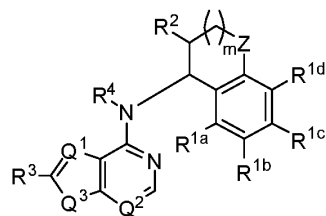


CLAIMS

What is claimed is:

1. A compound having a structure represented by a formula:



wherein m is 0 or 1;

wherein each of Q¹ and Q² is independently N or CH;

wherein Q³ is CH₂ or NH;

wherein Z is CR^{11a}R^{11b}, NR¹², or O;

wherein each of R^{11a} and R^{11b}, when present, is independently selected from hydrogen, halogen, -OH, and C1-C4 alkoxy,

or wherein each of R^{11a} and R^{11b}, when present, together comprise =O;

wherein R¹², when present, is hydrogen, C1-C4 alkyl, C3-C6 cycloalkyl, or -(C1-C4 alkyl)(C3-C6 cycloalkyl);

wherein each of R^{1a}, R^{1b}, R^{1c}, and R^{1d} is independently selected from hydrogen, halogen, -CN, -NH₂, -OH, -NO₂, C1-C4 alkyl, C2-C4 alkenyl, C1-C4 haloalkyl, C1-C4 cyanoalkyl, C1-C4 hydroxyalkyl, C1-C4 haloalkoxy, C1-C4 alkoxy, C1-C4 alkylamino, and (C1-C4)(C1-C4) dialkylamino;

wherein R² is selected from -(CH₂)_nCy¹, -O(CH₂)_nCy¹, -NR¹³(CH₂)_nCy¹, -CH(OH)Cy¹, and Cy¹;

wherein n, when present, is 0, 1, or 2;

wherein R¹³, when present, is selected from hydrogen and C1-C4 alkyl;

wherein Cy¹ is a C4-C9 cycloalkyl, a C3-C9 heterocycle having at least one O, S, or N atom, or a C2-C9 heteroaryl having at least one O, S, or N atom, and substituted with 0, 1, 2, or 3 groups independently selected from halogen, -CN, -NH₂, -OH, -NO₂, =O, C3-C6 cycloalkyl, C2-C5 heterocycloalkyl, C1-C4 alkyl, C2-C4 alkenyl, C1-C4 haloalkyl, C1-C4 cyanoalkyl, C1-C4 hydroxyalkyl, C1-C4 haloalkoxy, C1-C4 alkoxy, -(C1-C4)-O-(C1-C4 alkyl), -C(O)(C1-C4 alkyl), -S(O)R¹⁴, C1-C4 alkylamino, and (C1-C4)(C1-C4) dialkylamino;

wherein R^{14} , when present, is selected from $-OH$, $-NH_2$, $-O(C1-C4 \text{ alkyl})$, $-NH(C1-C4 \text{ alkyl})$, and $-N(C1-C4 \text{ alkyl})(C1-C4 \text{ alkyl})$;

wherein R^3 is a 3- to 6-membered cycloalkyl, a C1-C6 haloalkyl, C1-C6 haloalkoxy, or C1-C6 halohydroxyalkyl; and

wherein R^4 is selected from hydrogen and C1-C4 alkyl, or a pharmaceutically acceptable salt thereof.

2. The compound of claim 1, wherein R^2 is selected from $-O(CH_2)_nCy^1$, $-NR^{13}(CH_2)_nCy^1$, and Cy^1 ; Cy^1 is a C3-C9 heterocycle having at least one O, S, or N atom, and substituted with 0, 1, 2, or 3 groups independently selected from halogen, $-CN$, $-NH_2$, $-OH$, $-NO_2$, $=O$, C3-C6 cycloalkyl, C2-C5 heterocycloalkyl, C1-C4 alkyl, C2-C4 alkenyl, C1-C4 haloalkyl, C1-C4 cyanoalkyl, C1-C4 hydroxyalkyl, C1-C4 haloalkoxy, C1-C4 alkoxy, C1-C4 alkylamino, and $(C1-C4)(C1-C4)$ dialkylamino; and R^4 is hydrogen.

3. The compound of claim 1, wherein m is 1.

4. The compound of claim 1, wherein Q^1 is CH .

5. The compound of claim 1, wherein Q^2 is N .

6. The compound of claim 1, wherein Q^3 is NH .

7. The compound of claim 1, wherein Q^1 is CH , Q^2 is N , and Q^3 is NH .

8. The compound of claim 1, wherein Z is CH_2 .

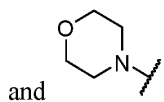
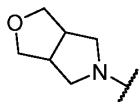
9. The compound of claim 1, wherein each of R^{1a} , R^{1b} , R^{1c} , and R^{1d} is independently hydrogen, halogen, or C1-C4 alkyl.

10. The compound of claim 1, wherein R^2 is selected from $-O(CH_2)_nCy^1$, $-NR^{13}(CH_2)_nCy^1$, $-CH(OH)Cy^1$, and Cy^1 ;

11. The compound of claim 1, wherein R^2 is Cy^1 .

12. The compound of claim 11, wherein Cy^1 is a C3-C9 heterocycle having at least one O, S, or N atom and unsubstituted.

13. The compound of claim 11, wherein Cy¹ is a structure represented by a formula selected from:



14. The compound of claim 1, wherein Cy¹ is a C3-C9 heterocycle having at least one O, S, or N atom.

15. The compound of claim 14, wherein the C3-C9 heterocycle is a monocyclic heterocycle.

16. The compound of claim 14, wherein the C3-C9 heterocycle is a bicyclic heterocycle.

17. The compound of claim 14, wherein the C3-C9 heterocycle is a spirocyclic heterocycle.

18. The compound of claim 14, wherein the C3-C9 heterocycle is a fused heterocycle.

19. The compound of claim 1, wherein Cy¹ is a C2-C9 heteroaryl having at least one O, S, or N atom.

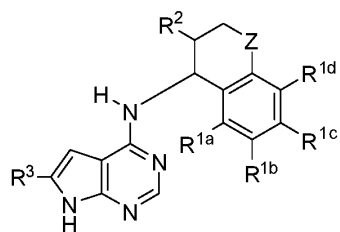
20. The compound of claim 1, wherein Cy¹ is a C3-C9 heterocycle having at least one O, S, or N atom, and substituted with 0, 1, 2, or 3 groups independently selected from halogen, –CN, –NH₂, –OH, –NO₂, =O, C3-C6 cycloalkyl, C2-C5 heterocycloalkyl, C1-C4 alkyl, C2-C4 alkenyl, C1-C4 haloalkyl, C1-C4 cyanoalkyl, C1-C4 hydroxyalkyl, C1-C4 haloalkoxy, C1-C4 alkoxy, C1-C4 alkylamino, and (C1-C4)(C1-C4) dialkylamino.

21. The compound of claim 1, wherein R³ is a 3- to 6-membered cycloalkyl or a C1-C6 haloalkyl.

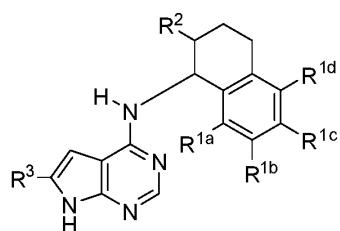
22. The compound of claim 1, wherein R³ is a 3-membered cycloalkyl or –CF₃.

23. The compound of claim 1, wherein R⁴ is hydrogen.

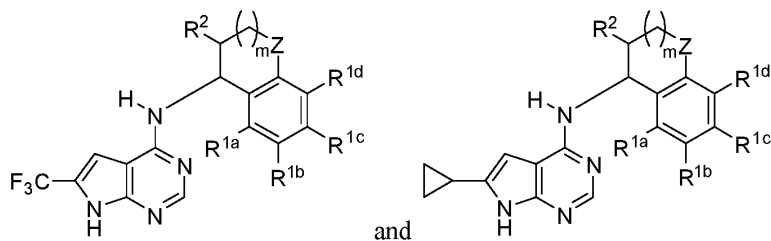
24. The compound of claim 1, wherein the compound has a structure represented by a formula:



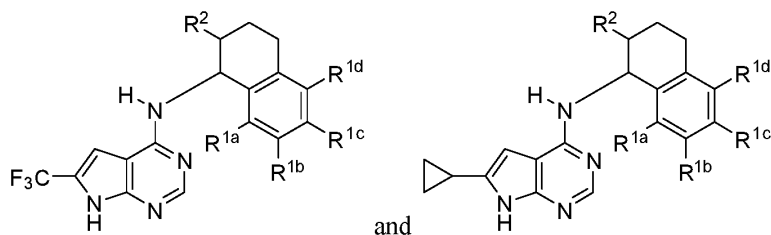
25. The compound of claim 1, wherein the compound has a structure represented by a formula:



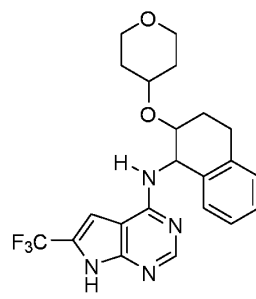
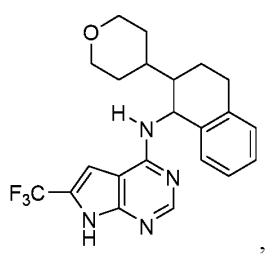
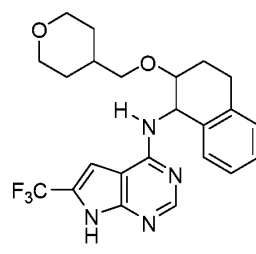
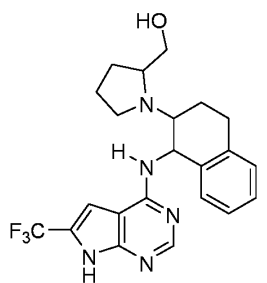
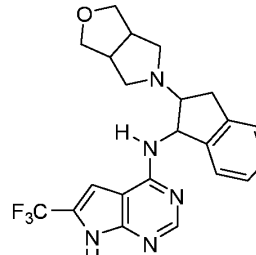
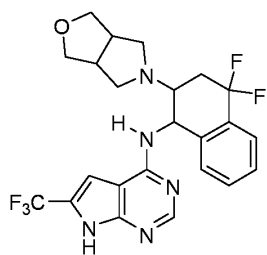
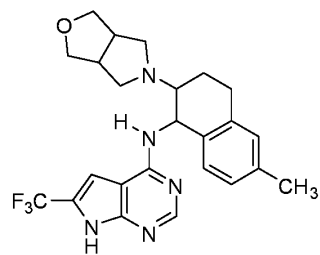
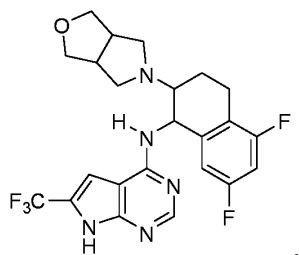
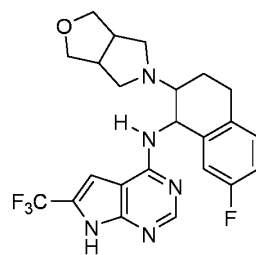
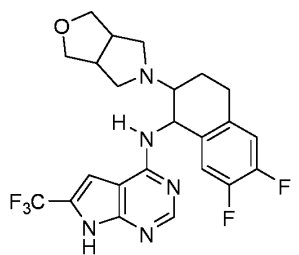
26. The compound of claim 1, wherein the compound has a structure represented by a formula selected from:

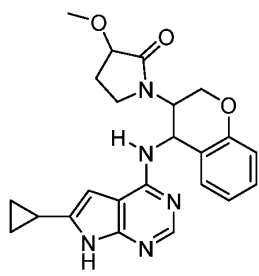
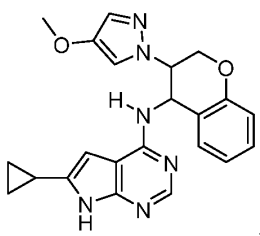
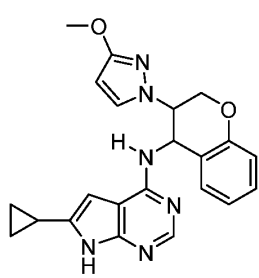
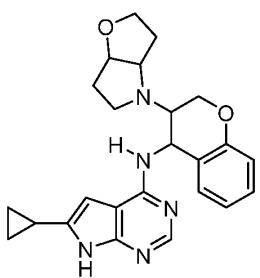
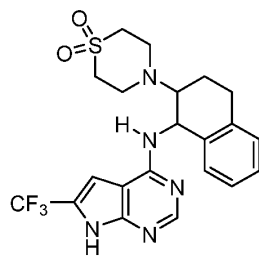
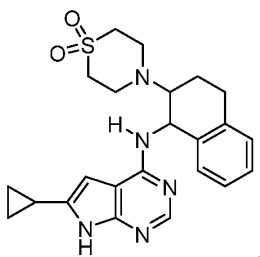
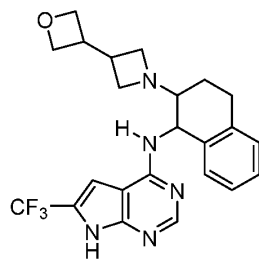
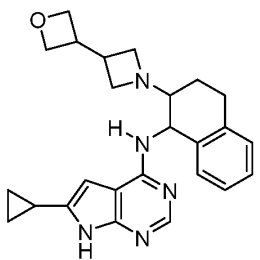
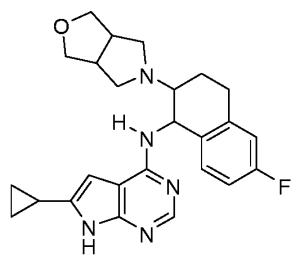
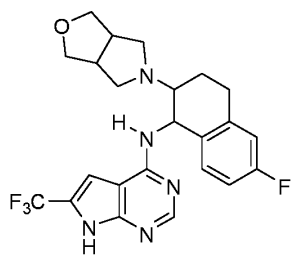


