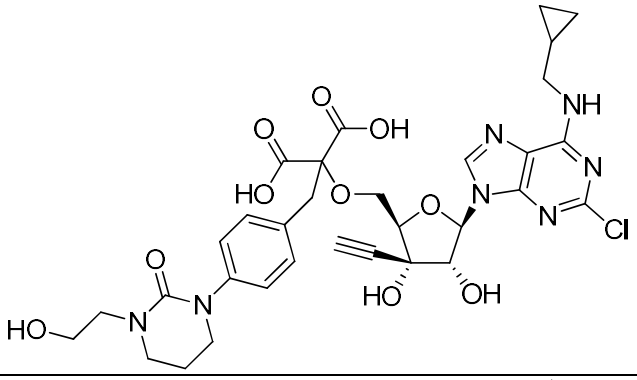
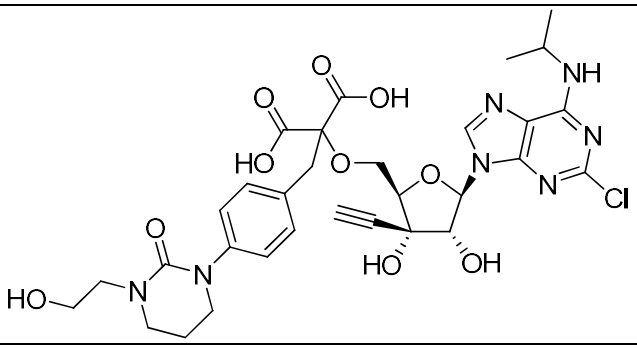
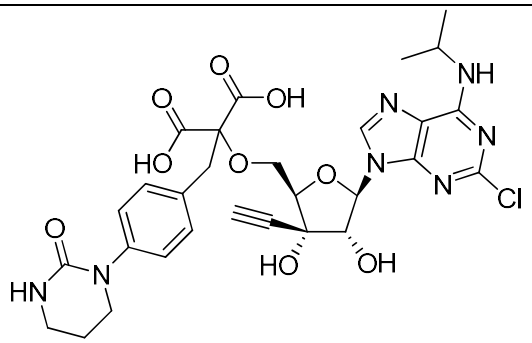
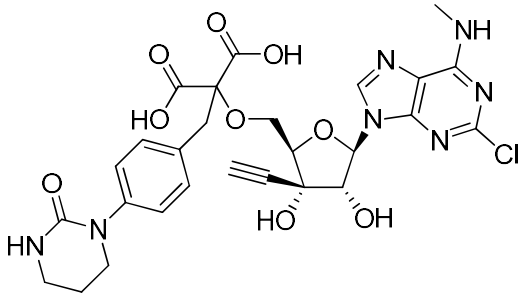
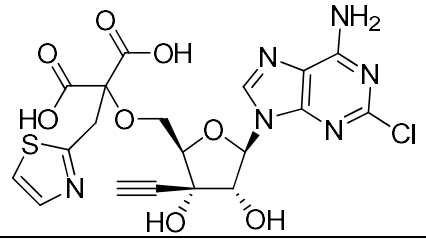
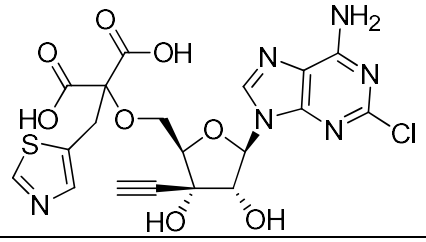
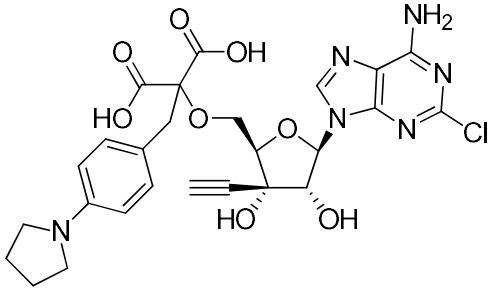
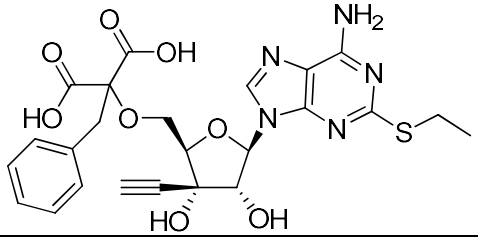
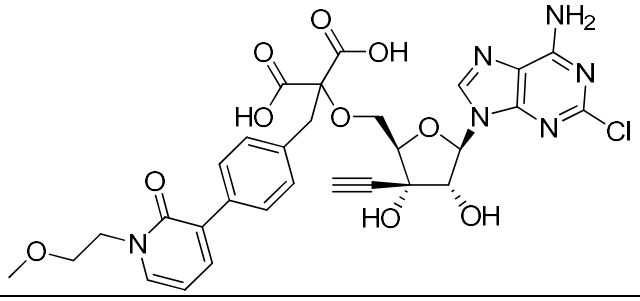
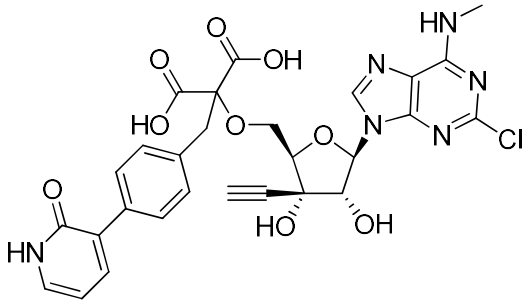
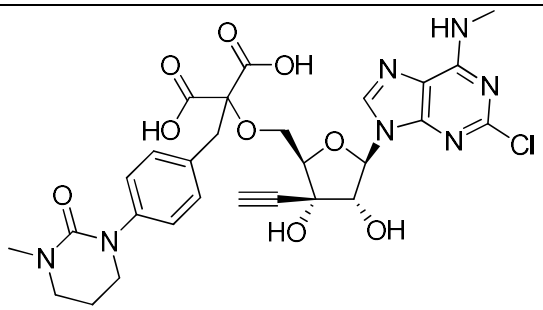
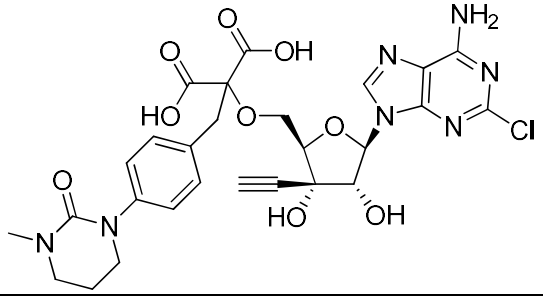
