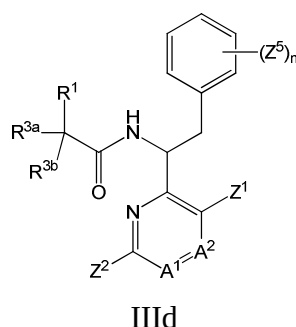


- 390 -

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A compound of formula IIIId:



wherein

A^1 is CH, C- Z^3 , or nitrogen;

A^2 is CH or nitrogen;

R^1 is 6-12 membered aryl, 5-12 membered heteroaryl, or 3-12 membered heterocycle, wherein any 6-12 membered aryl, 5-12 membered heteroaryl, or 3-12 membered heterocycle of R^1 is optionally substituted with 1, 2, 3, 4 or 5 Z^4 groups, wherein the Z^4 groups are the same or different;

each R^{3a} and R^{3b} is independently H or (C_1-C_3) alkyl;

Z^1 is 6-12 membered aryl, 5-14 membered heteroaryl, or 3-14 membered heterocycle, wherein any 6-12 membered aryl, 5-14 membered heteroaryl, or 3-14 membered heterocycle of Z^1 is optionally substituted with 1, 2, 3, 4 or 5 Z^{1a} or Z^{1b} , wherein the Z^{1a} and Z^{1b} groups are the same or different;

each Z^{1a} is independently (C_3-C_7) carbocycle, 5-12 membered heteroaryl, 3-12 membered heterocycle, halogen, -CN, $-OR^{n1}$, $-OC(O)R^{p1}$, $-OC(O)NR^{q1}R^{r1}$, $-SR^{n1}$, $-S(O)R^{p1}$, $-S(O)_2OH$, $-S(O)_2R^{p1}$, $-S(O)_2NR^{q1}R^{r1}$, $-NR^{q1}R^{r1}$, $-NR^{n1}COR^{p1}$, $-NR^{n1}CO_2R^{p1}$, $-NR^{n1}CONR^{q1}R^{r1}$, $-NR^{n1}S(O)_2R^{p1}$, $-NR^{n1}S(O)_2OR^{p1}$, $-NR^{n1}S(O)_2NR^{q1}R^{r1}$, $-C(O)R^{n1}$, $-C(O)OR^{n1}$, $-C(O)NR^{q1}R^{r1}$ and $-S(O)_2NR^{n1}COR^{p1}$, wherein any (C_3-C_7) carbocycle, 5-12 membered heteroaryl and 3-12 membered heterocycle of Z^{1a} is optionally substituted with 1, 2, 3, 4 or 5 Z^{1c} or Z^{1d} groups, wherein the Z^{1c} and Z^{1d} groups are the same or different;

each Z^{1b} is independently (C_1-C_8) alkyl optionally substituted with 1, 2, 3, 4 or 5 halogen, which are the same or different;

- 391 -

each Z^{1c} is independently halogen, -CN, -OH, -NH₂, -C(O)NR^{q2}R^{r2}, or (C₁-C₈)heteroalkyl;

each Z^{1d} is independently (C₁-C₈)alkyl or (C₁-C₈)haloalkyl;

each R^{n1} is independently H, (C₁-C₈)alkyl, (C₃-C₇)carbocycle, 3-7 membered heterocycle, or 5-6 membered monocyclic-heteroaryl, wherein any (C₃-C₇)carbocycle, 3-7 membered heterocycle, or 5-6 membered monocyclic-heteroaryl of R^{n1} is optionally substituted with 1, 2, 3, 4 or 5 Z^{1c} or Z^{1d} groups, wherein the Z^{1c} and Z^{1d} groups are the same or different, and wherein any (C₁-C₈)alkyl of R^{n1} is optionally substituted with 1, 2, 3, 4 or 5 Z^{1c} groups, wherein the Z^{1c} groups are the same or different;

each R^{p1} is independently (C₁-C₈)alkyl, (C₃-C₇)carbocycle, 3-7 membered heterocycle, or 5-6 membered monocyclic-heteroaryl, wherein any (C₃-C₇)carbocycle, 3-7 membered heterocycle, or 5-6 membered monocyclic-heteroaryl of R^{p1} is optionally substituted with 1, 2, 3, 4 or 5 Z^{1c} or Z^{1d} groups, wherein the Z^{1c} and Z^{1d} groups are the same or different, and wherein any (C₁-C₈)alkyl of R^{p1} is optionally substituted with 1, 2, 3, 4 or 5 Z^{1c} groups, wherein the Z^{1c} groups are the same or different;

each R^{q1} and R^{r1} is independently H, (C₁-C₈)alkyl, (C₃-C₇)carbocycle, 3-7 membered heterocycle, or 5-6 membered monocyclic-heteroaryl, wherein any (C₃-C₇)carbocycle, 3-7 membered heterocycle, or 5-6 membered monocyclic-heteroaryl of R^{q1} or R^{r1} is optionally substituted with 1, 2, 3, 4 or 5 Z^{1c} or Z^{1d} groups, wherein the Z^{1c} and Z^{1d} groups are the same or different, and wherein any (C₁-C₈)alkyl of R^{q1} or R^{r1} is optionally substituted with 1, 2, 3, 4 or 5 Z^{1c} groups, wherein the Z^{1c} groups are the same or different, or R^{q1} and R^{r1} together with the nitrogen to which they are attached form a 5, 6 or 7-membered heterocycle, wherein the 5, 6 or 7-membered heterocycle is optionally substituted with 1, 2, 3, 4 or 5 Z^{1c} or Z^{1d} groups, wherein the Z^{1c} and Z^{1d} groups are the same or different;

each R^{q2} and R^{r2} is independently H, (C₁-C₈)alkyl, (C₃-C₇)carbocycle, or R^{q2} and R^{r2} together with the nitrogen to which they are attached form a 5, 6, or 7-membered heterocycle;

Z^2 is (C₂-C₈)alkynyl which is optionally substituted with 1, 2, 3, 4, or 5 Z^{2c} groups, wherein the Z^{2c} groups are the same or different;

- 392 -

each Z^{2c} is independently oxo, halogen, $-CN$, $-OR^{n4}$, $-OC(O)R^{p4}$, $-OC(O)NR^{q4}R^{r4}$, $-SR^{n4}$, $-S(O)R^{p4}$, $-S(O)_2OH$, $-S(O)_2R^{p4}$, $-S(O)_2NR^{q4}R^{r4}$, $-NR^{q4}R^{r4}$, $-NR^{n4}COR^{p4}$, $-NR^{n4}CO_2R^{p4}$, $-NR^{n4}CONR^{q4}R^{r4}$, $-NR^{n4}S(O)_2R^{p4}$, $-NR^{n4}S(O)_2OR^{p4}$, $-NR^{n4}S(O)_2NR^{q4}R^{r4}$, $-NO_2$, $-C(O)R^{n4}$, $-C(O)OR^{n4}$, or $-C(O)NR^{q4}R^{r4}$;

each R^{n4} is independently H, (C_1-C_4) alkyl, (C_1-C_4) haloalkyl, or (C_1-C_4) heteroalkyl;

each R^{p4} is independently (C_1-C_8) alkyl, (C_1-C_4) haloalkyl, or (C_1-C_4) heteroalkyl;

each R^{q4} and R^{r4} is independently H, (C_1-C_4) alkyl, (C_1-C_4) haloalkyl, or (C_1-C_4) heteroalkyl;

each Z^3 is independently a (C_1-C_4) heteroalkyl;

each Z^4 is independently oxo, (C_1-C_8) alkyl, (C_3-C_7) carbocycle, halogen, $-CN$, $-OR^{n5}$, $-NR^{q5}R^{r5}$, $-NR^{n5}COR^{p5}$, $-NR^{n5}CO_2R^{p5}$, $-C(O)R^{n5}$, $-C(O)OR^{n5}$, or $-C(O)NR^{q5}R^{r5}$, wherein any (C_3-C_7) carbocycle or (C_1-C_8) alkyl of Z^4 is optionally substituted with 1, 2, 3, 4 or 5 Z^{4a} groups, wherein the Z^{4a} groups are the same or different;

each Z^{4a} is independently halogen, $-CN$, or $-OR^{n6}$;

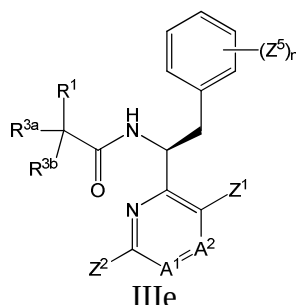
each R^{n5} , R^{p5} , R^{q5} , R^{r5} , and R^{n6} is independently H or (C_1-C_4) alkyl;

each Z^5 is independently halogen, which may be same or different; and

n is 0, 1, 2, or 3;

or a pharmaceutically acceptable salt thereof.

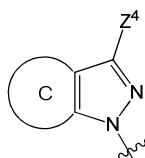
2. The compound of claim 1, or a pharmaceutically acceptable salt thereof, which is a compound of formula IIIe:



or a pharmaceutically acceptable salt thereof.