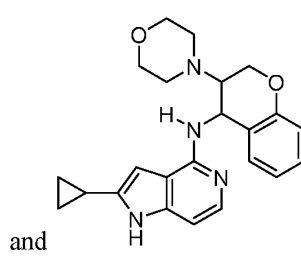
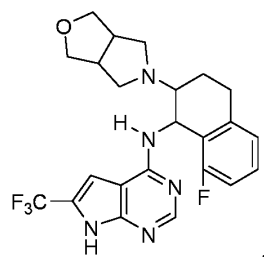
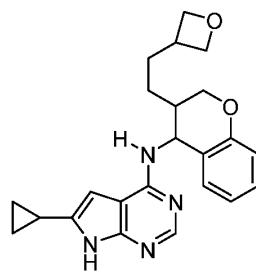
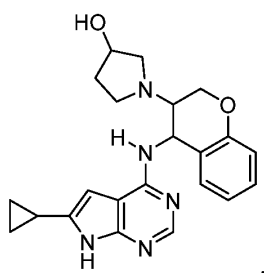
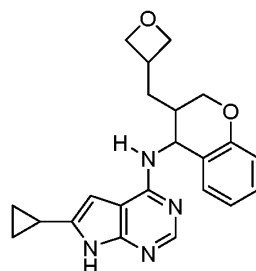
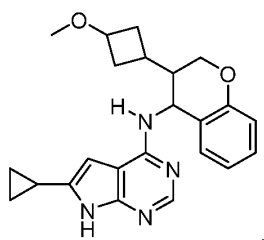
27. The compound of claim 1, wherein the compound has a structure represented by a formula selected from:



28. The compound of claim 1, wherein the compound is selected from:

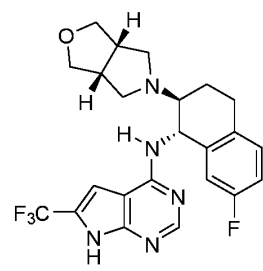
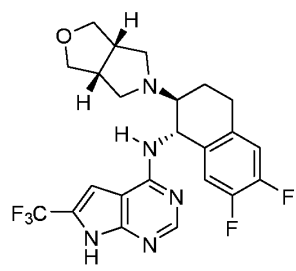


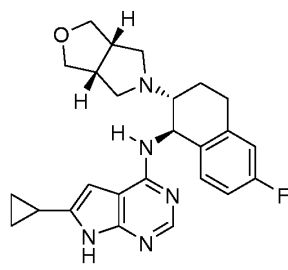
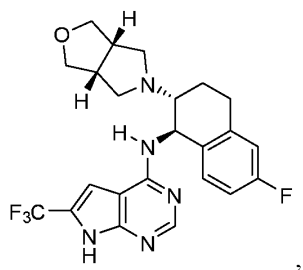
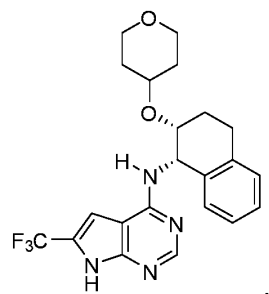
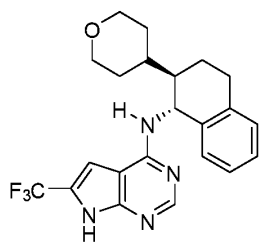
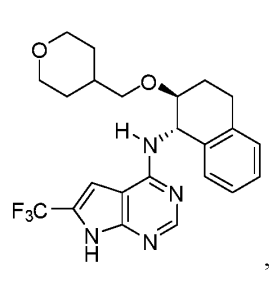
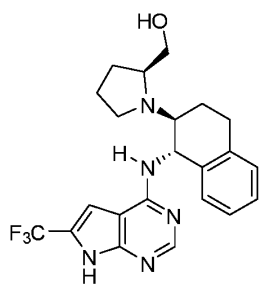
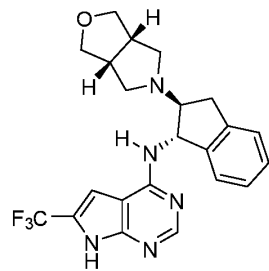
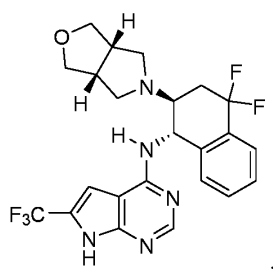
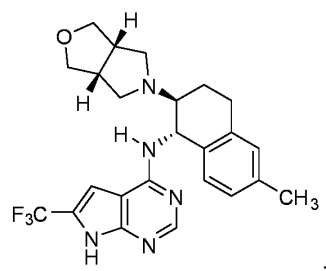
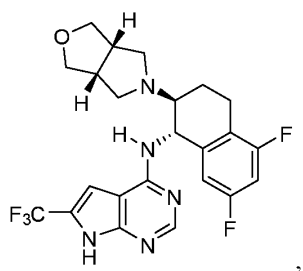


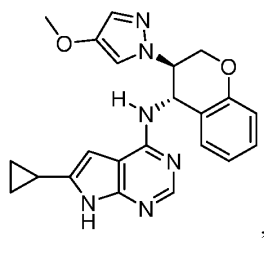
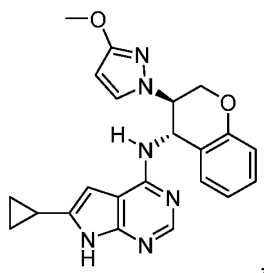
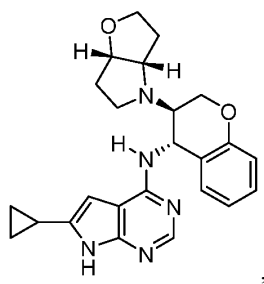
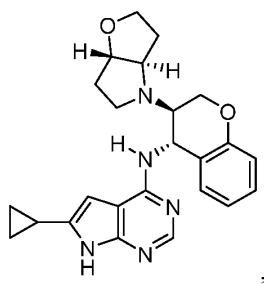
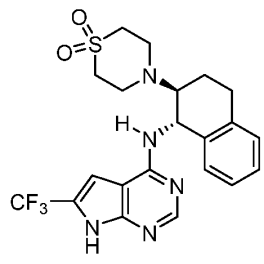
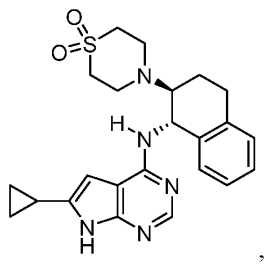
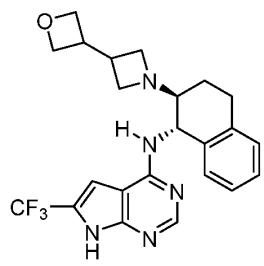
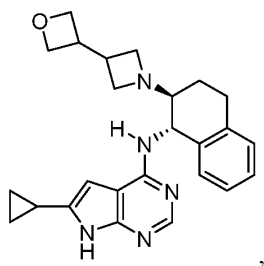


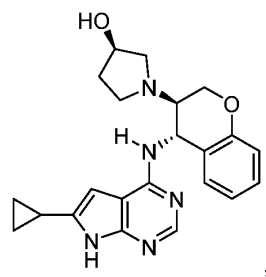
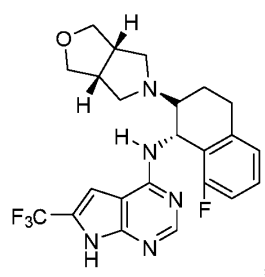
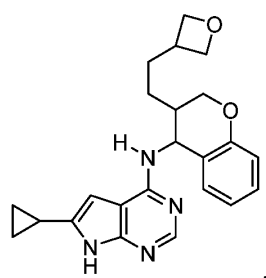
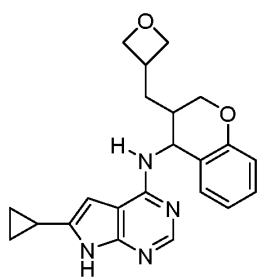
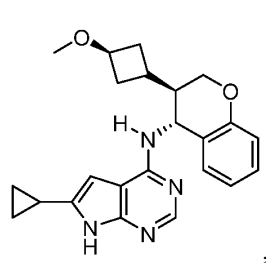
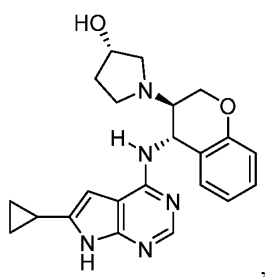
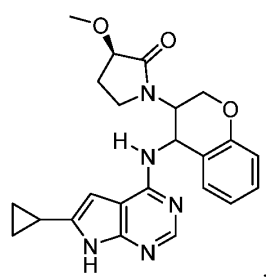
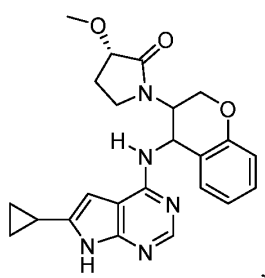
and

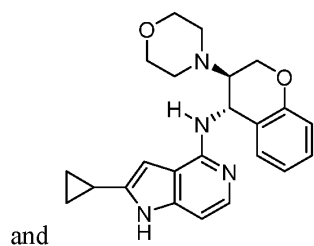
29. The compound of claim 1, wherein the compound is selected from:



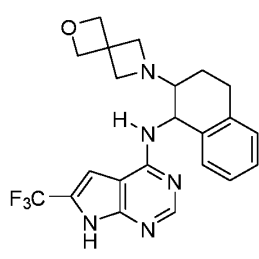
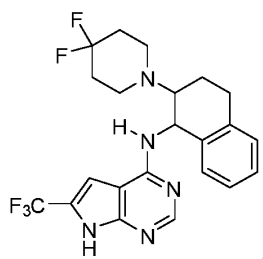
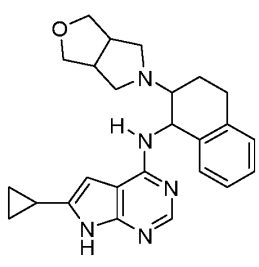
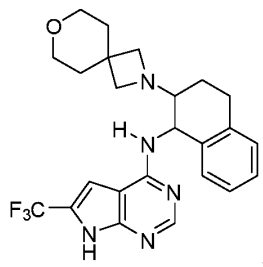
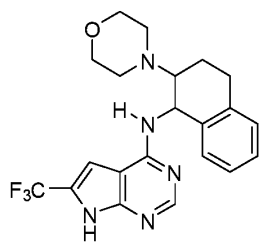
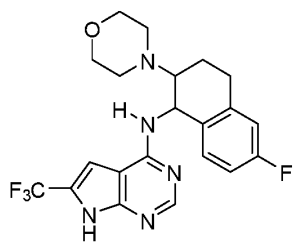
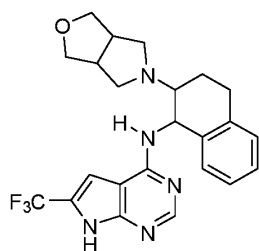
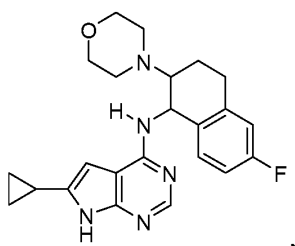


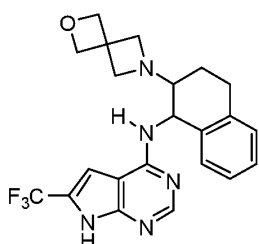
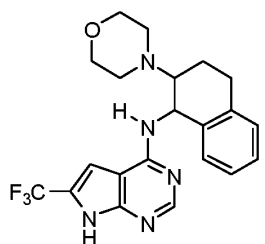
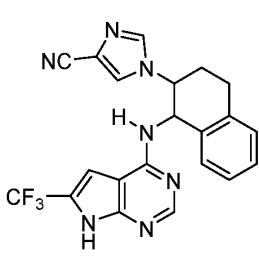
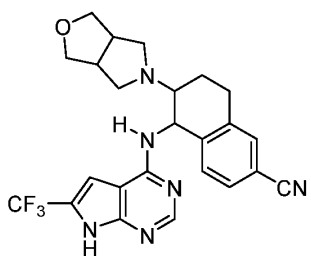
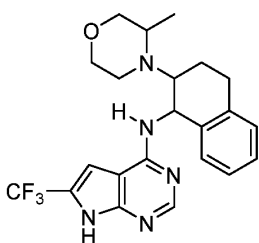
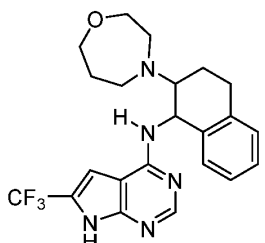
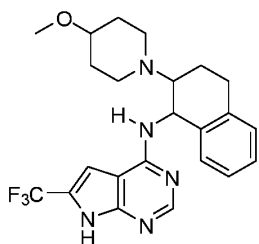
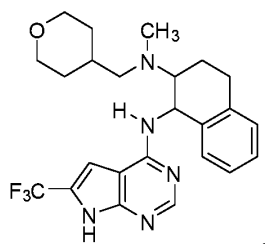
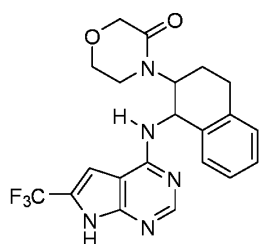
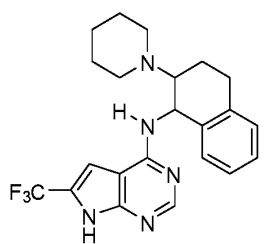


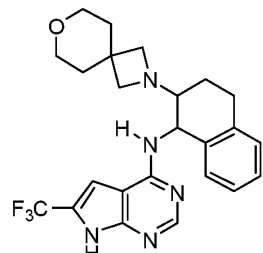
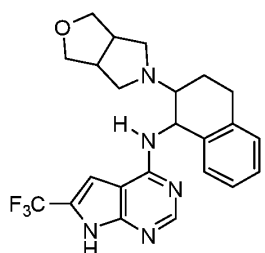
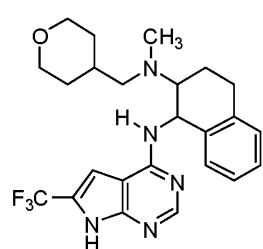
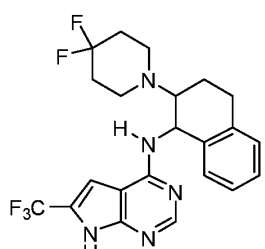
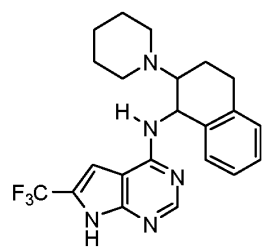
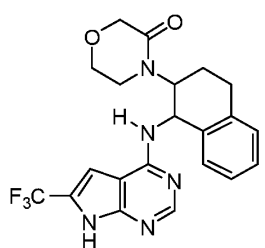
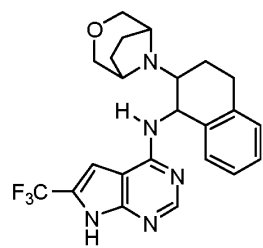
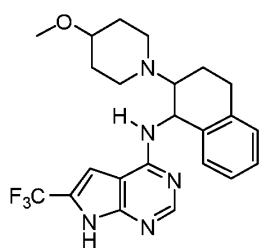