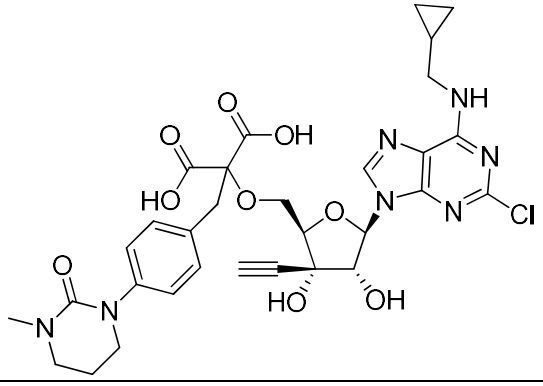
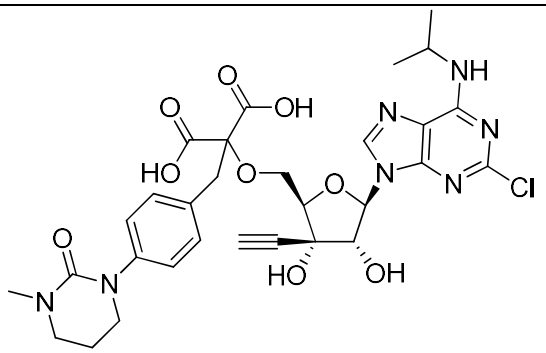
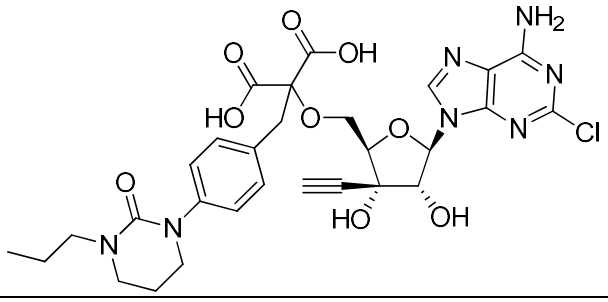
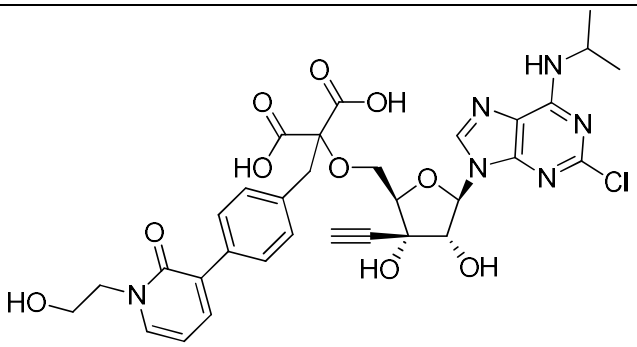
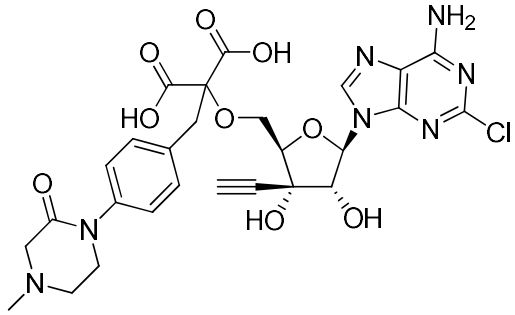
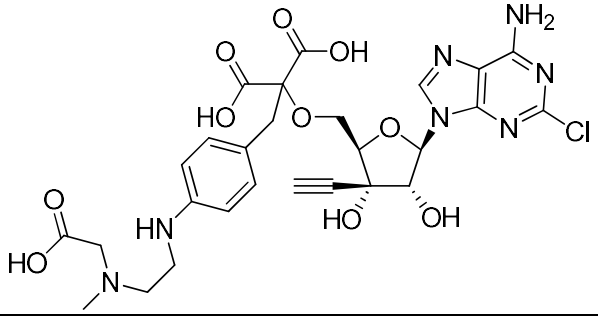
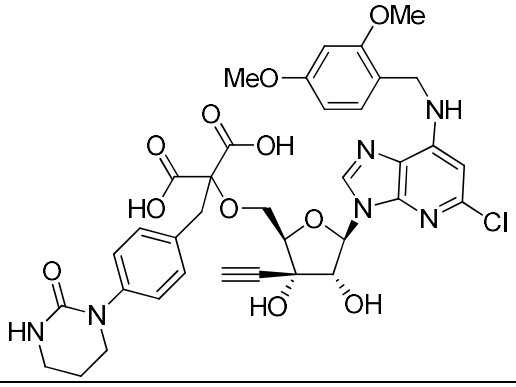
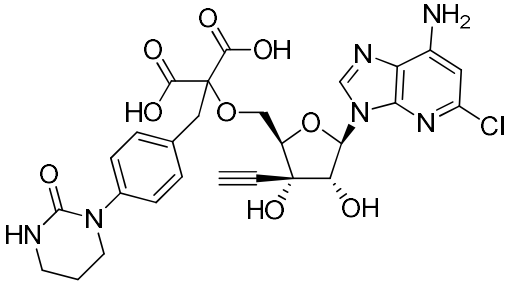
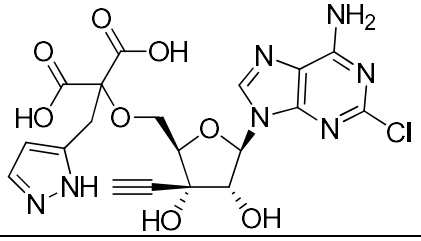
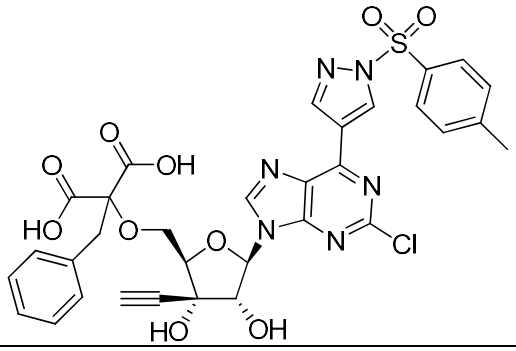
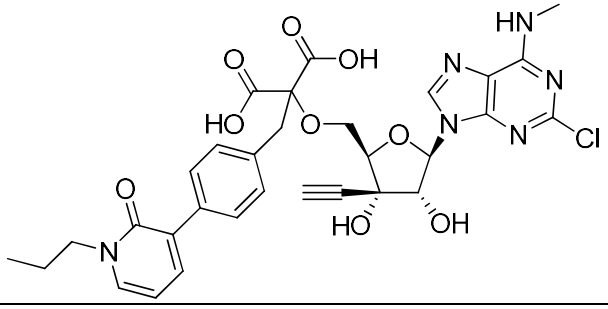
130	
131	
132	
133	
134	