3. The compound of claim 1 or 2, or a pharmaceutically acceptable salt thereof, wherein R^1 is

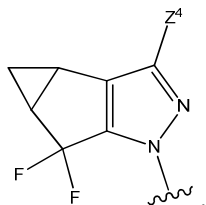
- 393 -



wherein

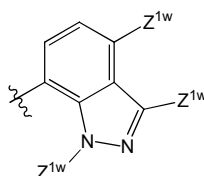
C together with the two carbon atoms to which it is attached forms a 3-7 membered monocyclic-carbocycle or 5-9 membered bicyclic-carbocycle, wherein any 3-7 membered monocyclic-carbocycle or 5-9 membered bicyclic-carbocycle of C is optionally substituted with 1, 2, 3, 4 or 5 Z^4 groups, wherein the Z^4 groups are the same or different.

4. The compound of any one of claims 1-3, or a pharmaceutically acceptable salt



thereof, wherein R^1 is

5. The compound of any one of claims 1-4, or a pharmaceutically acceptable salt thereof, wherein Z^1 is



wherein each Z^{1w} is independently Z^{1a} , Z^{1b} , or H.

6. The compound of claim 5, or a pharmaceutically acceptable salt thereof, wherein:

each Z^{1a} is independently halogen, -CN, -ORⁿ¹, -NRⁿ¹S(O)₂R^{p1}, -NRⁿ¹S(O)₂NR^{q1}R^{r1}, -NR^{q1}R^{r1}, -NRⁿ¹COR^{p1}, -NRⁿ¹CONR^{q1}R^{r1}, or -NRⁿ¹CO₂R^{p1};

each Z^{1b} is independently (C₁-C₈alkyl), wherein the (C₁-C₈alkyl) is optionally substituted with 1, 2, or 3 halogen, which are the same or different; and

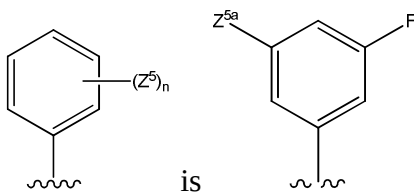
at least one of Z^{1w} is Z^{1a} or Z^{1b} .

- 394 -

7. The compound of claim 6, or a pharmaceutically acceptable salt thereof, wherein at least two of Z^{1w} are independently Z^{1a} .

8. The compound of claim 6 or 7, or a pharmaceutically acceptable salt thereof, wherein each Z^{1a} is independently halogen, $-NR^{n1}S(O)_2R^{p1}$, or $-NR^{n1}S(O)_2NR^{q1}R^{r1}$.

9. The compound of any one of claims 1-8, or a pharmaceutically acceptable salt thereof, wherein the moiety



wherein Z^{5a} is H or halogen.

10. The compound of any one of claims 1-9, or a pharmaceutically acceptable salt thereof, wherein A^1 is CH or $C-Z^3$.

11. The compound of any one of claims 1-10, or a pharmaceutically acceptable salt thereof, wherein A^2 is CH.

12. The compound of any one of claims 1-11, or a pharmaceutically acceptable salt thereof, wherein each Z^3 , where present, is independently methoxy, dimethylamino, or methylamino.

13. The compound of any one of claims 1-12, or a pharmaceutically acceptable salt thereof, wherein R^{3a} and R^{3b} are each H, or wherein R^{3a} is methyl and R^{3b} is H.

14. The compound of any one of claims 1-13, or a pharmaceutically acceptable salt thereof, wherein each Z^{2c} is independently halogen, $-OR^{n4}$, $-NR^{q4}R^{r4}$, $-NR^{n4}CO_2R^{p4}$, $-C(O)OR^{n4}$, or $-C(O)NR^{q4}R^{r4}$.

15. The compound of any one of claims 1-14, or a pharmaceutically acceptable salt thereof, wherein each Z^{2c} is independently halogen or $-OR^{n4}$.

- 396 -

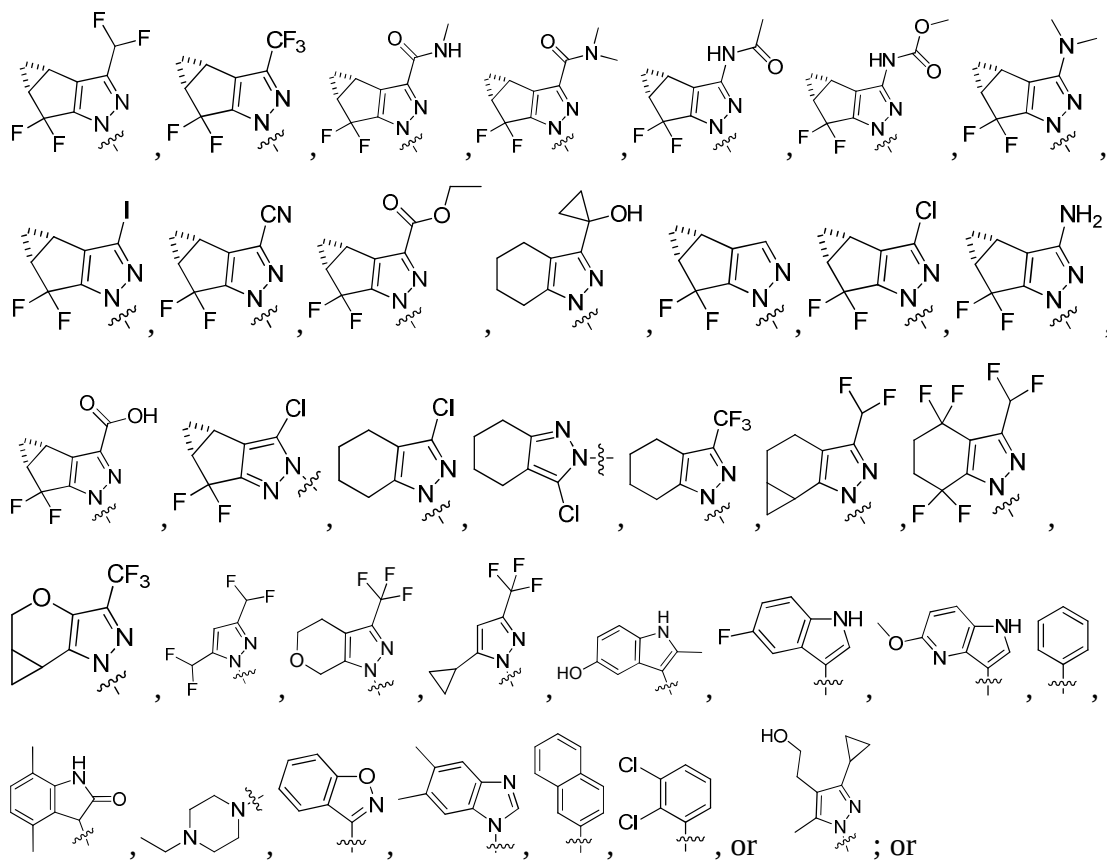
monocyclic-carbocycle, 5-9 membered bicyclic-carbocycle, 3-7 membered monocyclic-heterocycle or 5-9 membered bicyclic heterocycle of C is optionally substituted with 1, 2, 3, 4 or 5 Z^4 groups, wherein the Z^4 groups are the same or different; and

each Z^{4c} is independently selected from H or Z^4 , wherein the Z^4 groups are the same or different.

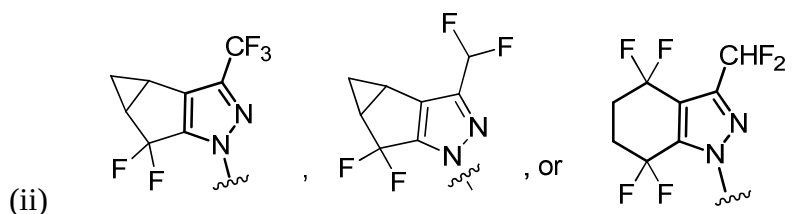
18. The compound of any one of claims 1-17, or a pharmaceutically acceptable salt thereof, wherein each Z^4 is independently (C₁-C₄)alkyl or halogen, wherein any (C₁-C₄)alkyl of Z^4 is optionally substituted with 1, 2, 3, 4 or 5 halogen.

19. The compound of any one of claims 1-2 and 5-18, or a pharmaceutically acceptable salt thereof, wherein R¹ optionally substituted with 1, 2, 3, 4, or 5 Z^4 groups is

(i)