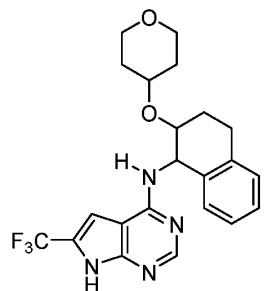
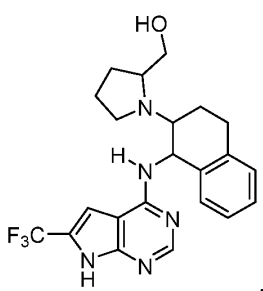
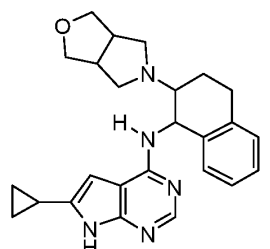
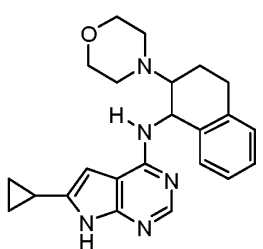
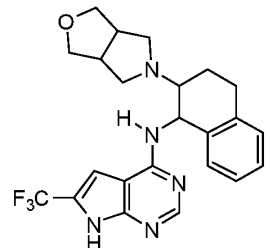
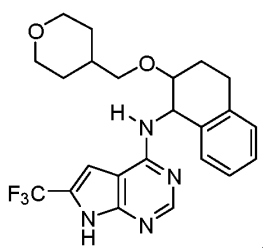
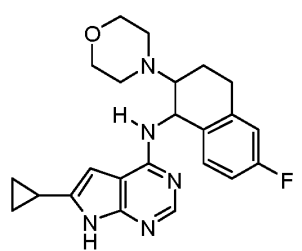
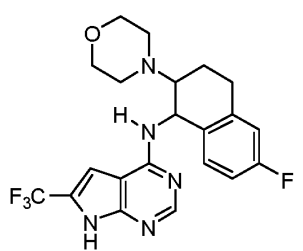


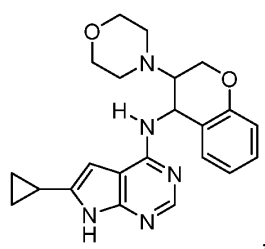
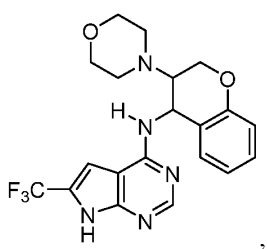
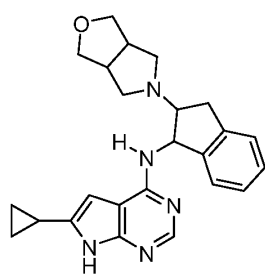
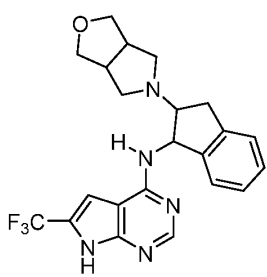
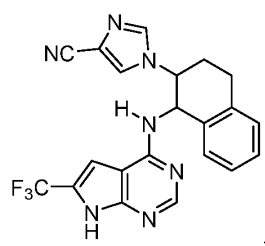
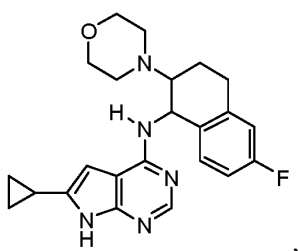
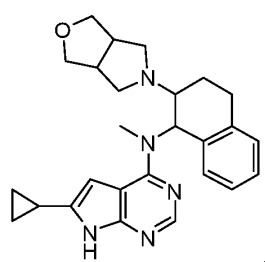
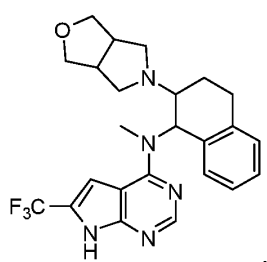
30. The compound of claim 1, wherein the compound is selected from:

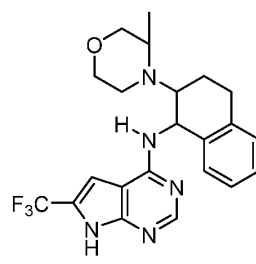
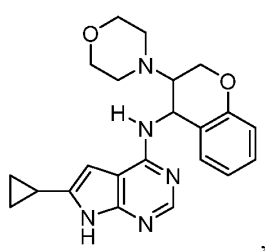
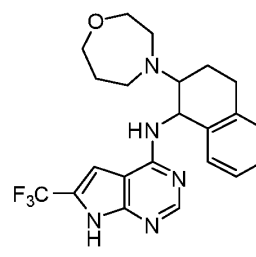
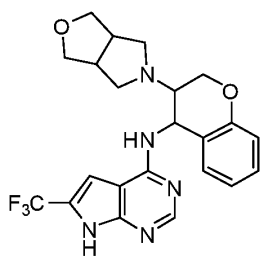
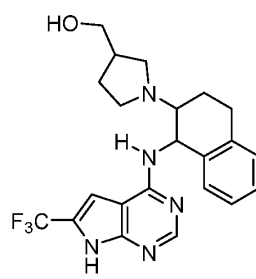
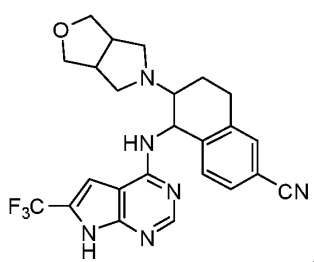
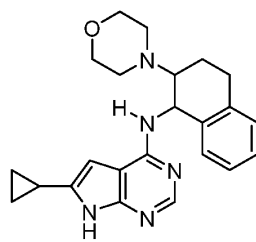
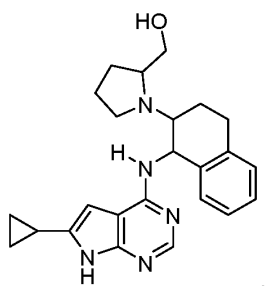


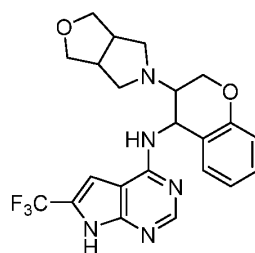
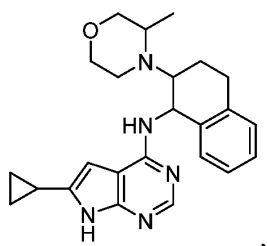
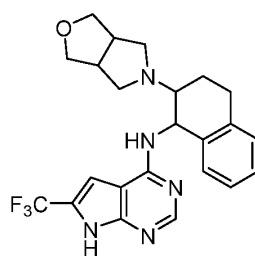
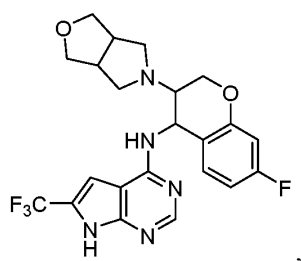
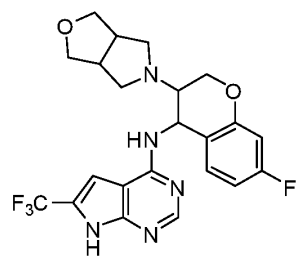
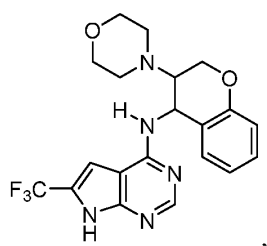
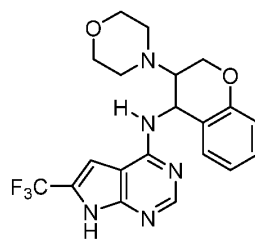
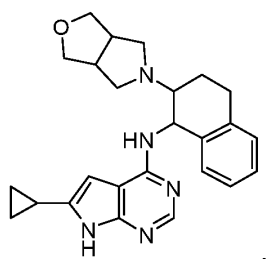


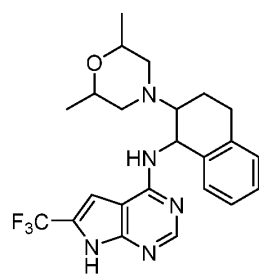
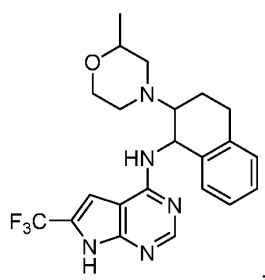
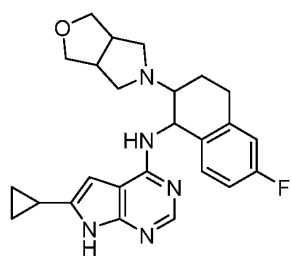
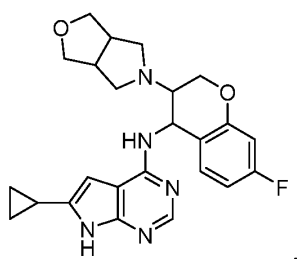
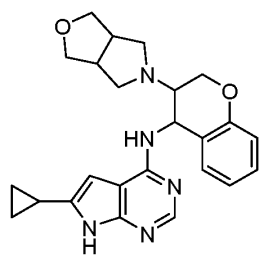
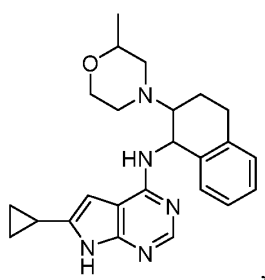
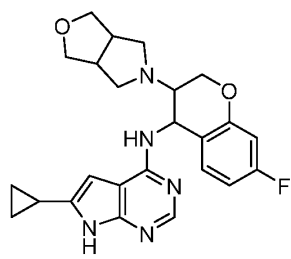
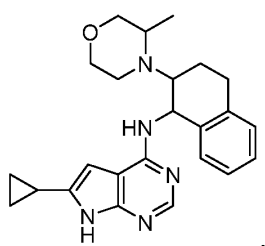


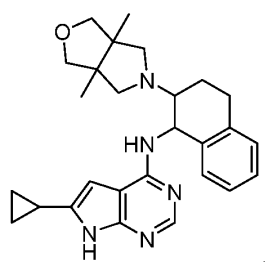
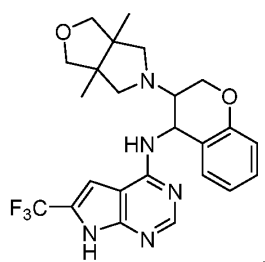
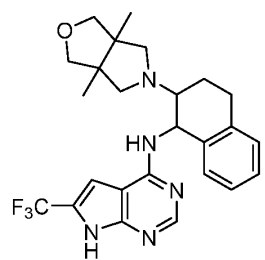
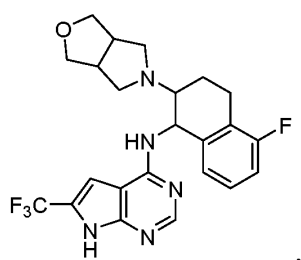
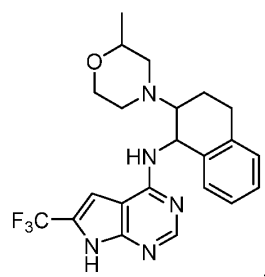
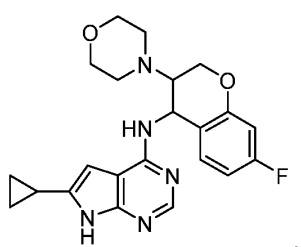
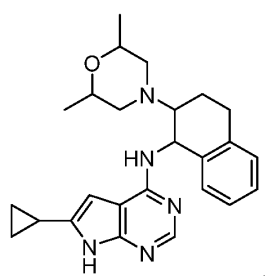
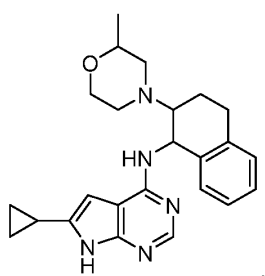


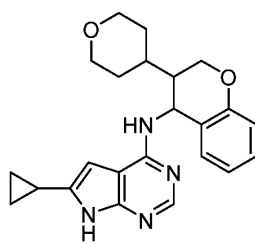
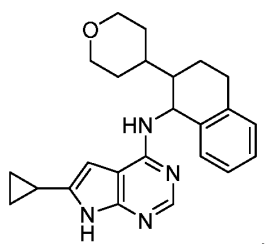
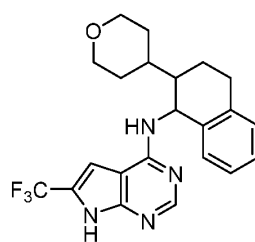
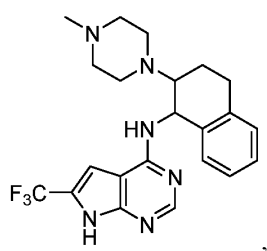
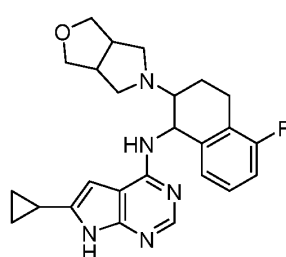
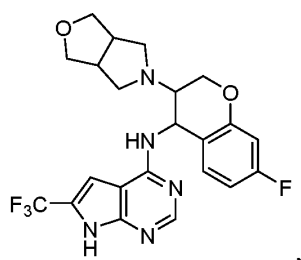
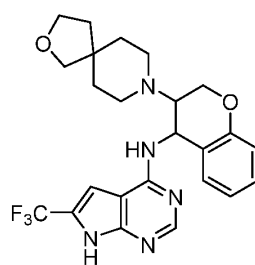
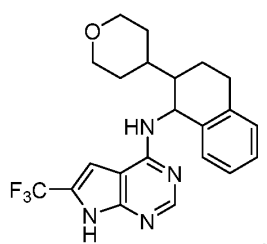