Example #	Compound
135	
136	
137	
138	
139	

Example #	Compound
140	
141	
142	
143	
144	
145	

Example #	Compound
146	
147	
148	
149	
150	

Example #	Compound
151	
152	
153	
154	
155	

Example #	Compound
156	
157	
158	
159	
160	

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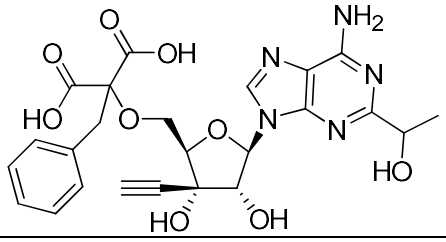
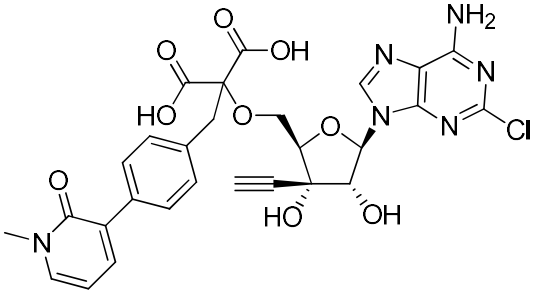
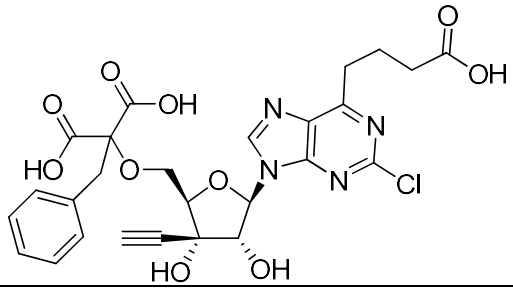
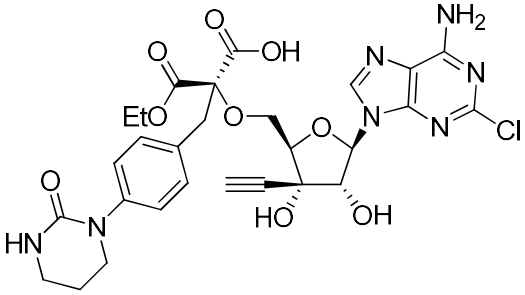
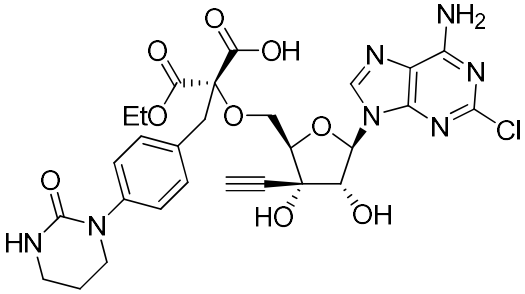
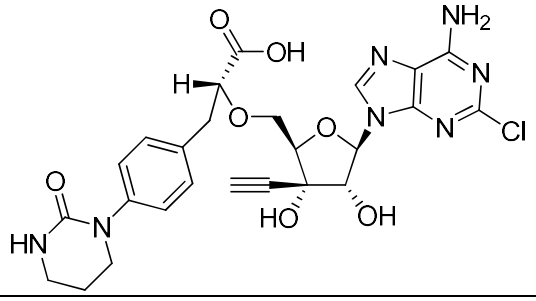
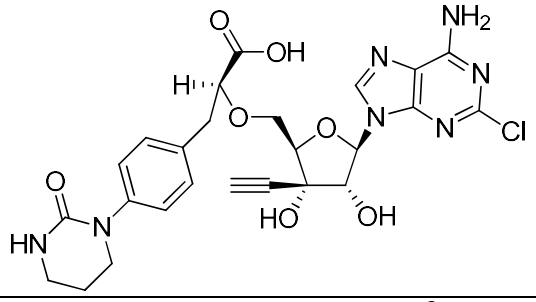
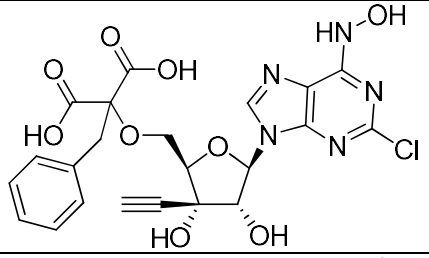
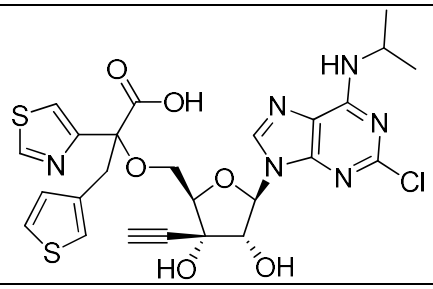
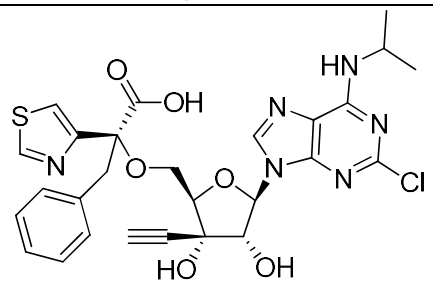
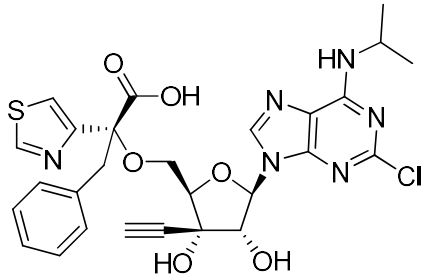
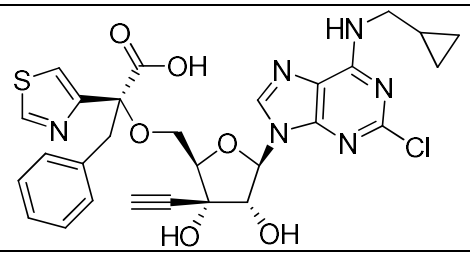
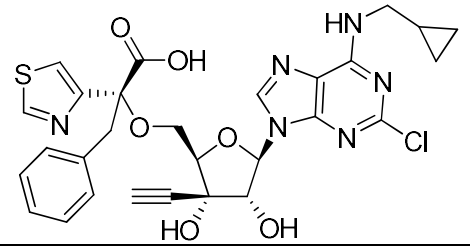
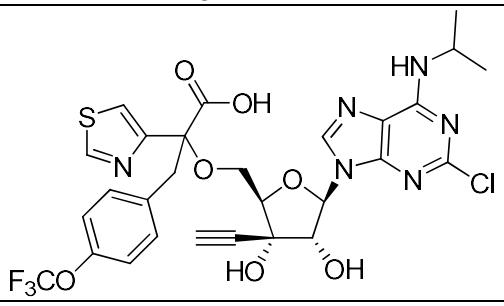