- 397 -



20. The compound of any one of claims 1-4 and 9-19, or a pharmaceutically acceptable salt thereof, wherein

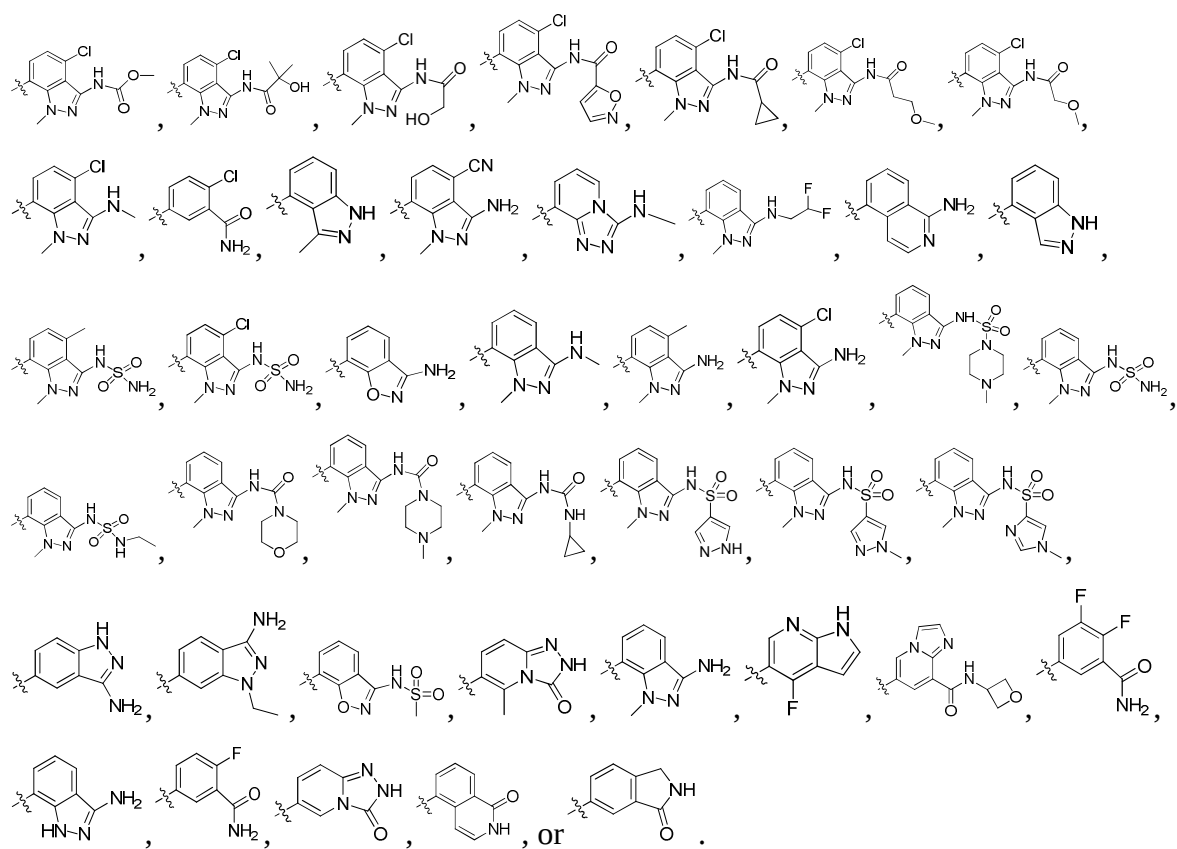
(i) Z^1 is phenyl, 5-6 membered monocyclic-heteroaryl, 8-10 membered bicyclic-heteroaryl, 8-10 membered bicyclic-heterocycle, or 9-12 membered tricyclic-heterocycle, wherein any phenyl, 5-6 membered monocyclic-heteroaryl, 8-10 membered bicyclic-heteroaryl, 8-10 membered bicyclic-heterocycle, or 9-12 membered tricyclic-heterocycle of Z^1 is optionally substituted with 1, 2, 3, 4, or 5 Z^{1a} or Z^{1b} groups; or

(ii) Z^1 is 8-10 membered bicyclic-heteroaryl or 8-10 membered bicyclic-heterocycle, wherein any 8-10 membered bicyclic-heteroaryl or 8-10 membered bicyclic-heterocycle has 3-9 carbon atoms and 1-5 heteroatoms in the ring system, and wherein any 8-10 membered bicyclic-heteroaryl or 8-10 membered bicyclic-heterocycle of Z^1 is optionally substituted with 1, 2, 3, 4, or 5 Z^{1a} or Z^{1b} groups.

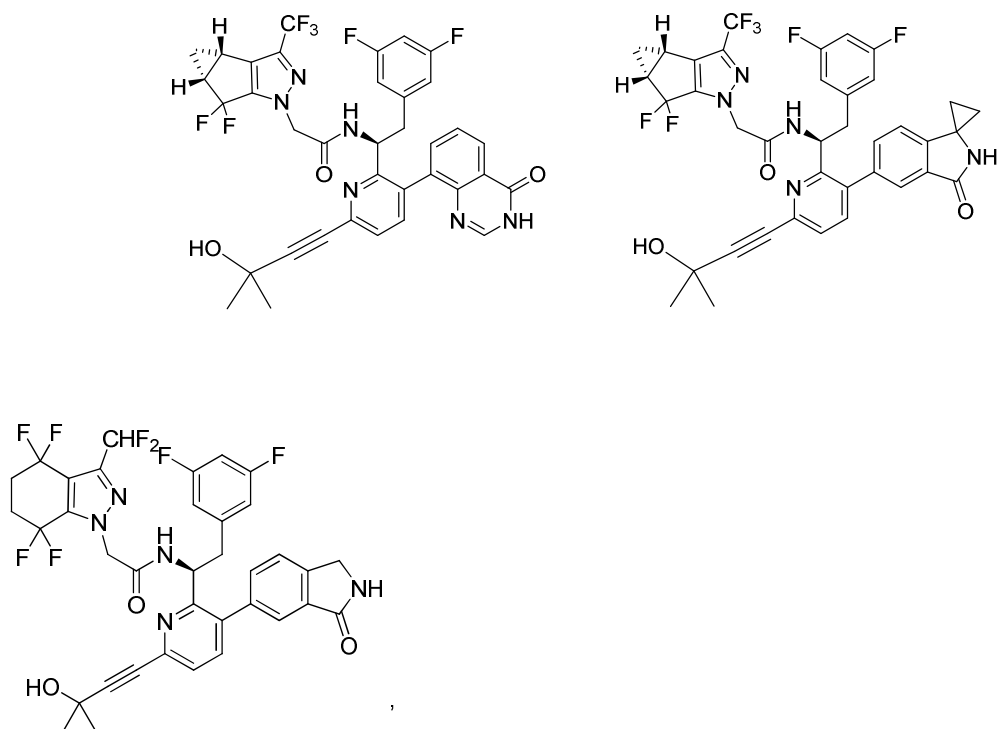
21. The compound of any one of claims 1-5 and 9-20, or a pharmaceutically acceptable salt thereof, wherein each Z^{1a} is independently oxo, (C_3-C_7) carbocycle, halogen, -CN, -O- (C_1-C_8) alkyl, $-NR^{q1}R^{r1}$, $-NR^{n1}COR^{p1}$, $-NR^{n1}CO_2R^{p1}$, $-NR^{n1}CONR^{q1}R^{r1}$, $-NR^{n1}S(O)_2R^{p1}$, $-NR^{n1}S(O)_2NR^{q1}R^{r1}$, or $-C(O)NR^{q1}R^{r1}$.

22. The compound of any one of claims 1-21, or a pharmaceutically acceptable salt thereof, wherein each Z^{1b} is independently methyl or difluoromethyl.