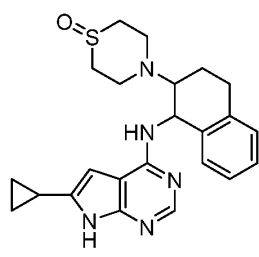
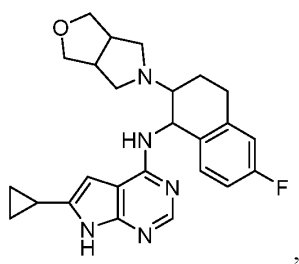
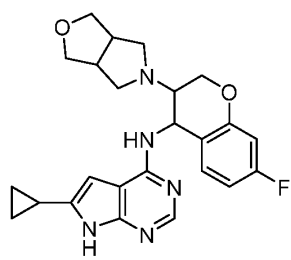
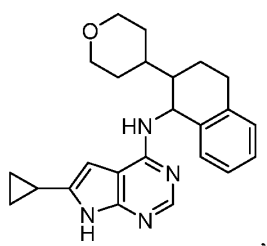
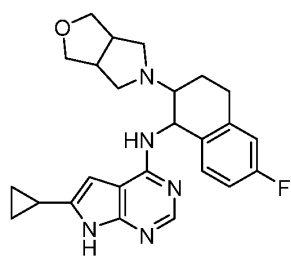
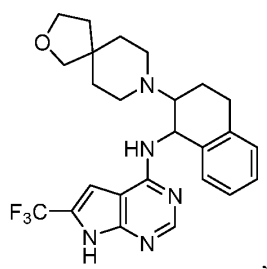
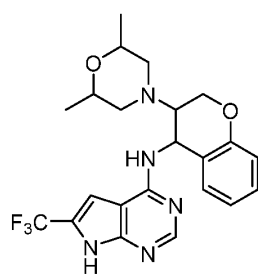
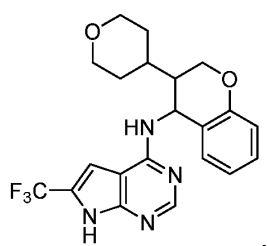


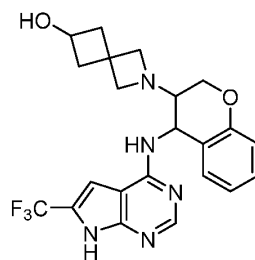
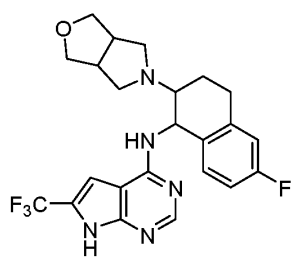
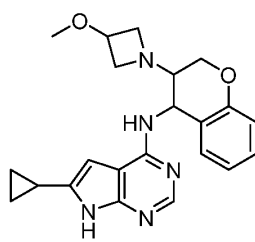
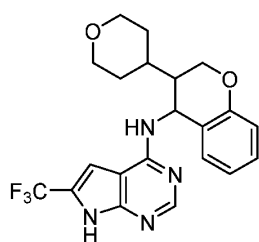
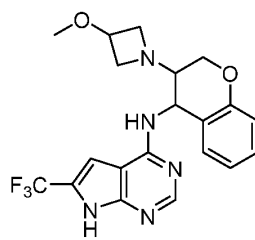
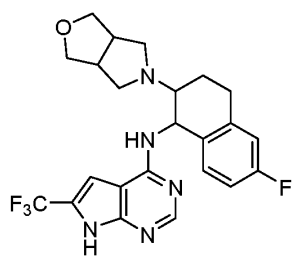
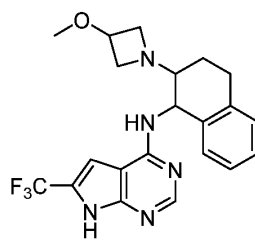
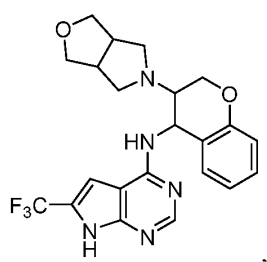


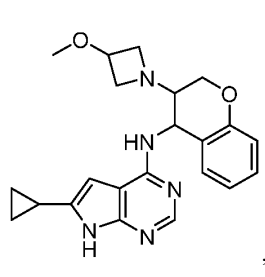
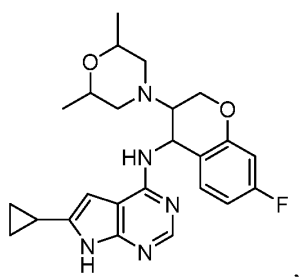
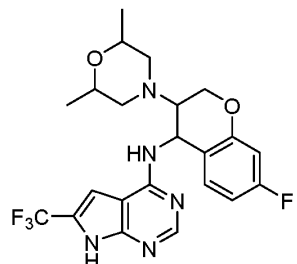
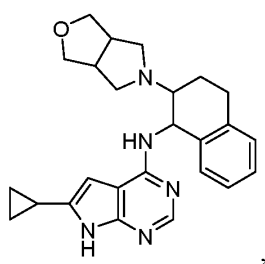
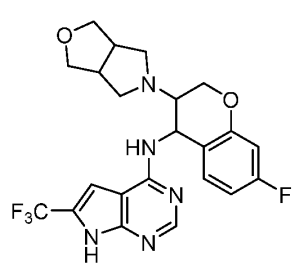
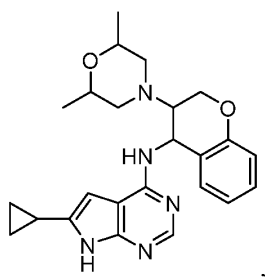
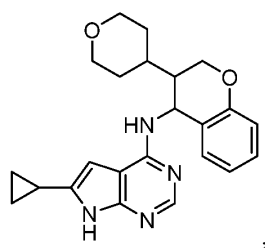
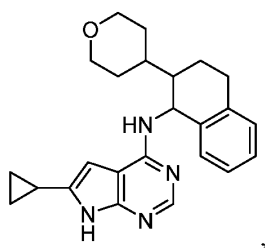


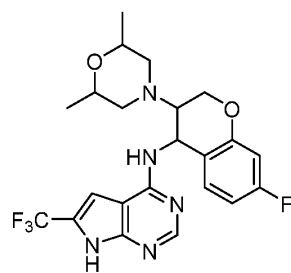
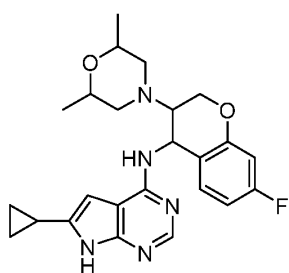
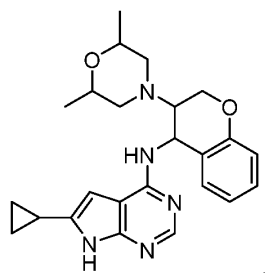
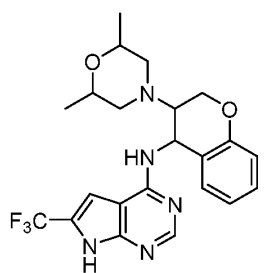
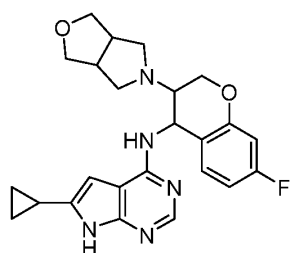
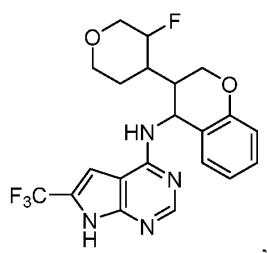
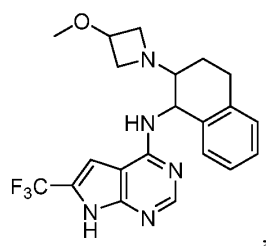
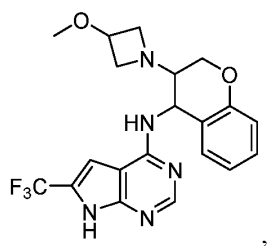


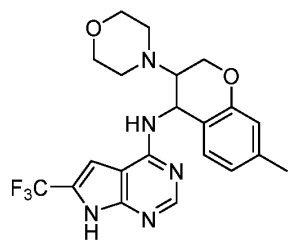
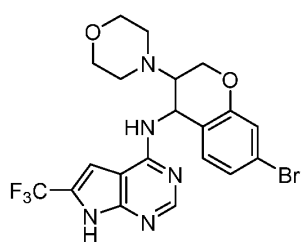
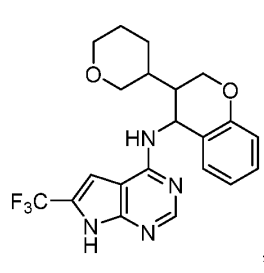
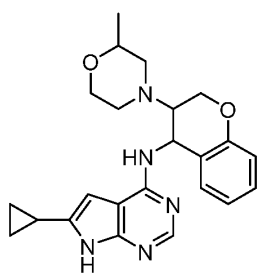
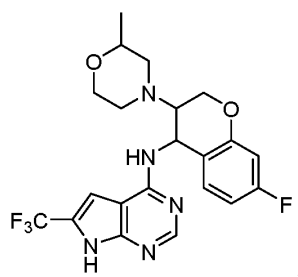
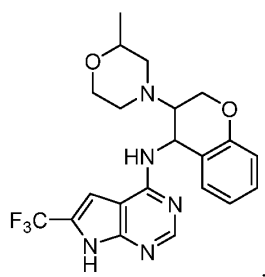
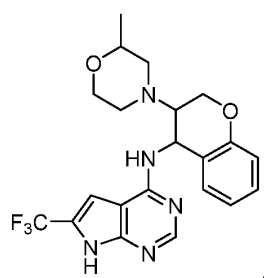
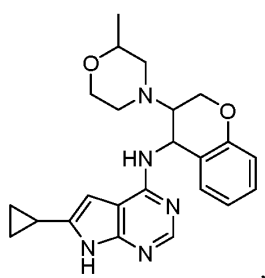


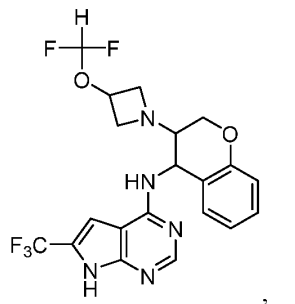
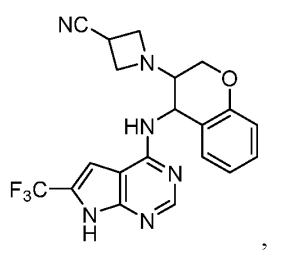
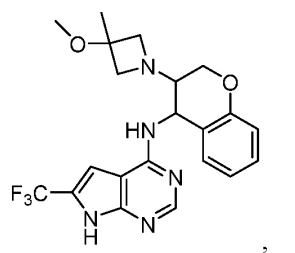
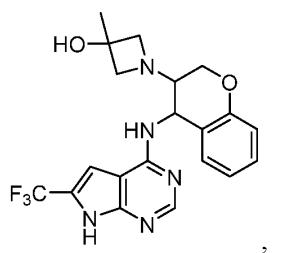
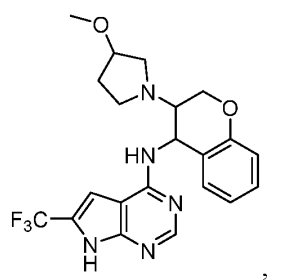
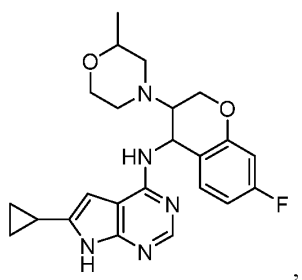
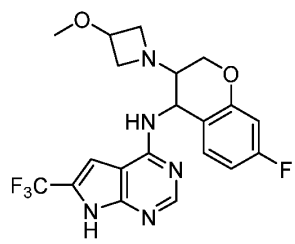
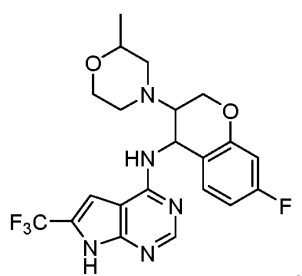


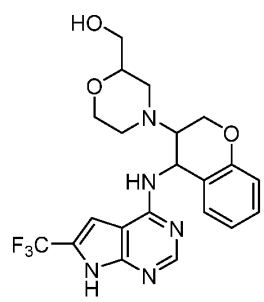
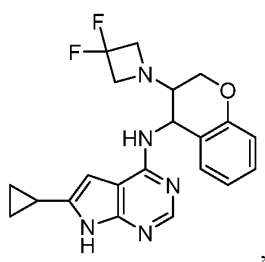
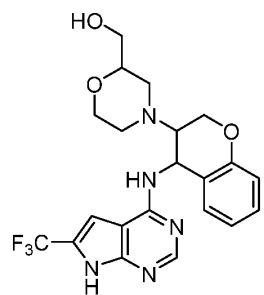
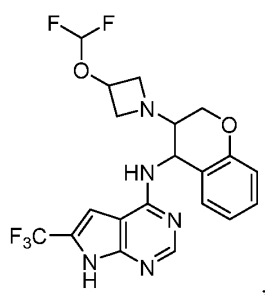
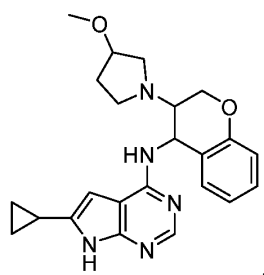
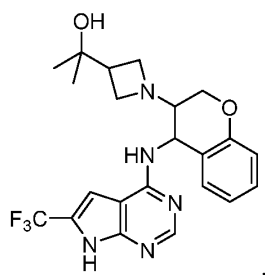
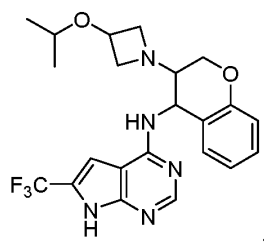
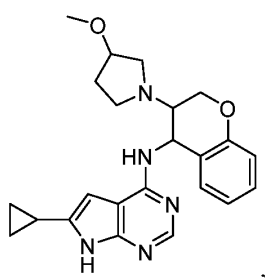


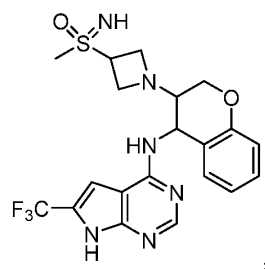
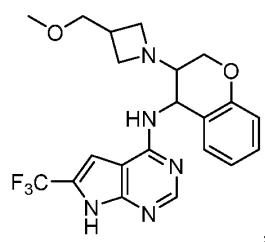
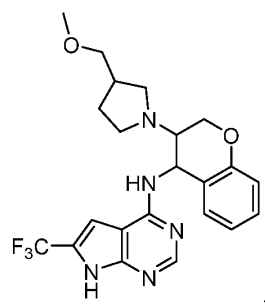
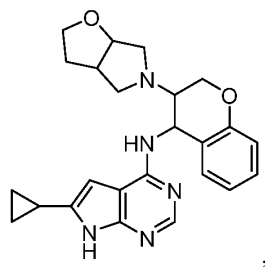