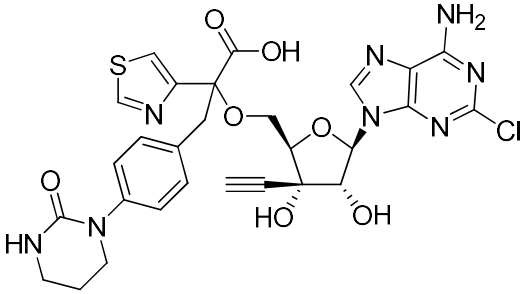
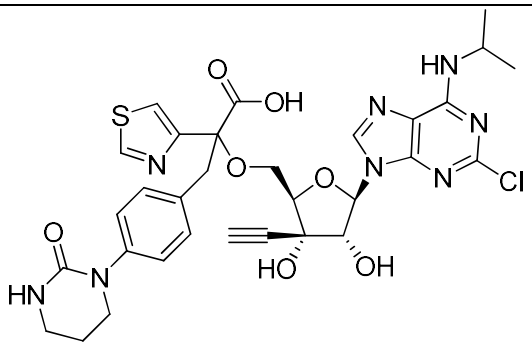
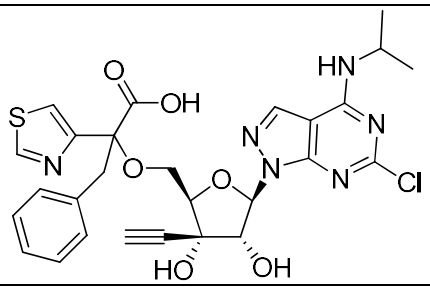
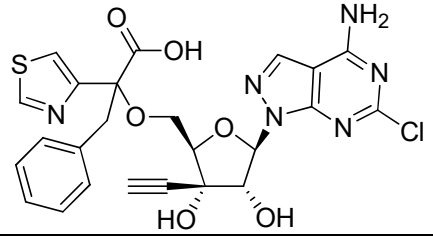
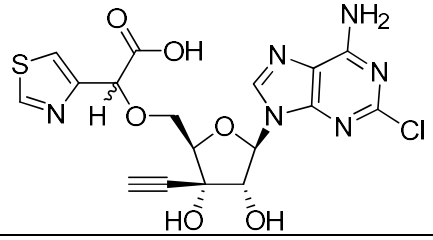
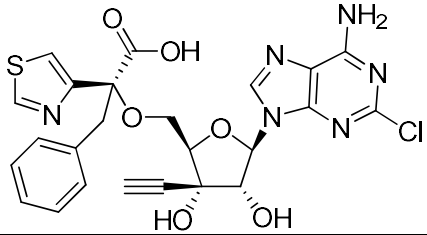
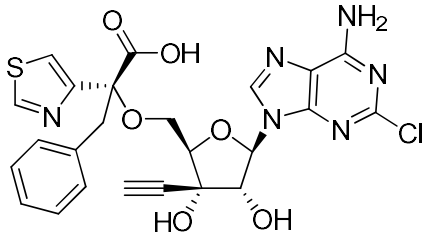
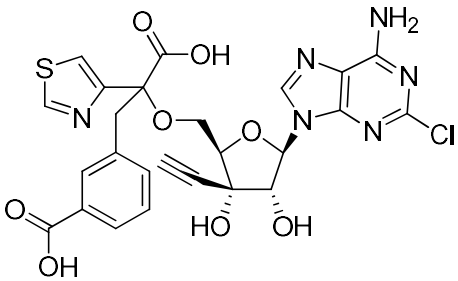
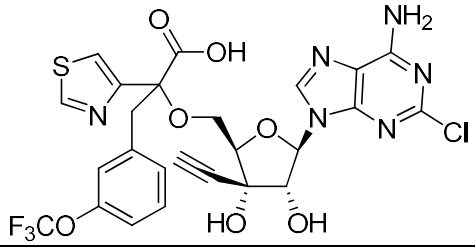
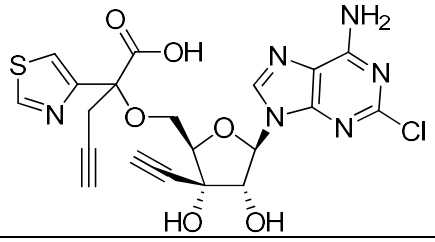
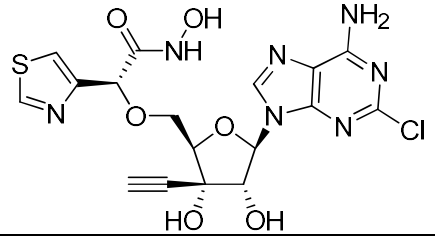
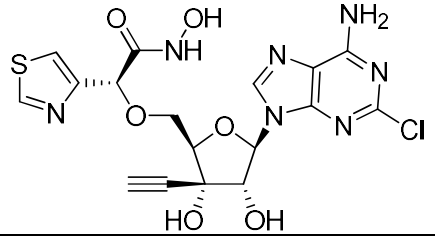
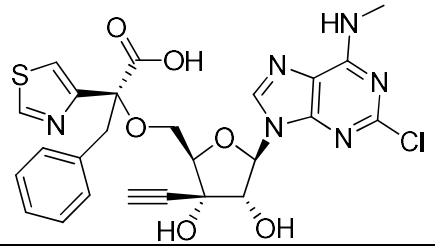
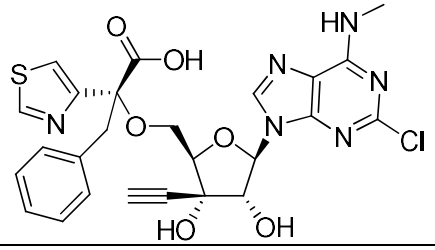
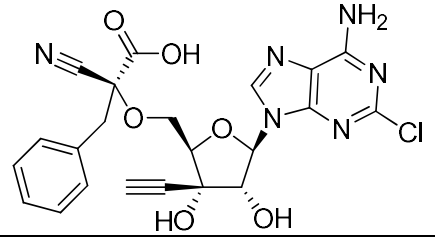
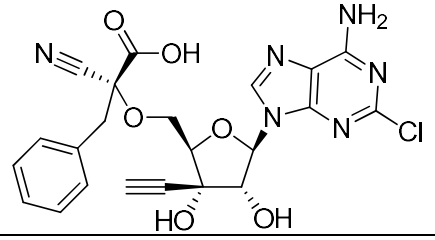
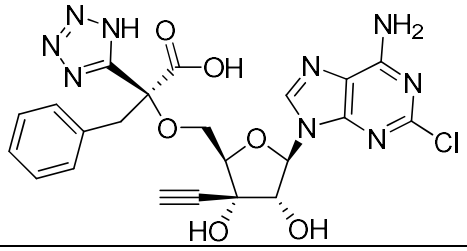
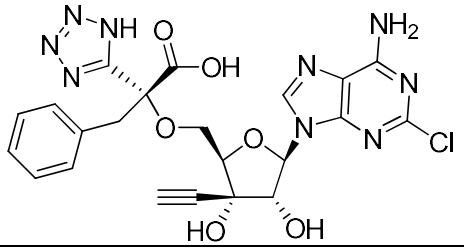
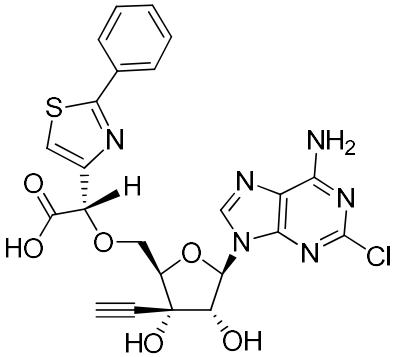
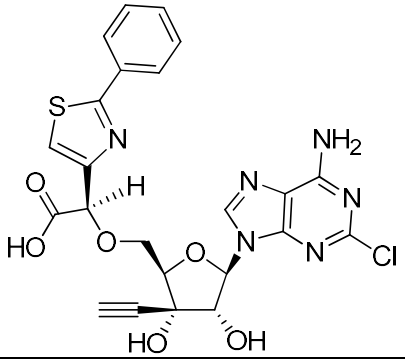
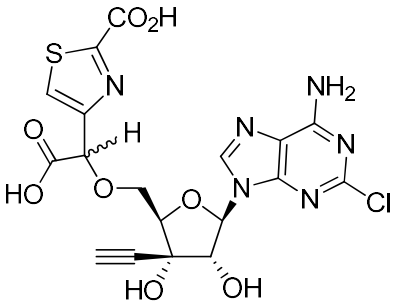
161	
162	
163	
164	
165	