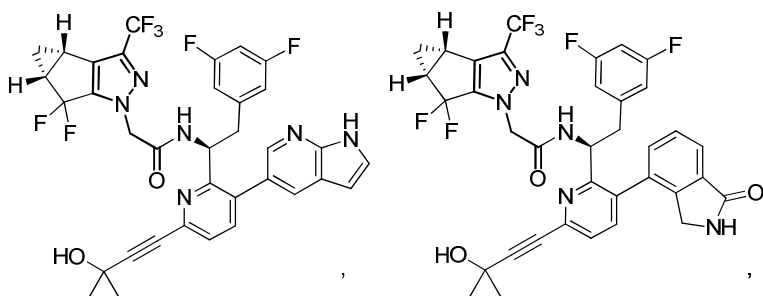
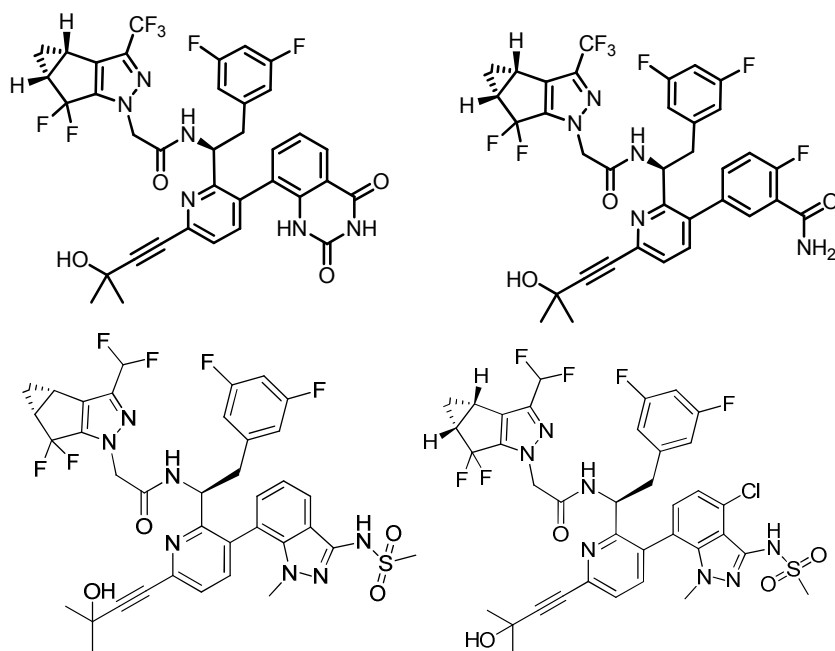
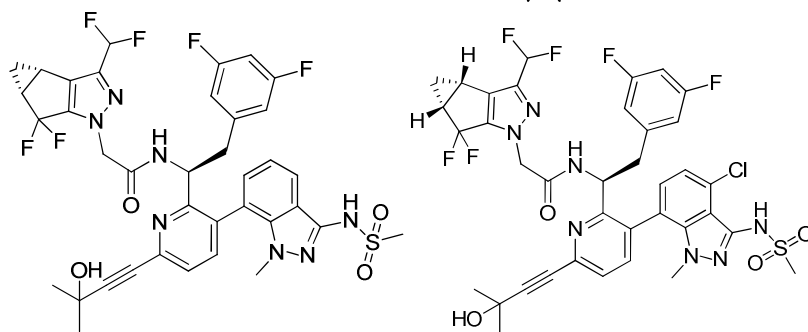
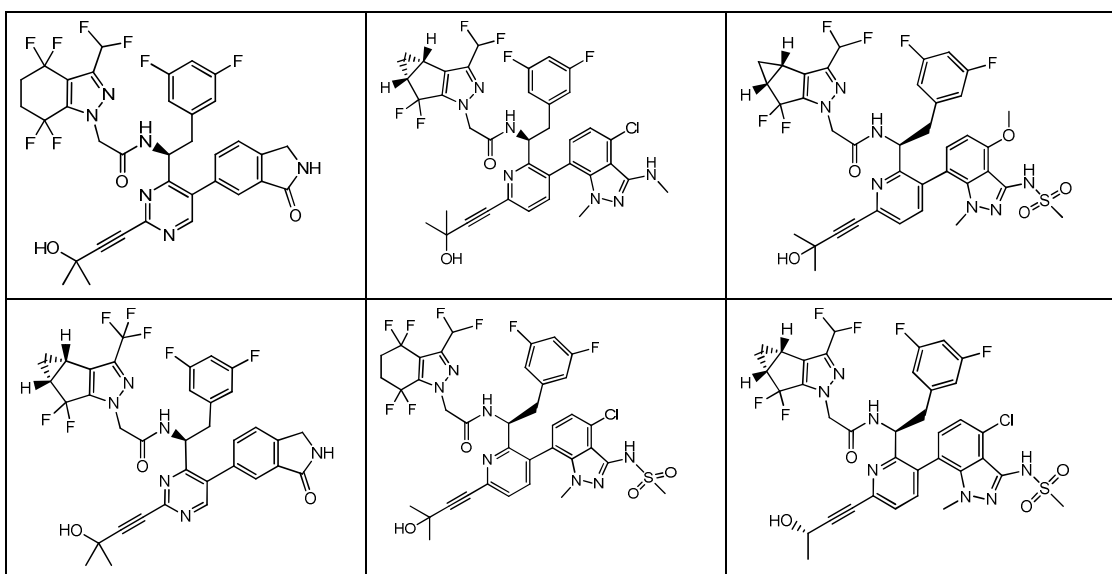
23. The compound of any one of claims 1-22, or a pharmaceutically acceptable salt thereof, wherein Z^1 is substituted with 2 Z^{1a} groups, wherein each Z^{1a} is independently $-NR^{n1}S(O)_2R^{p1}$, $-NR^{n1}S(O)_2NR^{q1}R^{r1}$, or halogen.