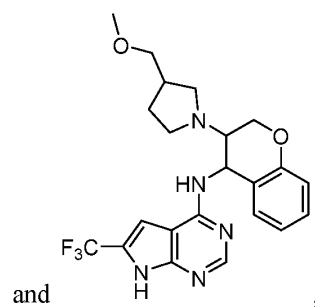
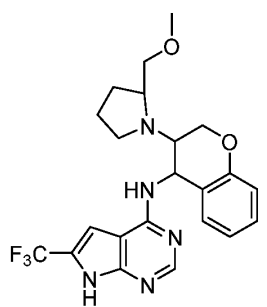
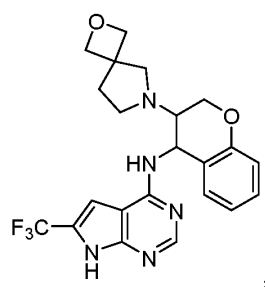
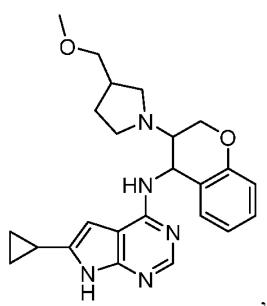
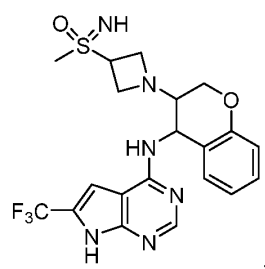
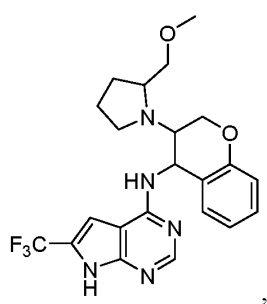
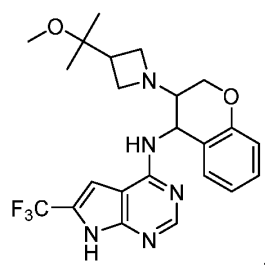
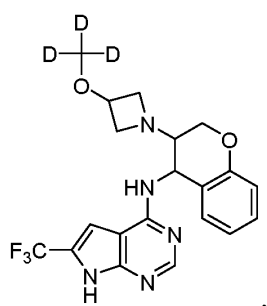




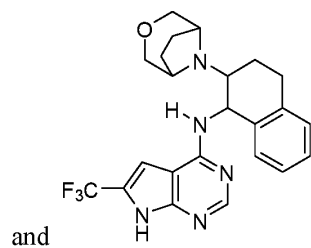




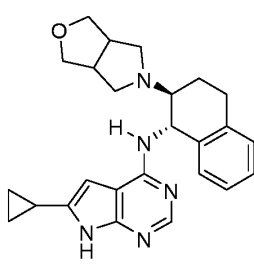
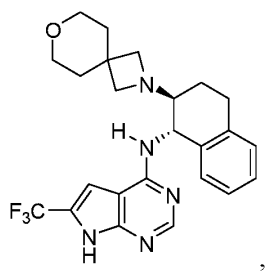
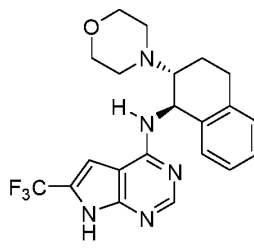
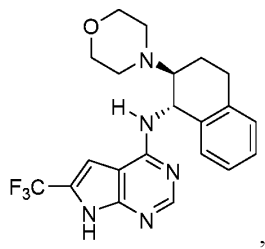
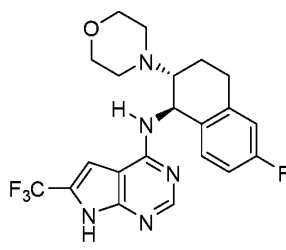
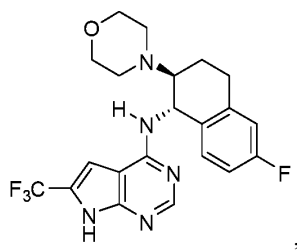
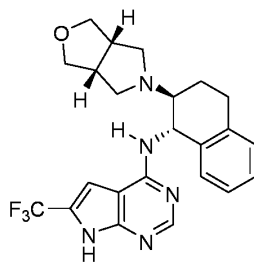
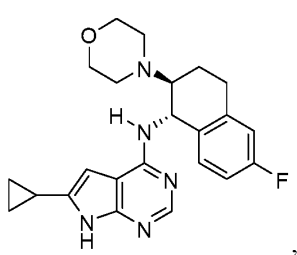


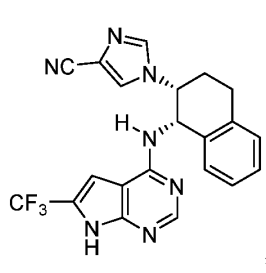
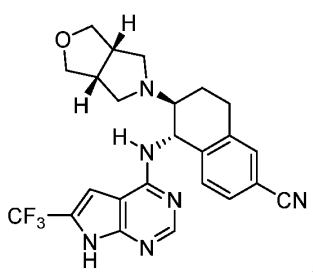
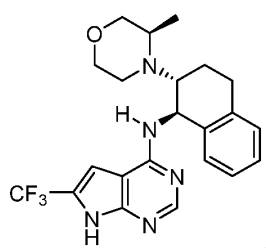
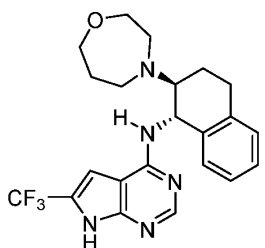
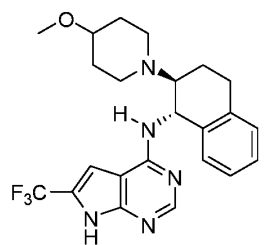
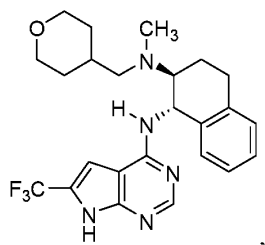
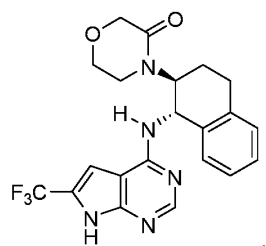
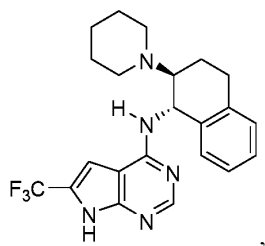
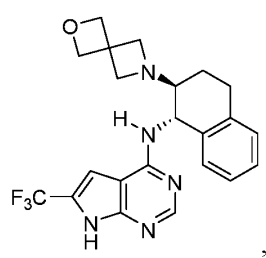
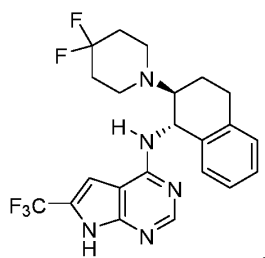


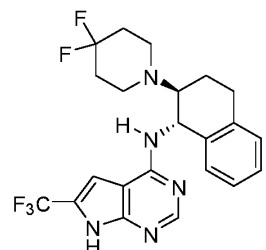
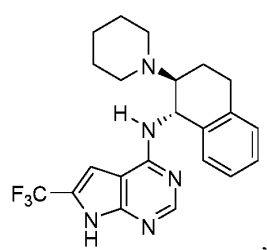
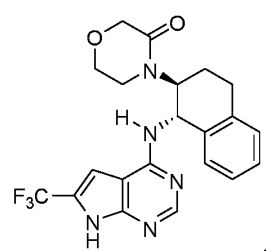
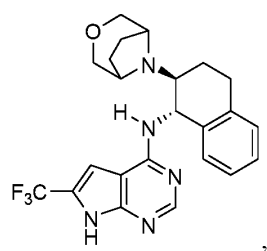
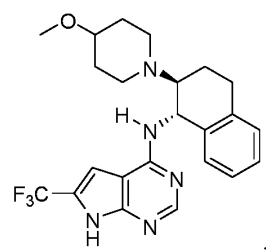
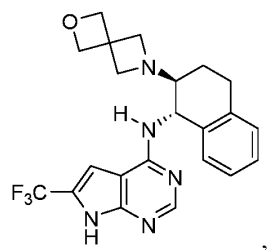
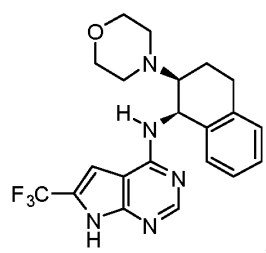
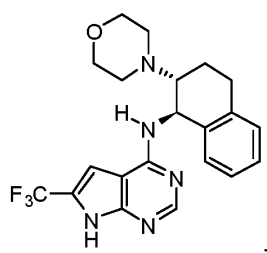
and

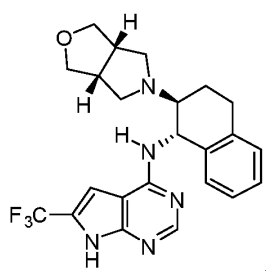
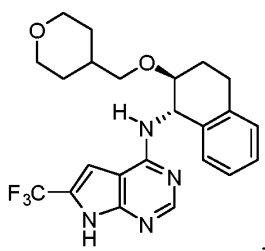
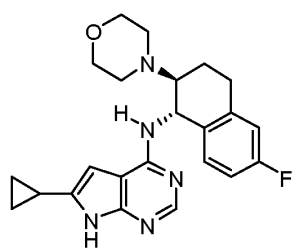
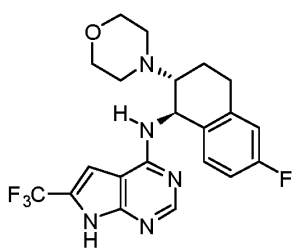
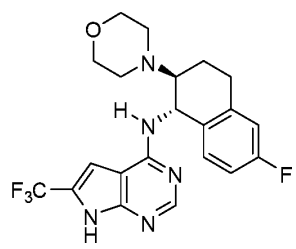
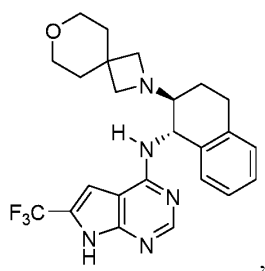
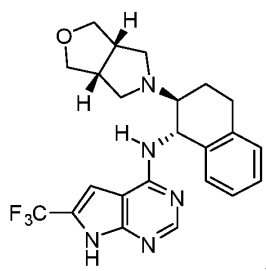
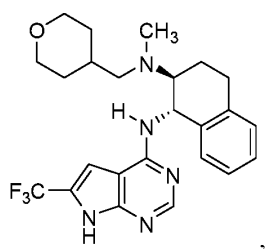


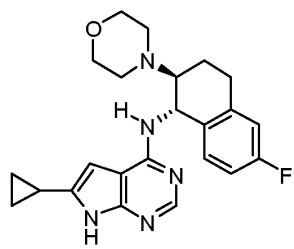
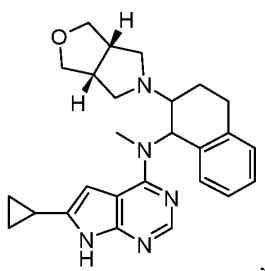
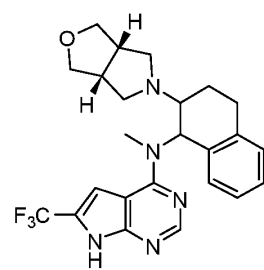
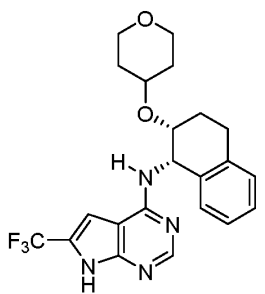
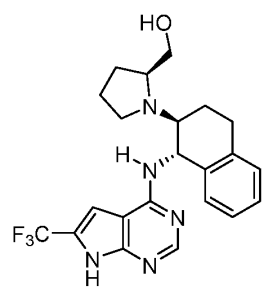
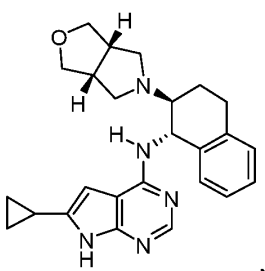
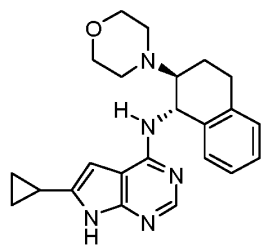
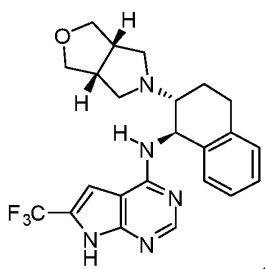
31. The compound of claim 1, wherein the compound is selected from:

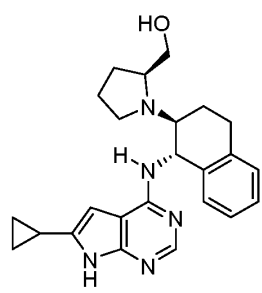
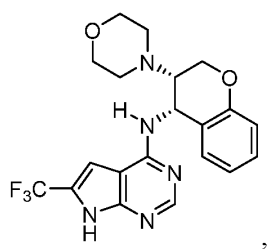
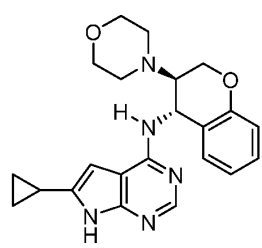
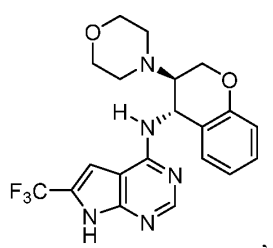
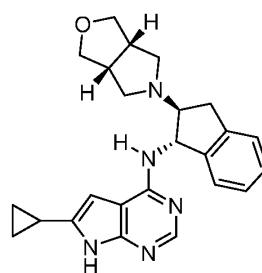
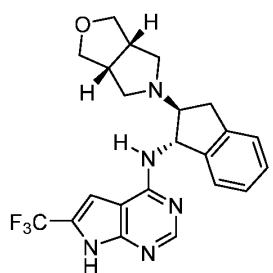
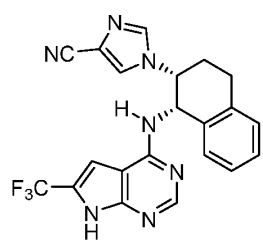
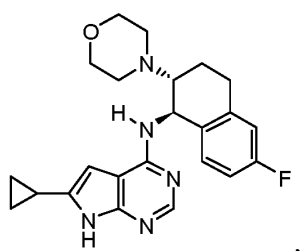