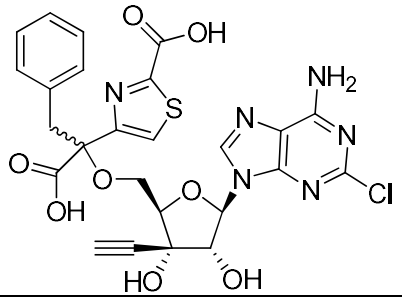
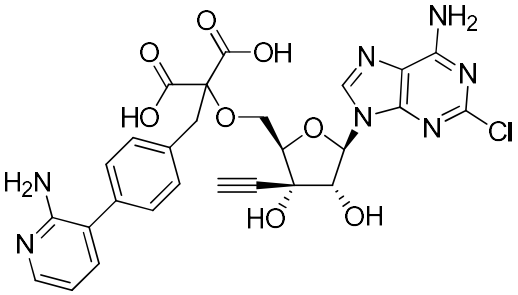
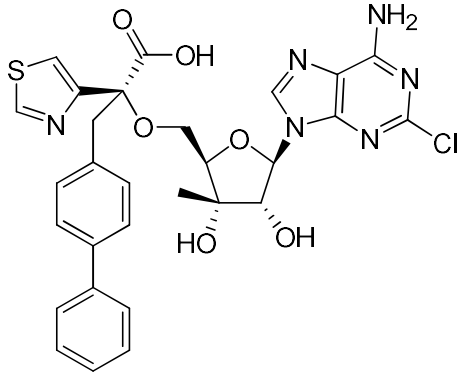
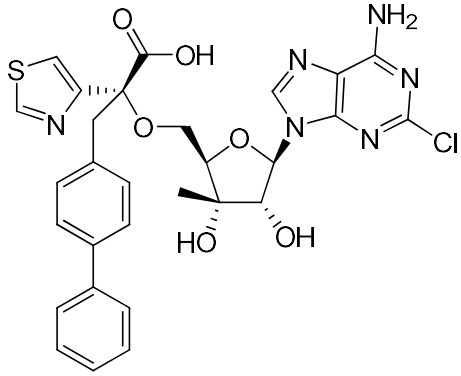
Example #	Compound
166	
167	
168	
169	
170	
171	