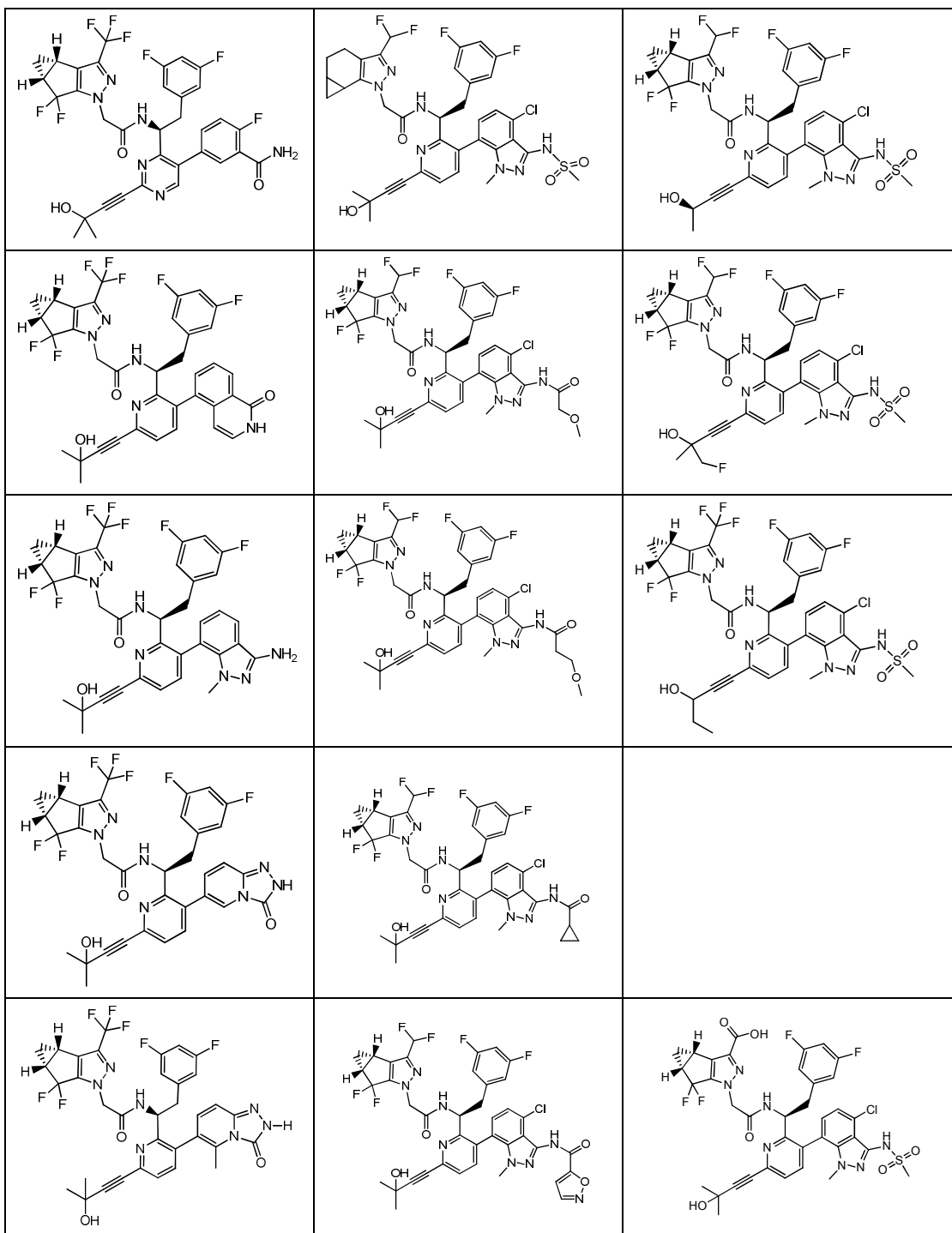


25. A compound of claim 1, or a pharmaceutically acceptable salt thereof, which is

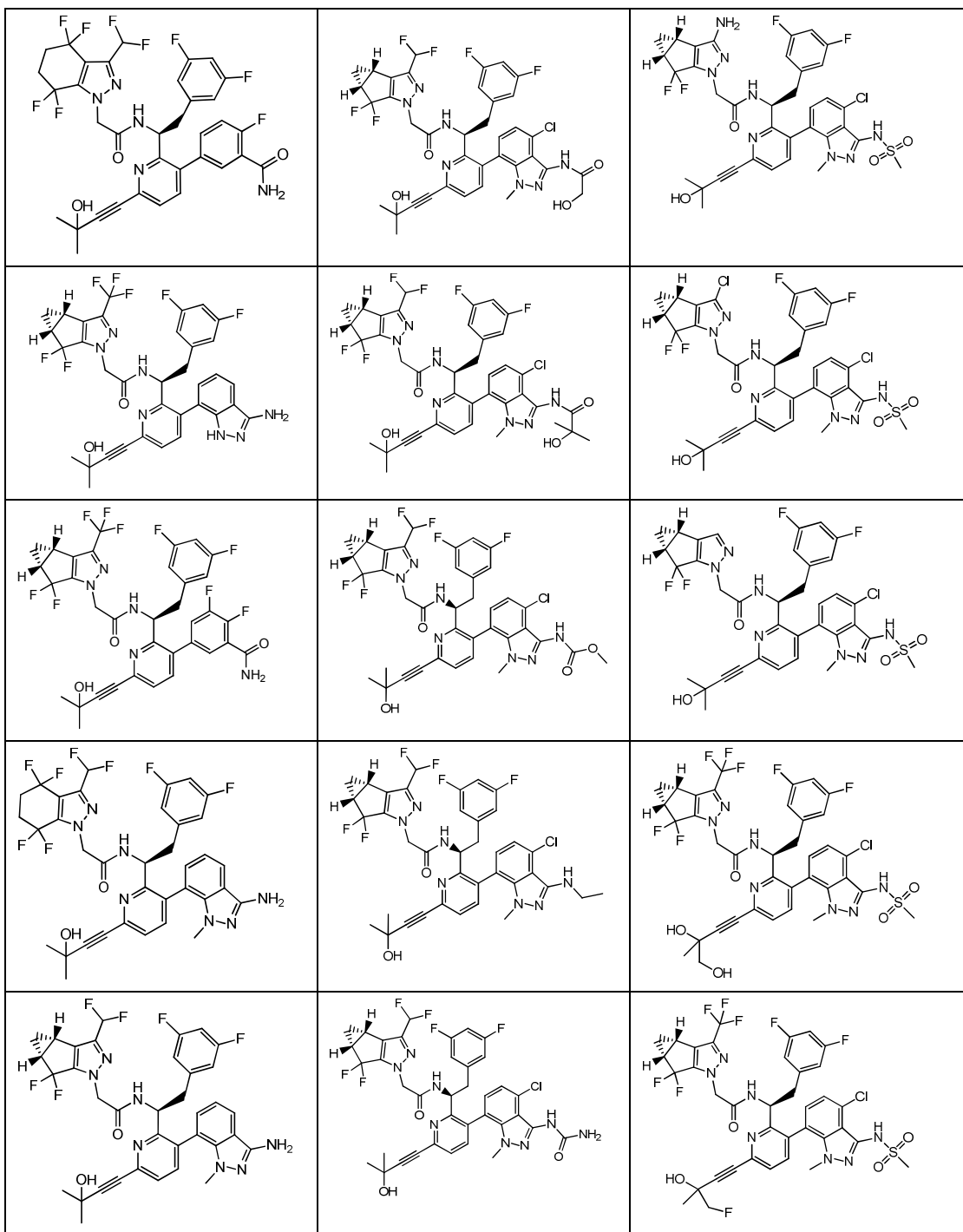


- 400 -

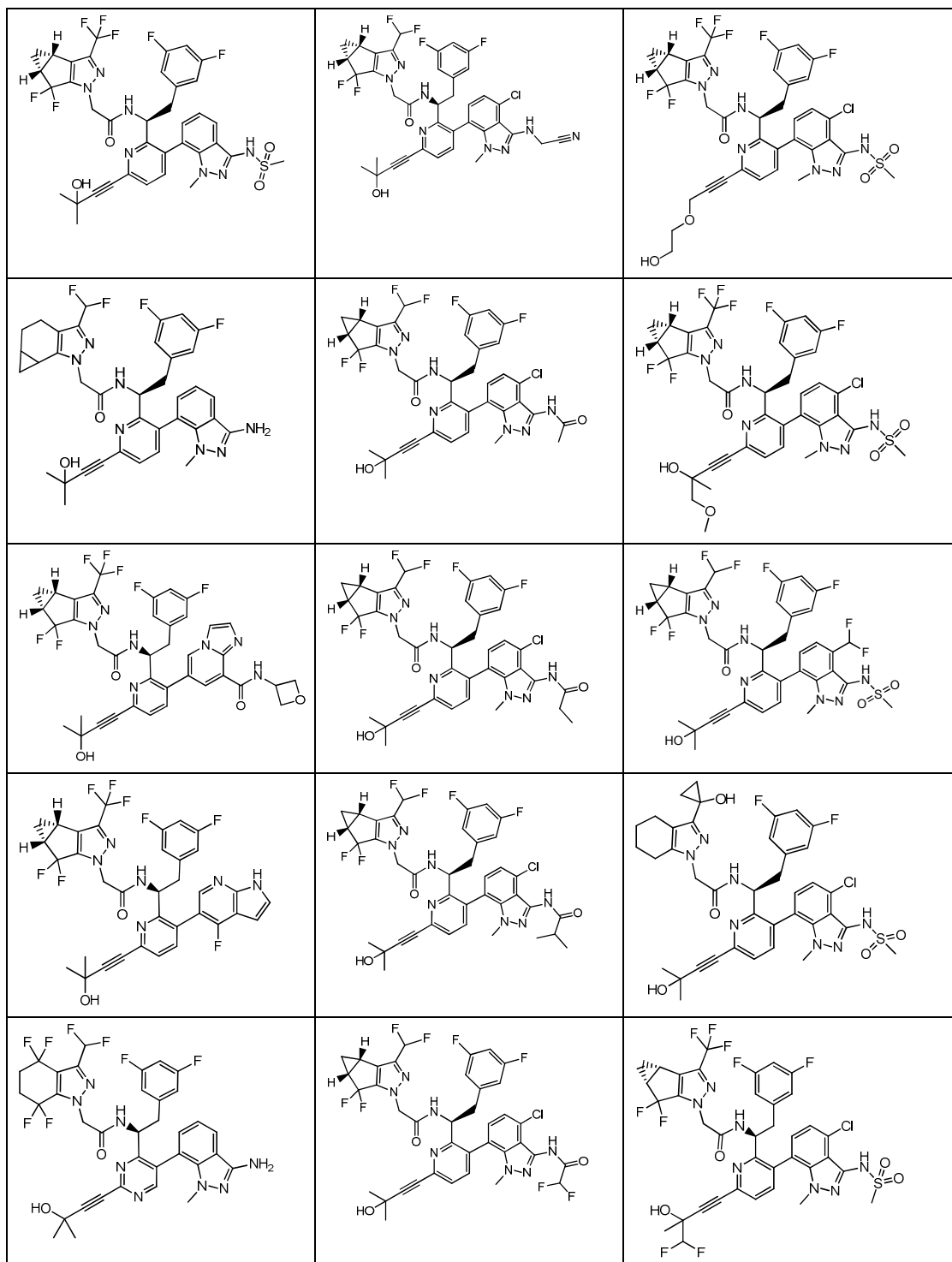


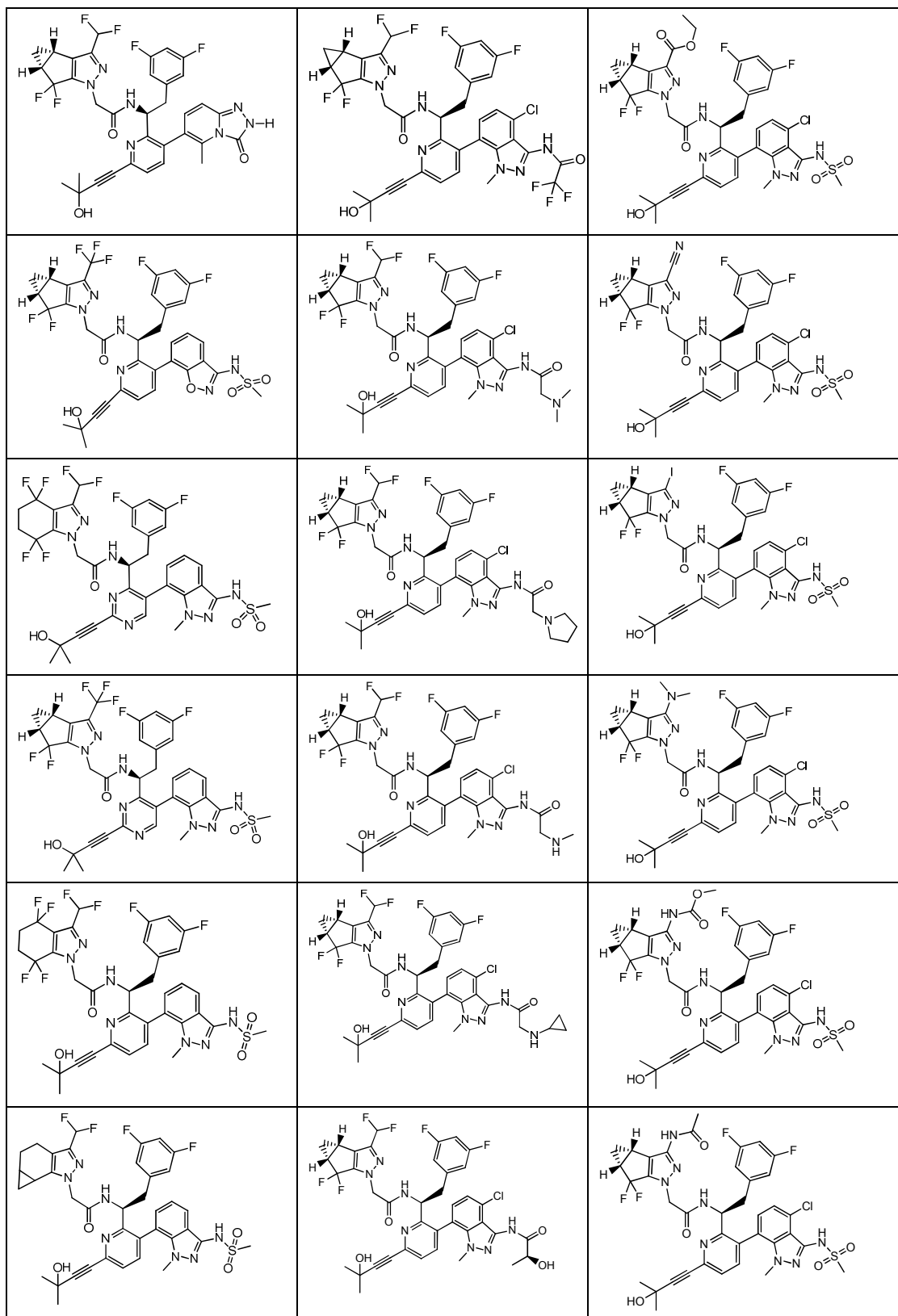


- 402 -

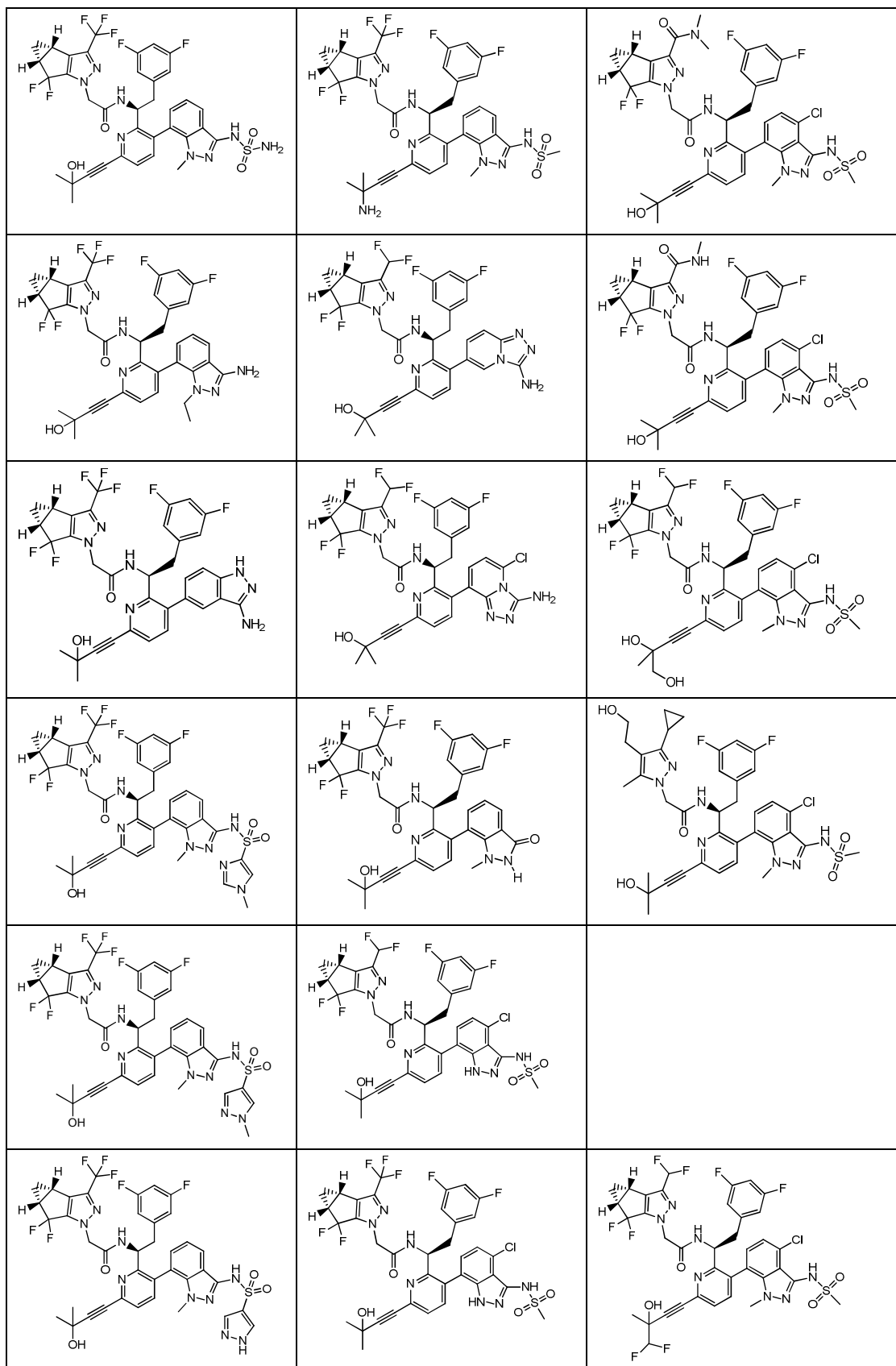


- 403 -

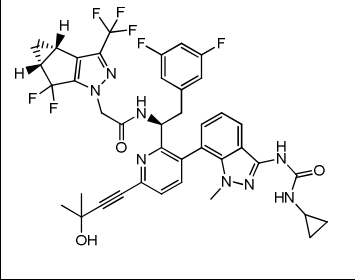
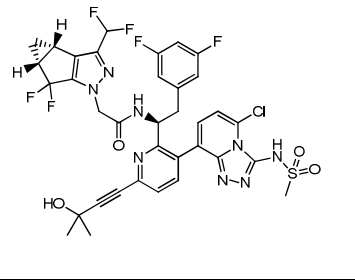
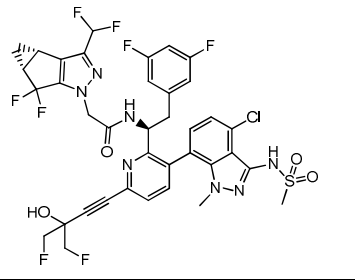