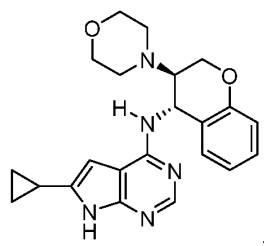
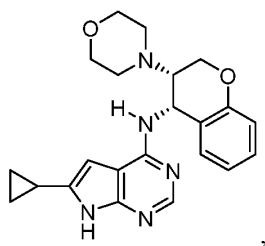
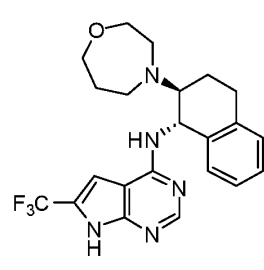
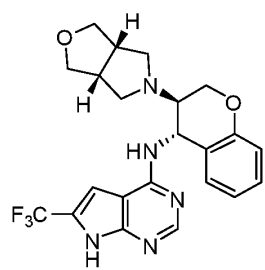
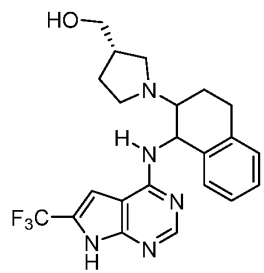
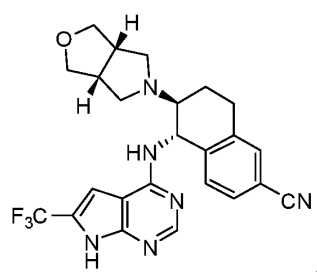
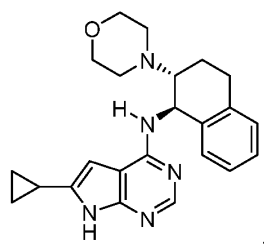
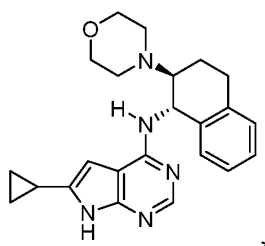


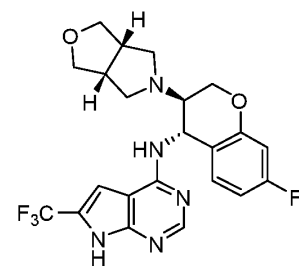
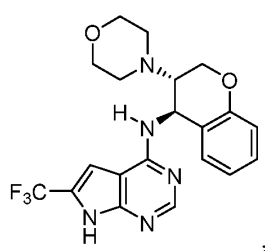
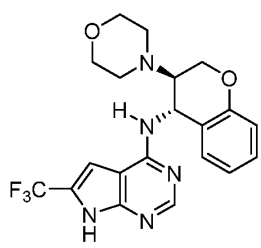
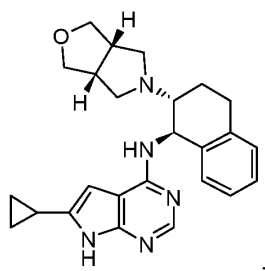
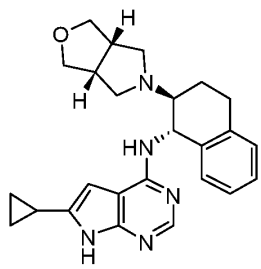
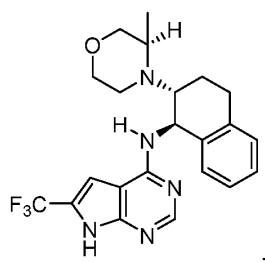
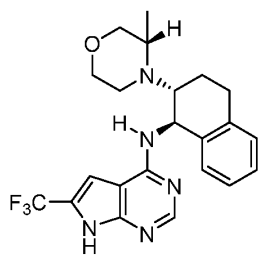
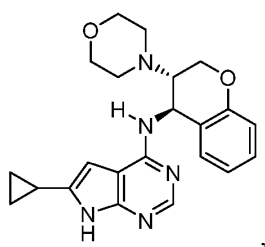


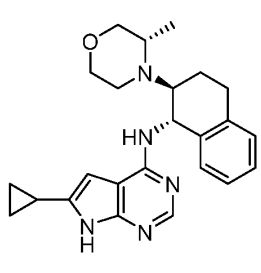
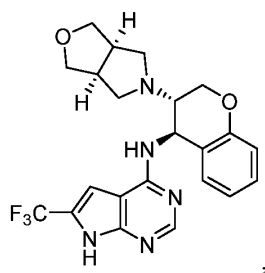
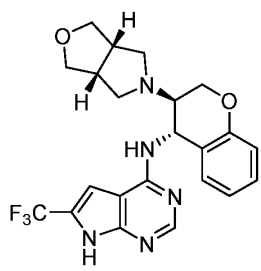
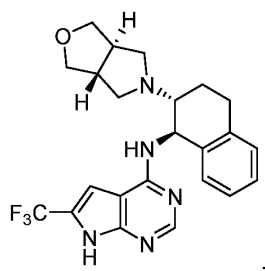
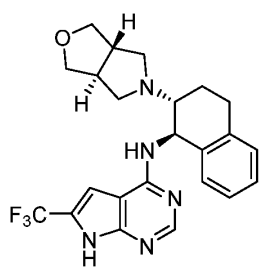
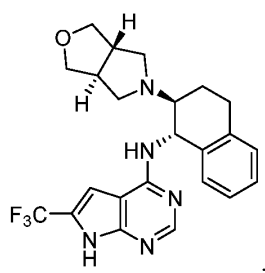
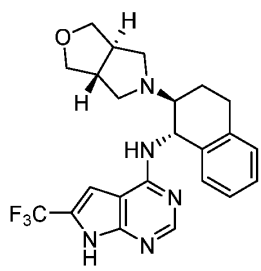
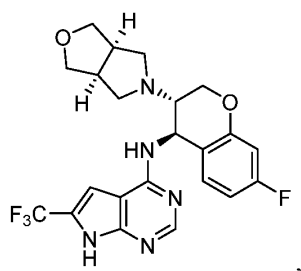


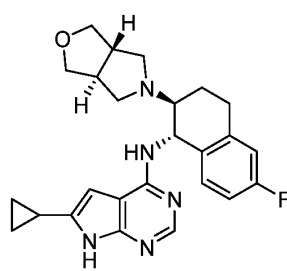
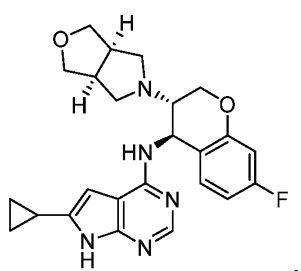
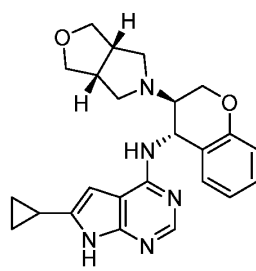
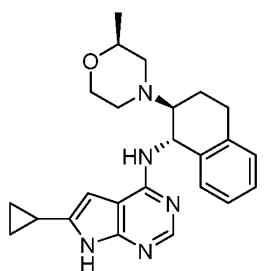
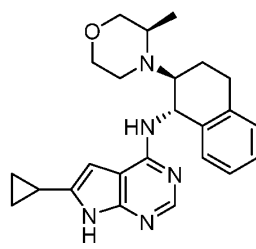
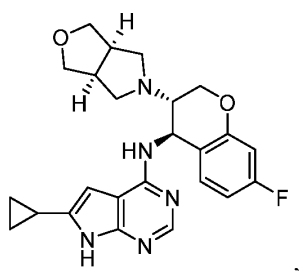
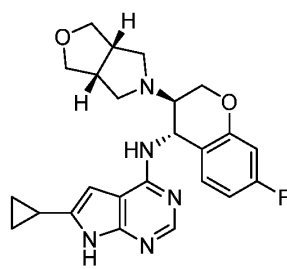
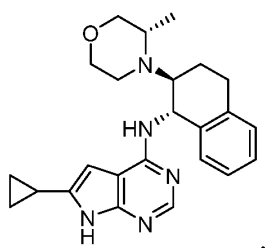


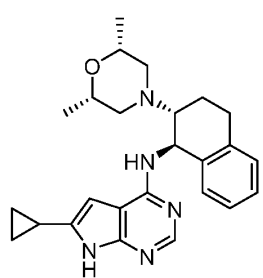
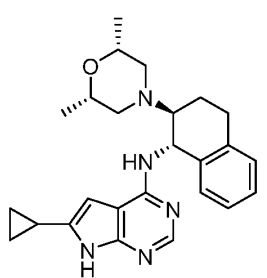
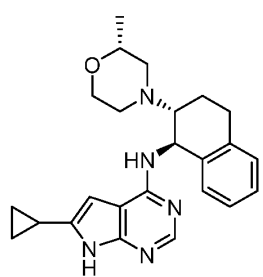
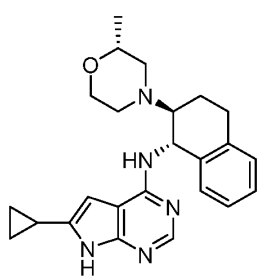
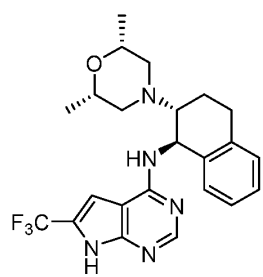
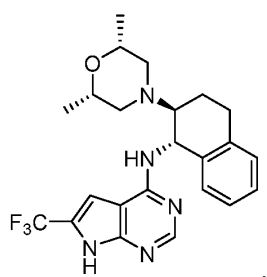
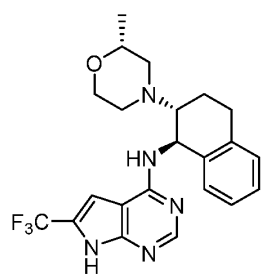
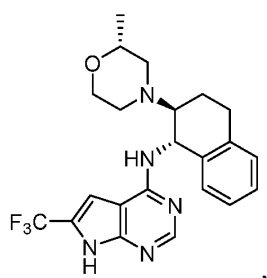


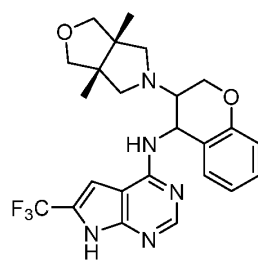
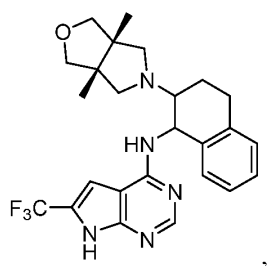
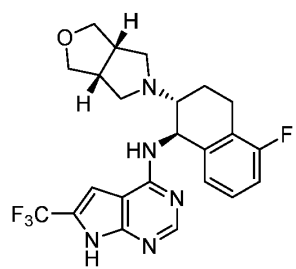
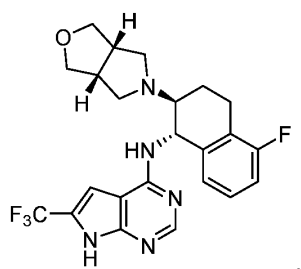
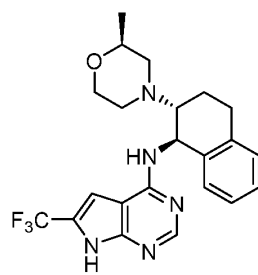
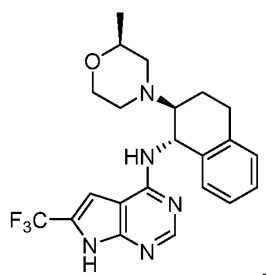
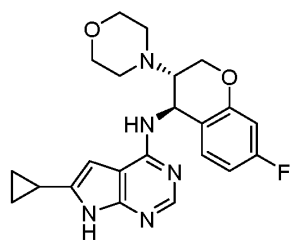
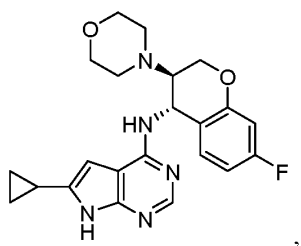


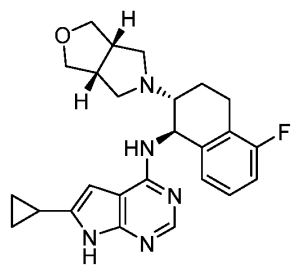
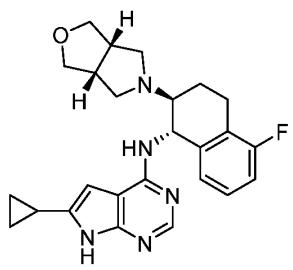
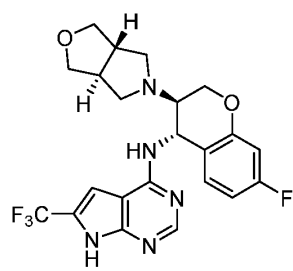
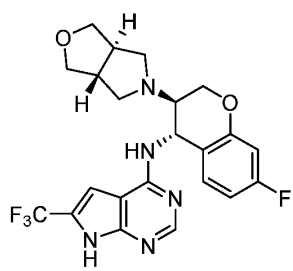
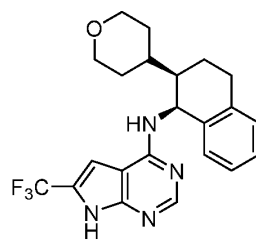
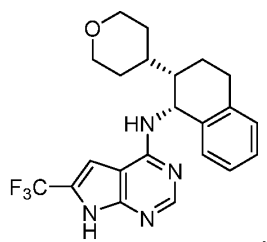
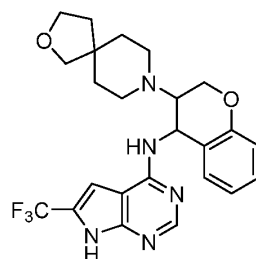
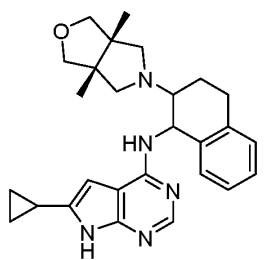