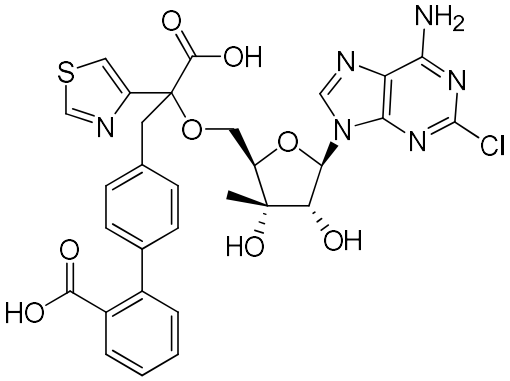
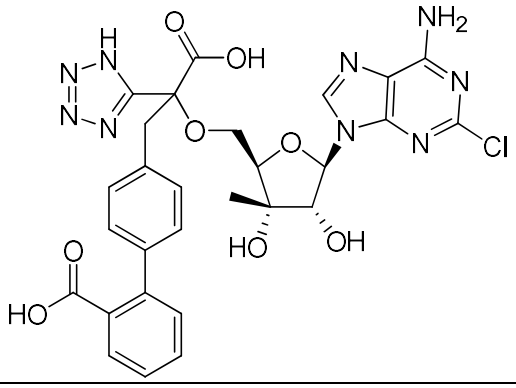
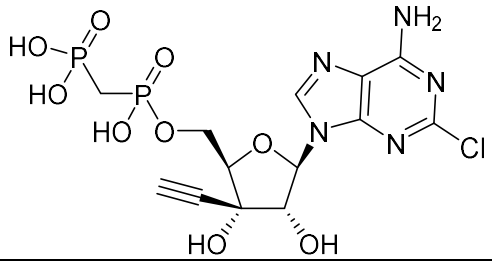
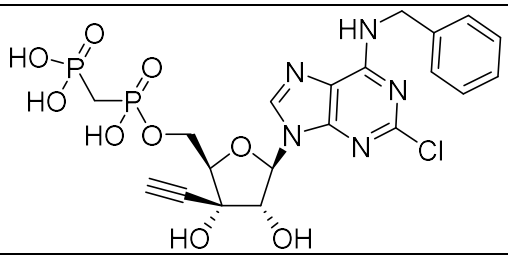
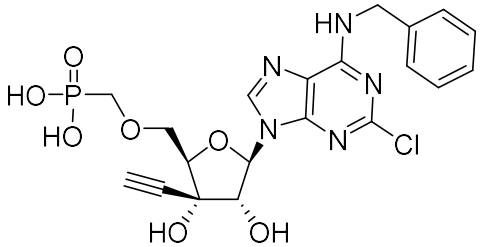
Example #	Compound
172	
173	
174	
175	
176	
177	

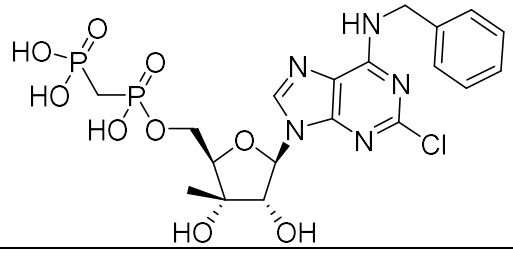
Example #	Compound
178	
179	
180	
181	
182	
183	

Example #	Compound
184	
185	
186	
187	
188	
189	
190	

Example #	Compound
191	
192	
193	
194	
195	

Example #	Compound
196	
197	
198	
199	

Example #	Compound
200	
201	
202	
203	
204	

Example #	Compound
205	

or a pharmaceutically acceptable salt thereof.