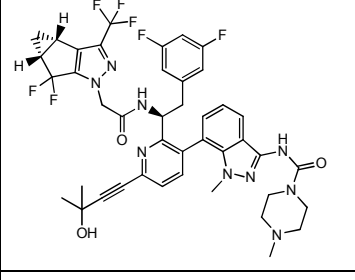
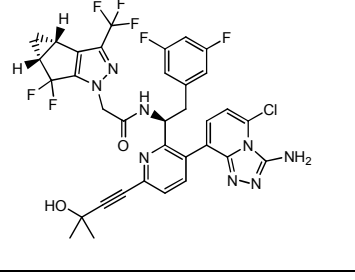
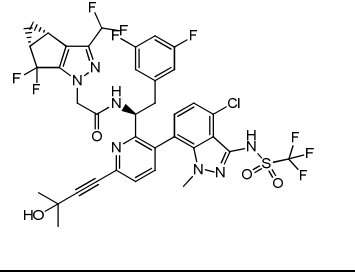
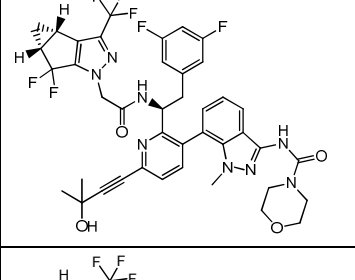
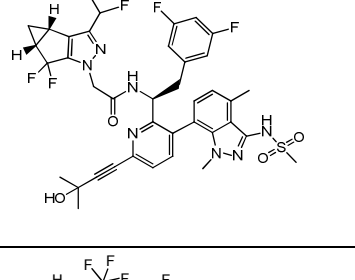
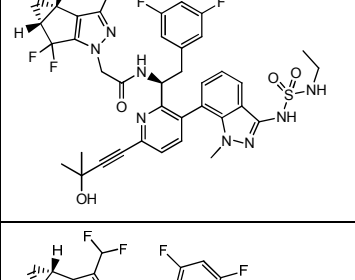
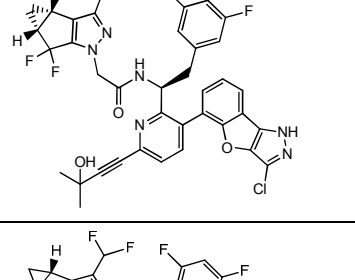
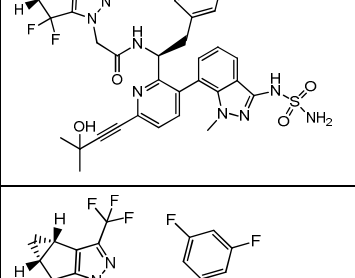
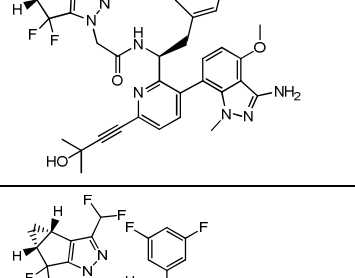
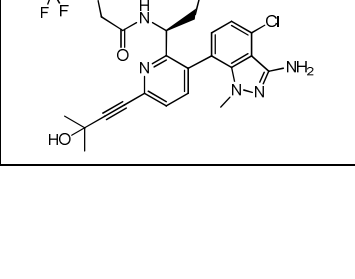
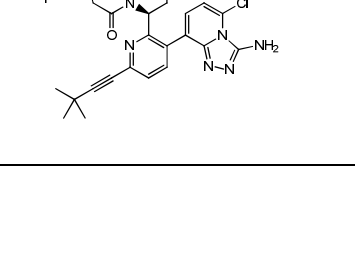