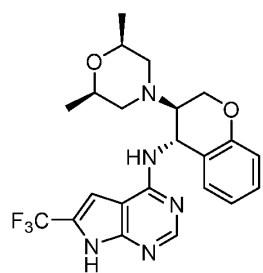
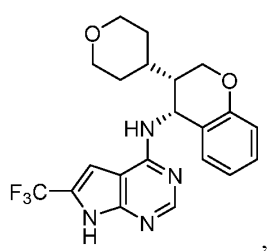
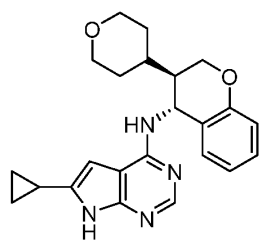
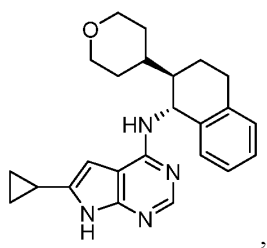
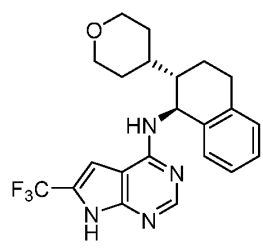
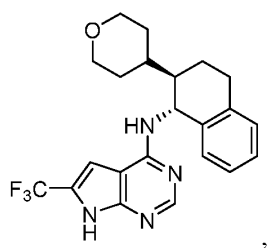
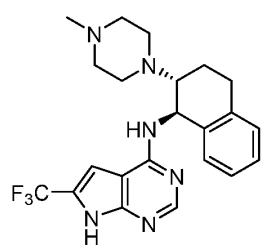
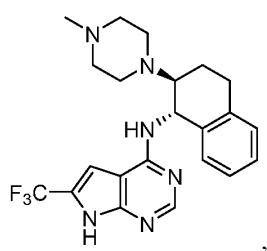


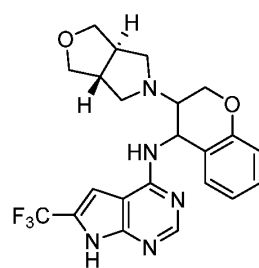
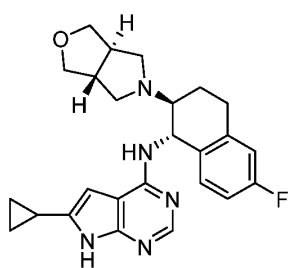
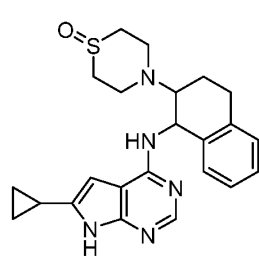
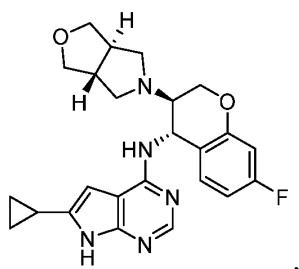
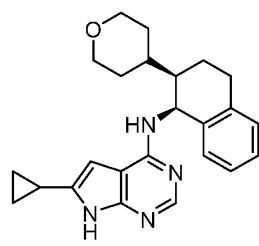
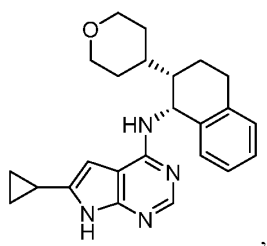
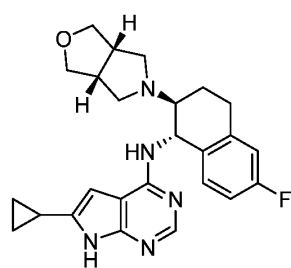
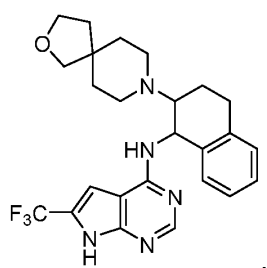


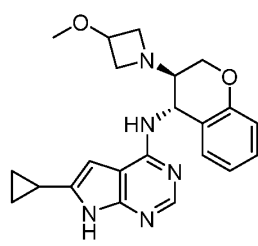
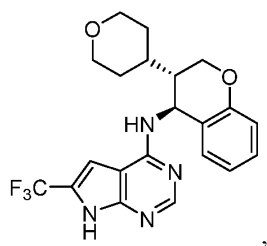
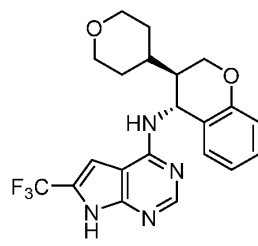
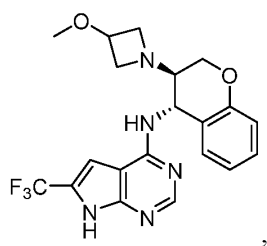
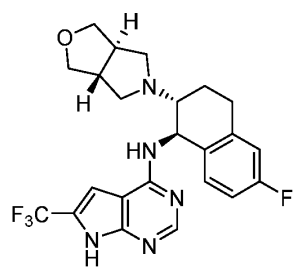
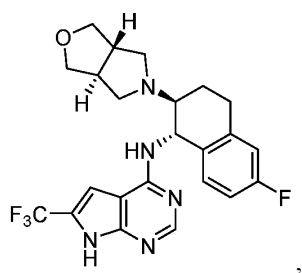
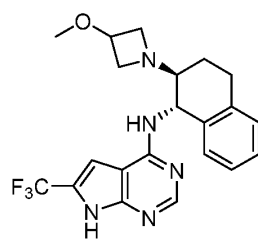
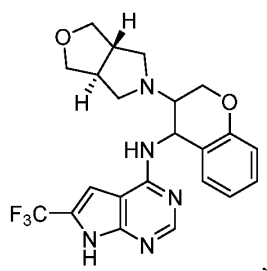


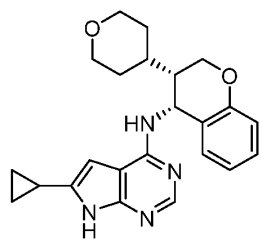
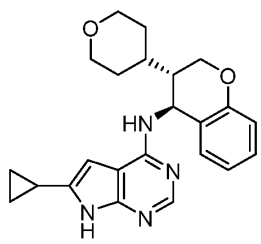
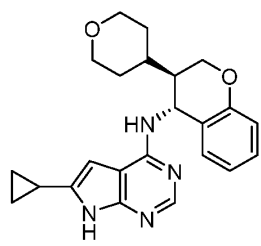
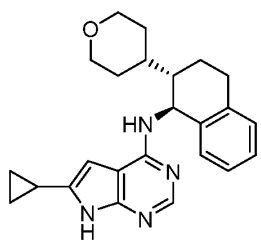
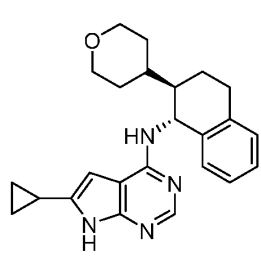
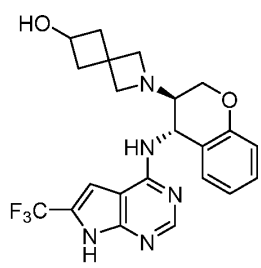
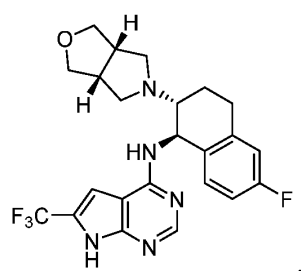
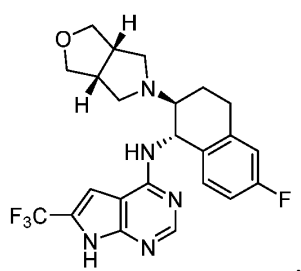


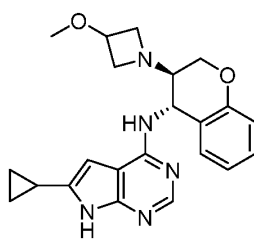
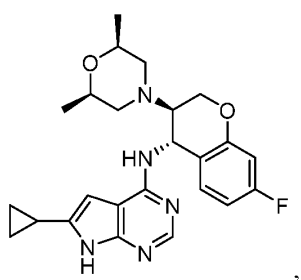
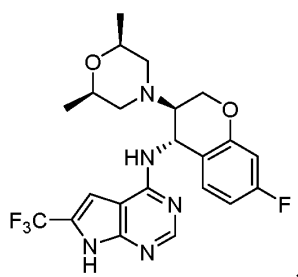
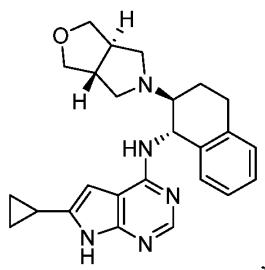
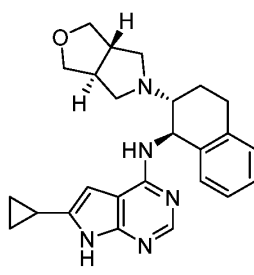
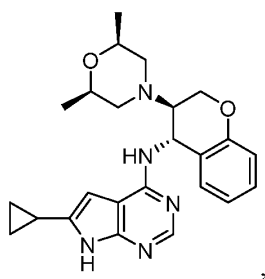
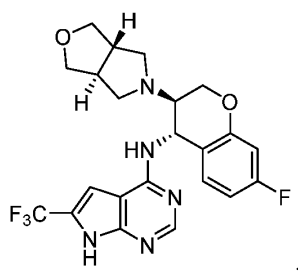
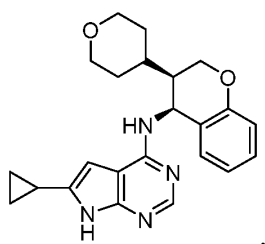


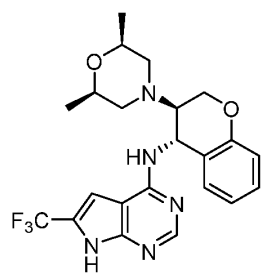
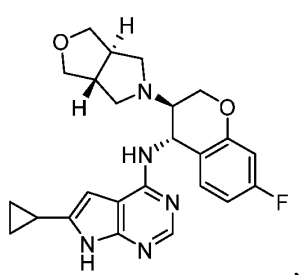
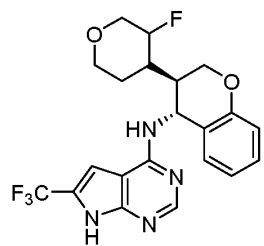
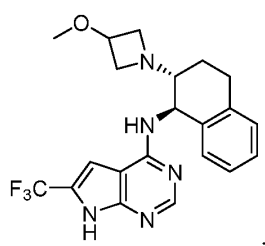
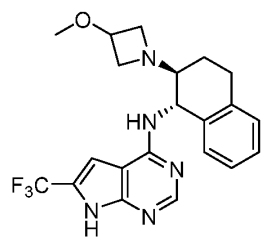
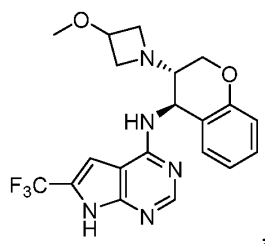
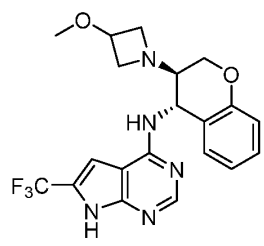
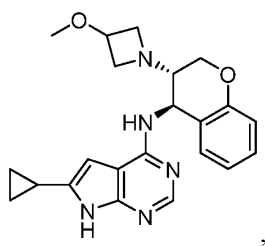


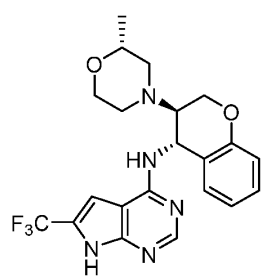
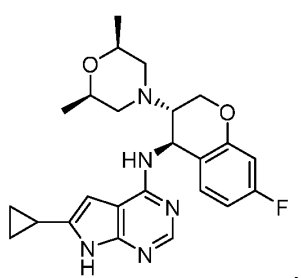
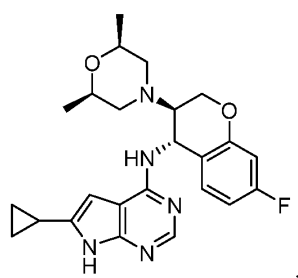
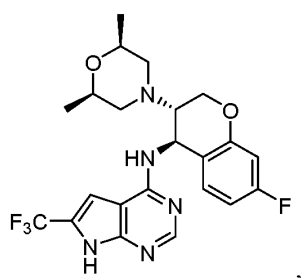
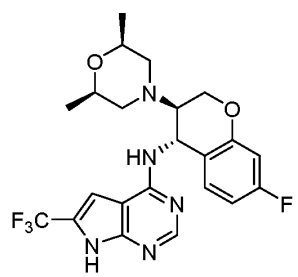
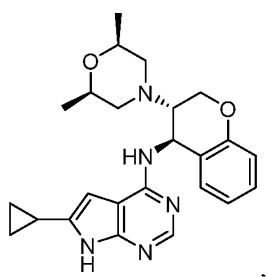
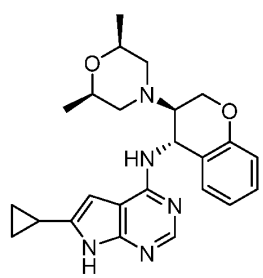
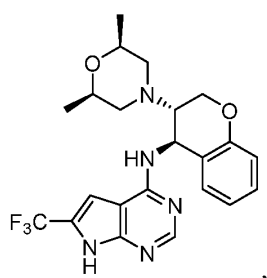


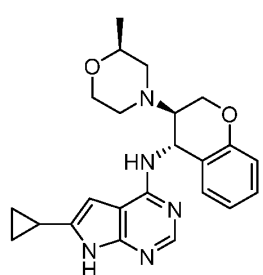
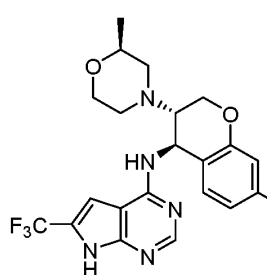
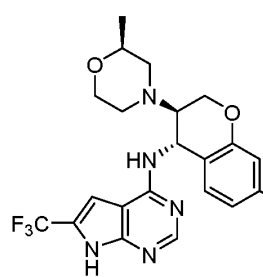
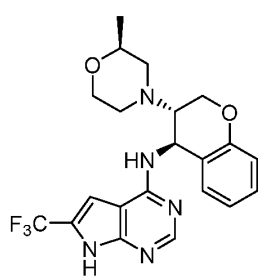
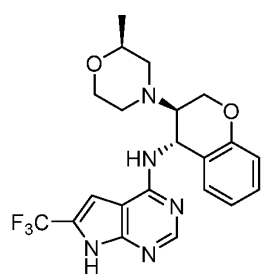
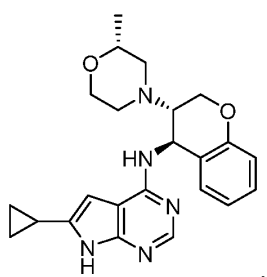
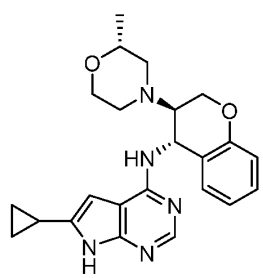
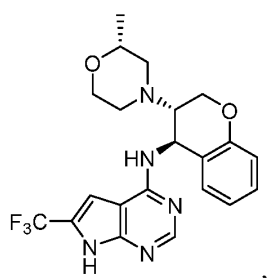