~~83~~30. A pharmaceutical composition comprising a compound according to ~~any one of claims 1-82~~claim 1, or a pharmaceutically acceptable salt thereof, and one or more pharmaceutically acceptable excipients.

~~84. A method of inhibiting CD73 in a cell, comprising contacting the cell with a compound according to any one of claims 1-82, or a pharmaceutically acceptable salt thereof.~~

~~85. A method of treating a disease or disorder selected from cancer, cerebral and cardiac ischemic diseases, fibrosis, immune and inflammatory disorders, inflammatory gut motility disorder, neurological, neurodegenerative and CNS disorders and diseases, depression, Parkinson's disease, and sleep disorders, comprising administering a compound according to any one of claims 1-82, or a pharmaceutically acceptable salt thereof.~~

~~86. The method of claim 85, wherein the cancer is selected from bladder cancer, bone cancer, brain cancer, breast cancer, cardiac cancer, cervical cancer, colon cancer, colorectal cancer, esophageal cancer, fibrosarcoma, gastric cancer, gastrointestinal cancer, head & neck cancer, Kaposi's sarcoma, kidney cancer, leukemia, liver cancer, lung cancer, lymphoma, melanoma, myeloma, ovarian cancer, pancreatic cancer, penile cancer, prostate cancer, testicular germcell cancer, thymoma and thymic carcinoma.~~

~~87. The method of claim 85 or 86, wherein the cancer is selected from breast cancer, brain cancer, colon cancer, fibrosarcoma, kidney cancer, lung cancer, melanoma, ovarian cancer, and prostate cancer.~~

~~88. The method of any one of claims 85-87, wherein the cancer is breast cancer.~~

89. The method of any one of claims 85-88, further comprising conjointly administering one or more additional chemotherapeutic agents.

90. The method of claim 89, wherein the one or more additional chemotherapeutic agents are selected from 1-amino-4-phenylamino-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate (acid blue 25), 1-amino-4-[4-hydroxyphenyl-amino]-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate, 1-amino-4-[4-aminophenylamino]-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate, 1-amino-4-[1-naphthylamino]-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate, 1-amino-4-[4-fluoro-2-carboxyphenylamino]-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate, 1-amino-4-[2-anthracenylamino]-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate, ABT-263, afatinib dimaleate, axitinib, aminoglutethimide, amsacrine, anastrozole, APCP, asparaginase, AZD5363, Bacillus Calmette–Guérin vaccine (bcg), bicalutamide, bleomycin, bortezomib, β-methylene-ADP (AOPCP), buserelin, busulfan, cabazitaxel, cabozantinib, campothecin, capecitabine, carboplatin, carfilzomib, carmustine, ceritinib, chlorambucil, chloroquine, cisplatin, cladribine, clodronate, cobimetinib, colchicine, crizotinib, cyclophosphamide, cyproterone, cytarabine, dacarbazine, dactinomycin, daunorubicin, demethoxyviridin, dexamethasone, dichloroacetate, dienestrol, diethylstilbestrol, docetaxel, doxorubicin, epirubicin, eribulin, erlotinib, estradiol, estramustine, etoposide, everolimus, exemestane, filgrastim, fludarabine, fludrocortisone, fluorouracil, fluoxymesterone, flutamide, gefitinib, gemcitabine, genistein, goserelin, GSK1120212, hydroxyurea, idarubicin, ifosfamide, imatinib, interferon, irinotecan, ixabepilone, lenalidomide, letrozole, leucovorin, leuprolide, levamisole, lomustine, lonidamine, mechlorethamine, medroxyprogesterone, megestrol, melphalan, mercaptopurine, mesna, metformin, methotrexate, miltefosine, mitomycin, mitotane, mitoxantrone, MK-2206, mutamycin, N-(4-sulfamoylphenylcarbamothioyl) pivalamide, NF279, NF449, nilutamide, nocodazole, octreotide, olaparib, oxaliplatin, paclitaxel, pamidronate, pazopanib, pemexetred, pentostatin, perifosine, PF-04691502, plicamycin, pomalidomide, porfimer, PPADS, procarbazine, quercetin, raltitrexed, ramucirumab, reactive blue 2, rituximab, rolofylline, romidepsin, rucaparib, selumetinib, sirolimus, sodium 2,4-dinitrobenzenesulfonate, sorafenib, streptozocin, sunitinib, suramin, talazoparib, tamoxifen, temozolomide, temsirolimus, teniposide, testosterone, thalidomide, thioguanine, thiotepa, titanocene dichloride, tonapofylline, topotecan, trametinib, trastuzumab, tretinoin, veliparib, vinblastine, vincristine, vindesine, vinorelbine, and vorinostat (SAHA).