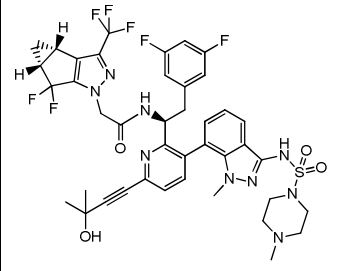
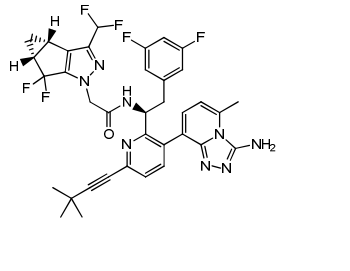
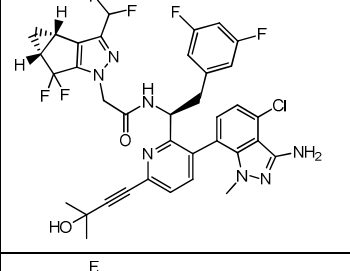
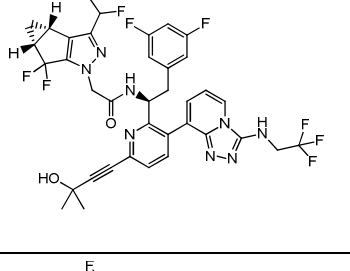
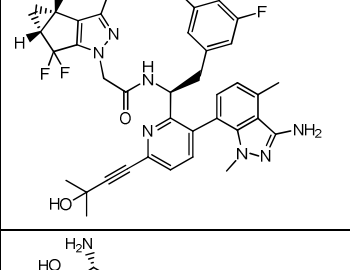
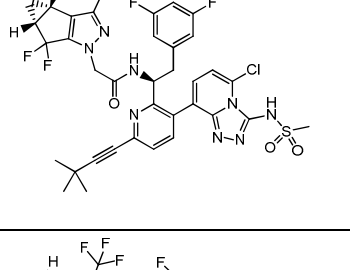
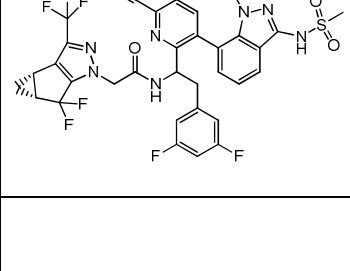
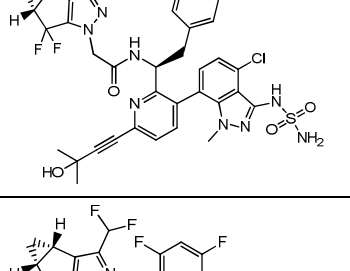
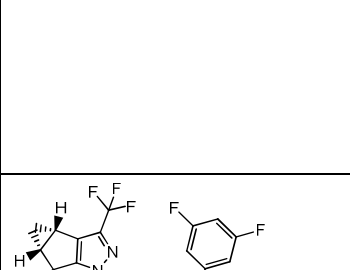
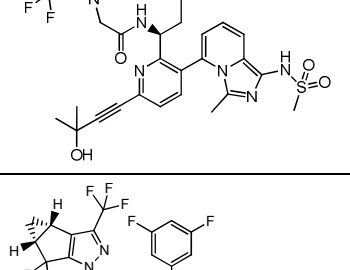
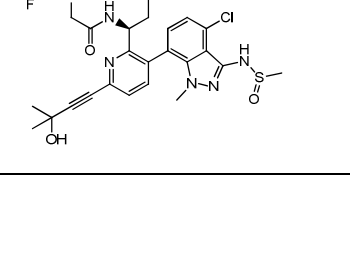
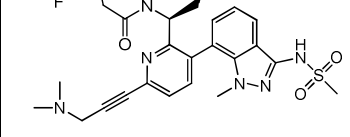
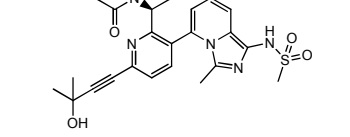
- 405 -