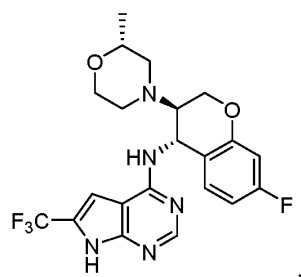
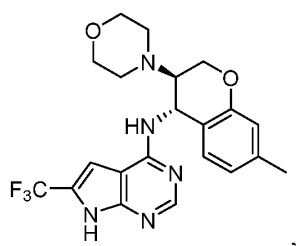
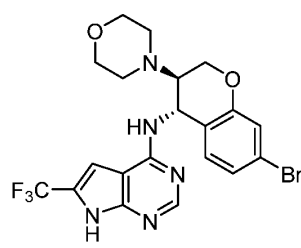
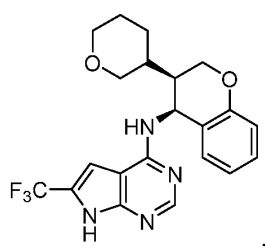
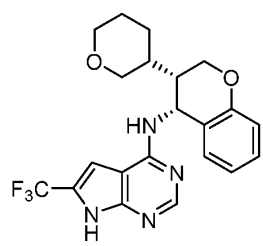
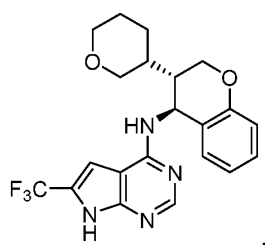
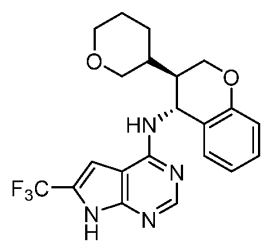
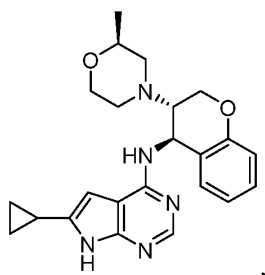


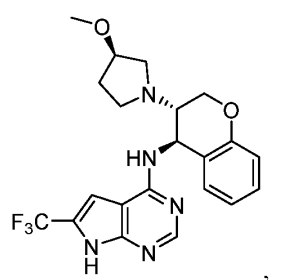
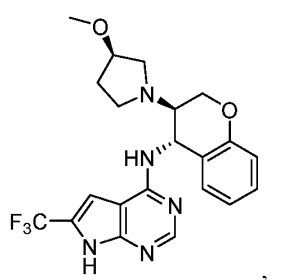
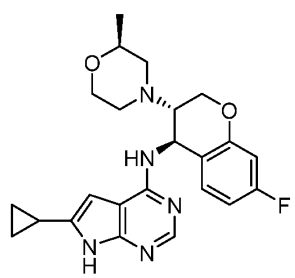
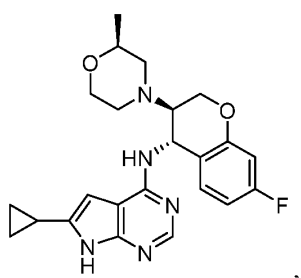
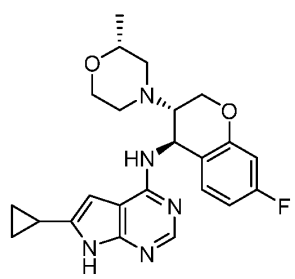
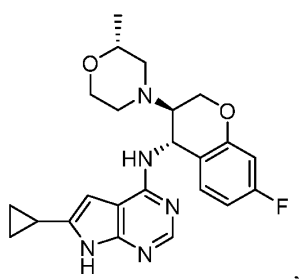
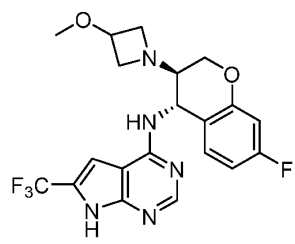
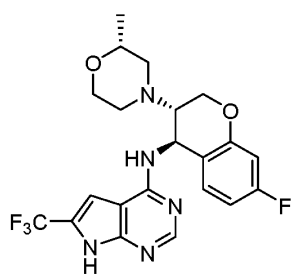


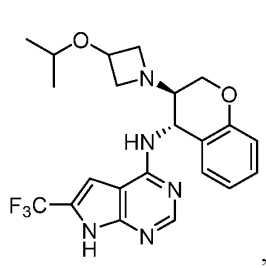
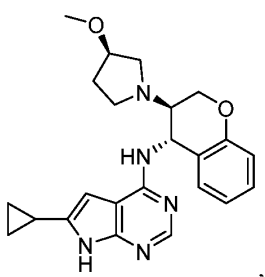
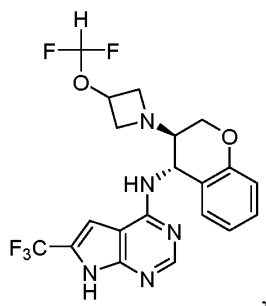
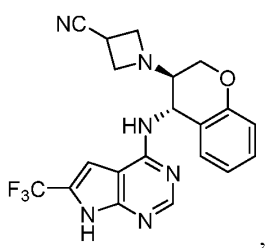
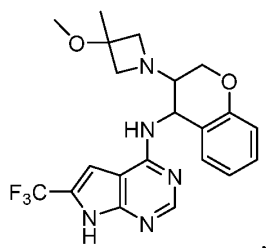
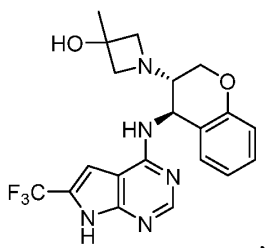
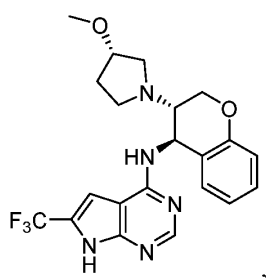
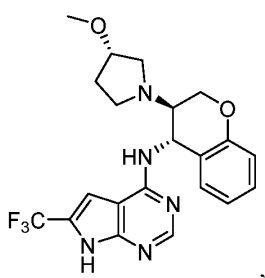


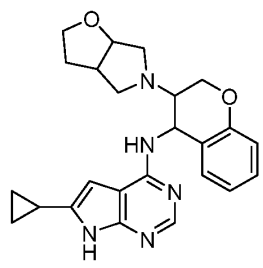
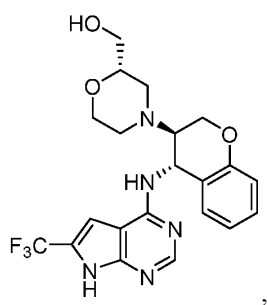
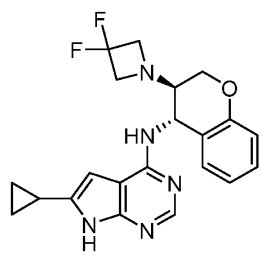
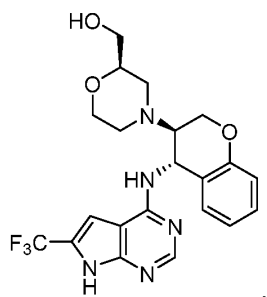
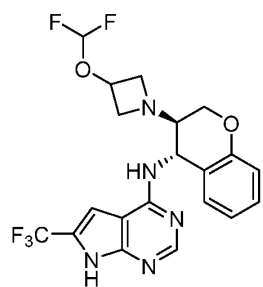
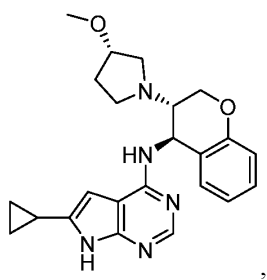
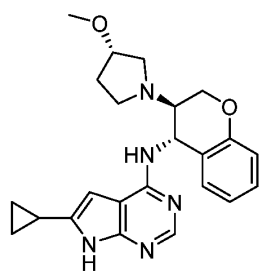
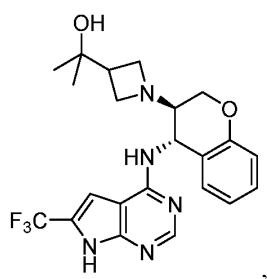


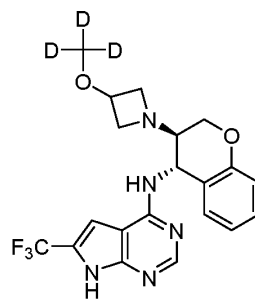
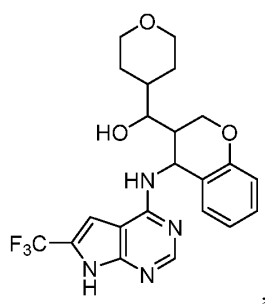
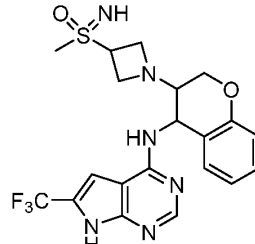
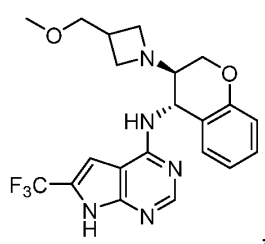
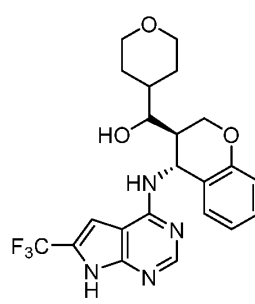
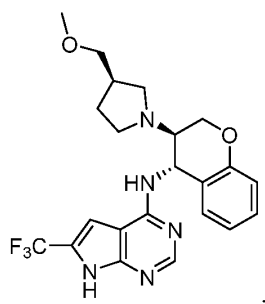
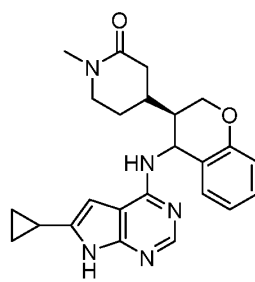
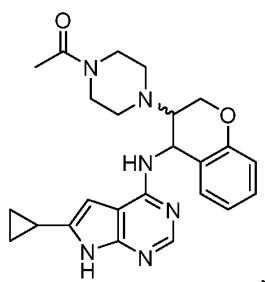


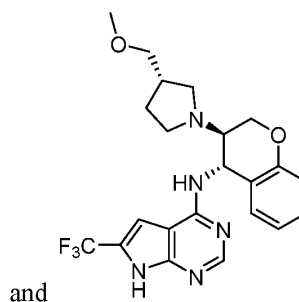
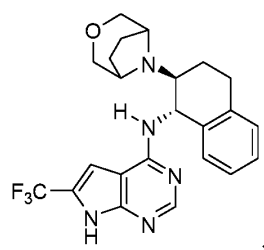
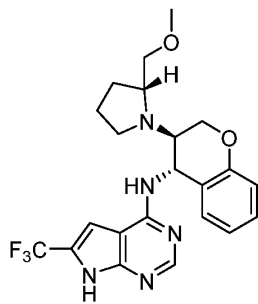
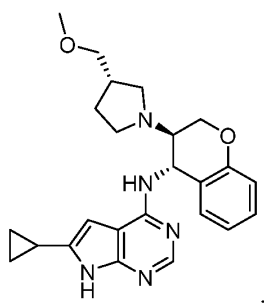




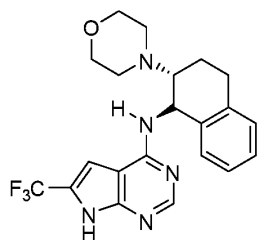








32. The compound of claim 1, wherein the compound is:



33. A pharmaceutical composition comprising a therapeutically effective amount of the compound of any one of claims 1-32, and a pharmaceutically acceptable carrier.

34. A method of modulating PINK1 kinase activity in a subject in need thereof, the method comprising administering to the subject in need thereof an effective amount of the compound of any one of claims 1-32.

35. The method of claim 34, wherein the modulating is inhibiting.

36. A method of modulating PINK1 kinase activity in at least one cell, the method comprising contacting the cell with an effective amount of the compound of any one of claims 1-32.
37. The method of claim 36, wherein the cell is mammalian.
38. The method of claim 37, wherein the cell has been isolated from a mammal prior to the contacting step.
39. The method of claim 36, wherein the cell comprises a dysfunctional PINK1 kinase activity.
40. The method of claim 36, wherein the step of contacting is performed *in vitro*.
41. A method of treating a disorder in a subject in need thereof, the method comprising administering to the subject in need thereof an effective amount of the compound of any one of claims 1-32, wherein the disorder is a neurodegenerative disorder, a mitochondrial disorder, a fibrosis, or cardiomyopathy.
42. The method of claim 41, wherein the subject is a mammal.
43. The method of claim 41, wherein the subject is a human.
44. The method of claim 41, wherein the subject has been diagnosed with the disorder prior to the administering step.
45. The method of claim 41, wherein the administering is accomplished by oral administration, parenteral administration, sublingual administration, transdermal administration, rectal administration, transmucosal administration, topical administration, inhalation, buccal administration, intrapleural administration, intravenous administration, intraarterial administration, intraperitoneal administration, subcutaneous administration, intramuscular administration, intranasal administration, intrathecal administration, and intraarticular administration, or combinations thereof.
46. The method of claim 41, wherein the administering comprises administering from about 1 to about 2000 micrograms of expressible nucleic acid sequence.

47. The method of claim 41, wherein the neurodegenerative disorder is Parkinson's disease, Huntington's disease, or amyotrophic lateral sclerosis.
48. A kit comprising the compound of any one of claims 1-32, and one or more of:
- (a) at least one agent known for the treatment of a neurodegenerative disorder, a mitochondrial disorder, a fibrosis, and cardiomyopathy;
 - (b) instructions for administering the compound in connection with the neurodegenerative disorder, a mitochondrial disorder, a fibrosis, or cardiomyopathy; and/or
 - (c) instructions for treating the disorder.