~~91. The method of claim 89, wherein the one or more additional chemotherapeutic agents are selected from 1-amino-4-phenylamino-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate (acid blue 25), 1-amino-4-[4-hydroxyphenyl-amino]-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate, 1-amino-4-[4-aminophenylamino]-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate, 1-amino-4-[1-naphthylamino]-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate, 1-amino-4-[4-fluoro-2-carboxyphenylamino]-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate, 1-amino-4-[2-anthracenylamino]-9,10-dioxo-9,10-dihydroanthracene-2-sulfonate, APCP, β-methylene-ADP (AOPCP), capecitabine, cladribine, cytarabine, fludarabine, doxorubicin, gemcitabine, N-(4-sulfamoylphenylcarbamothioyl) pivalamide, NF279, NF449, PPADS, quercetin, reactive blue 2, rolofylline sodium 2,4-dinitrobenzenesulfonate, sumarin, and tonapofylline.~~

~~92. The method of claim 89, wherein the additional chemotherapeutic agent is an immuno-oncology agent.~~

31. The compound of claim 1, wherein R^{2b} is unsubstituted C_2alkynyl.

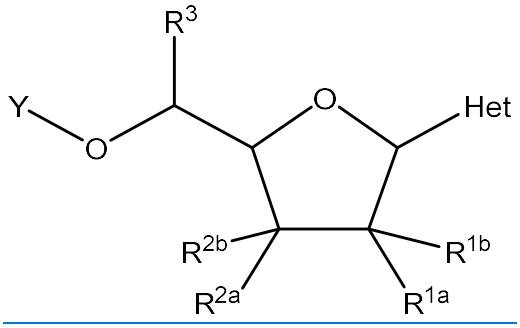
32. The compound of claim 5, wherein R^5 is benzyl substituted on the phenyl ring at a para position.

33. The compound of claim 5, wherein:

the phenyl ring substituent is selected from substituted piperidonyl, piperazinonyl, tetrahydropyrimidonyl, pyridonyl, and pyridyl, and, optionally, the piperidonyl, tetrahydropyrimidonyl, pyridonyl, or pyridyl is substituted with one or more of alkyl, hydroxyalkyl or alkoxyalkyl.

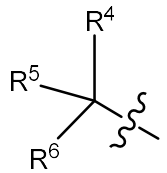
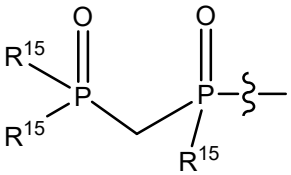
34. The compound of claim 28, wherein R^5 is benzyl substituted on the phenyl ring.

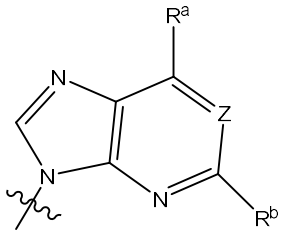
35. A compound of formula (I):



(I)

or a pharmaceutically acceptable salt and/or prodrug thereof, wherein

Y is  or  ;

Het is  wherein Z is N; R^a is selected from -NR^7R^8, aralkyl, aryl, and heteroaryl; R^b is selected from halo, alkyl, haloalkyl, hydroxyalkyl, alkylthio, amido, carbonyl, amido, and heteroaryl; R^7 is selected from hydroxy, alkyl, aralkyl, heteroaralkyl, cycloalkyl, and heterocyclyl and R^8 is H or alkyl; or R^7 and R^8, together with the nitrogen atom to which they are attached, form a 4- to 7-membered heterocyclyl ring;

R^{1a} is selected from H, halo, hydroxy, cyano, azido, amino, C_{1-6}alkyl, hydroxyC_{1-6}alkyl, amino-C_{1-6}alkyl, -O-C(O)-O-C_{1-6}alkyl, C_{1-6}acyloxy, C_{1-6}alkoxy, C_{2-6}alkenyl, and C_{2-6}alkynyl;

R^{1b} is selected from H, halo, C_{1-6}alkyl, hydroxy-C_{1-6}alkyl, amino-C_{1-6}alkyl, C_{2-6}alkenyl, and C_{2-6}alkynyl;

R^{2a} is selected from halo, hydroxy, cyano, azido, amino, C_{1-6}alkyl, hydroxy-C_{1-6}alkyl, amino-C_{1-6}alkyl, C_{1-6}acyloxy, -O-C(O)-O-C_{1-6}alkyl, C_{1-6}alkoxy, C_{2-6}alkenyl, and C_{2-6}alkynyl;

R^{2b} is C_{2-6}alkynyl;

R^3 is selected from H and alkyl;

R^4 is selected from H, alkyl, CN, aryl, heteroaryl, -C(O)OR^9, -C(O)$NR^{11}R^{12}$, -$S(O)_2R^{10}$, -P(O)(OR^{11})(OR^{12}), and -P(O)(OR^{11})($NR^{13}R^{14}$);

R^5 is aralkyl or heteroaralkyl;

R^6 is selected from -C(O)OR^9, -C(O)$NR^{16}R^{17}$, and -P(O)(OR^{11})(OR^{12});

R^9 is independently selected from H, alkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl;

R^{10} is independently selected from alkyl, alkenyl, alkynyl, amino, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl; and

each R^{11} and R^{12} is independently selected from H, alkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl; or

R^{11} and R^{12}, together with the nitrogen atom to which they are attached, form a 5- to 7-membered heterocyclyl;

R^{13} is, independently for each occurrence, H or alkyl;

R^{14} is, independently for each occurrence, alkyl or aralkyl;

each R^{15} is independently selected from hydroxy, alkoxy acyloxy and $NR^{13}R^{14}$;

each R^{16} and R^{17} is independently selected from H, hydroxy, alkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl; or

R^{16} and R^{17}, together with the nitrogen atom to which they are attached, form a 5- to 7-membered heterocyclyl.