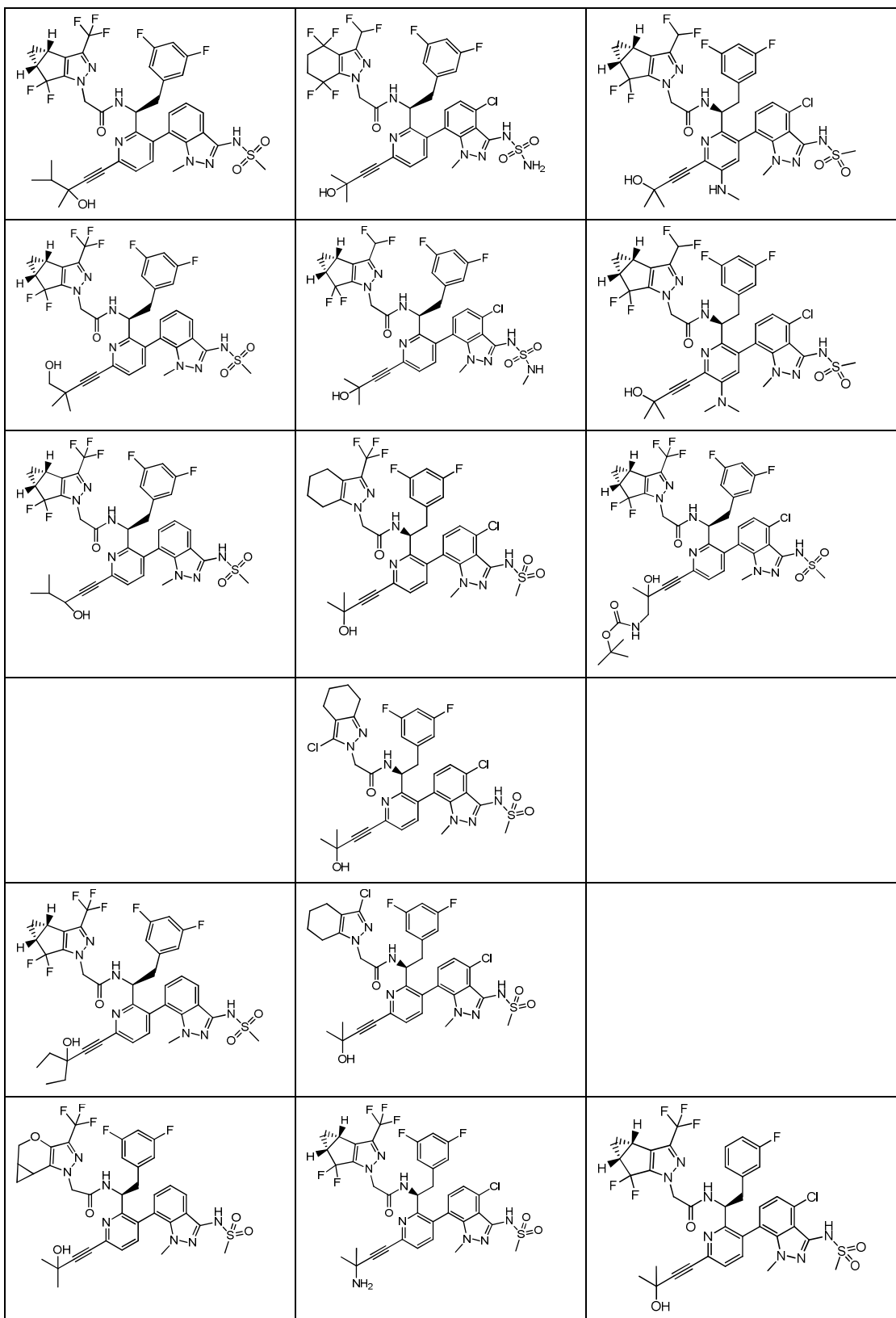


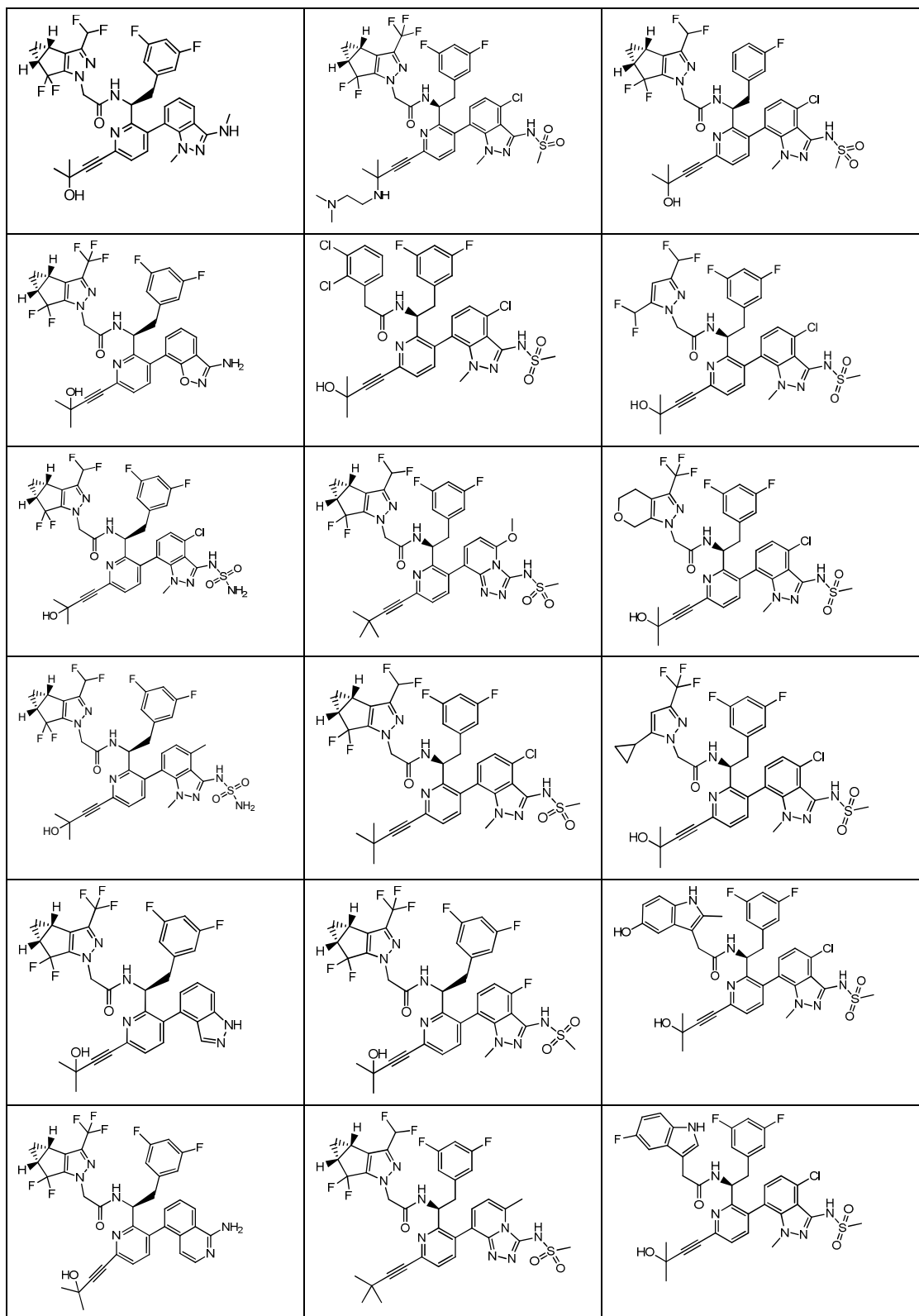
- 406 -

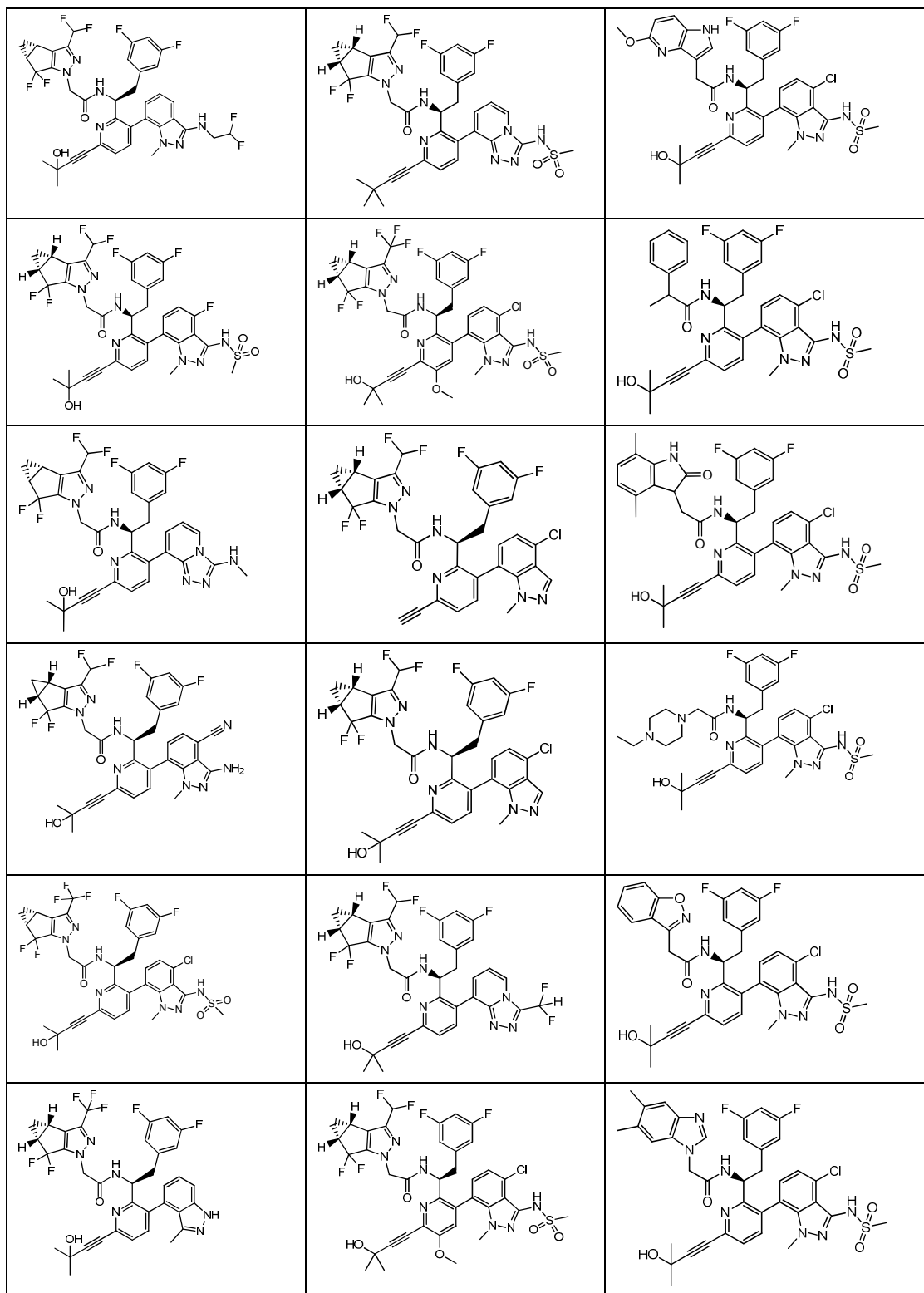
- 407 -

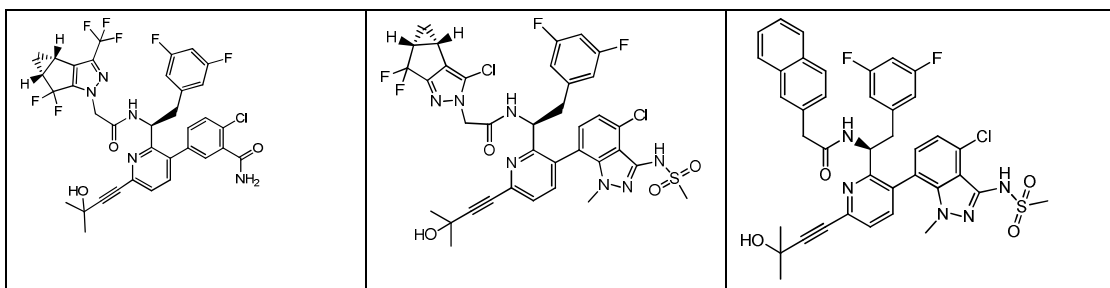




- 410 -

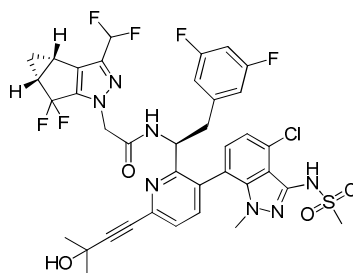


- 411 -



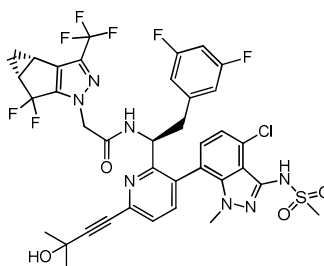
26. A compound of claim 1, which is

(i) of formula:



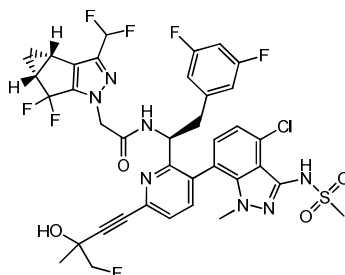
or a pharmaceutically acceptable salt thereof;

(ii) of formula:



or a pharmaceutically acceptable salt thereof;

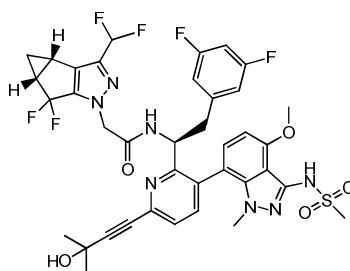
(iii) of formula:



- 412 -

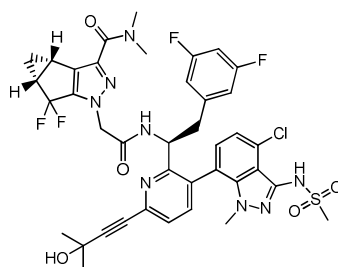
or a pharmaceutically acceptable salt thereof;

(iv) of formula:



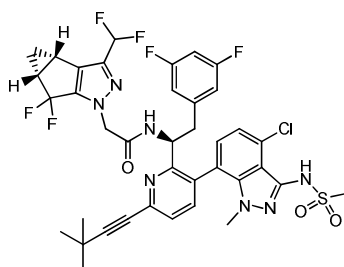
or a pharmaceutically acceptable salt thereof;

(v) of formula:



or a pharmaceutically acceptable salt thereof; or

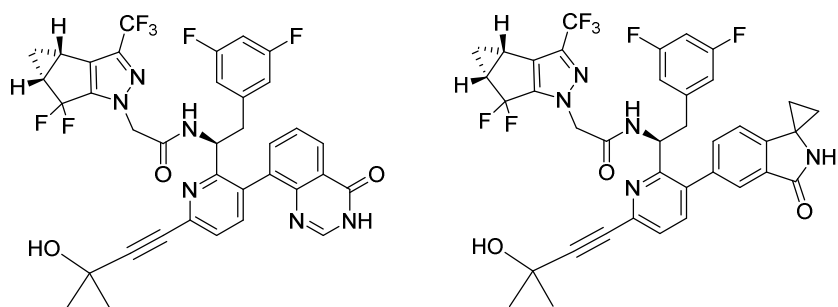
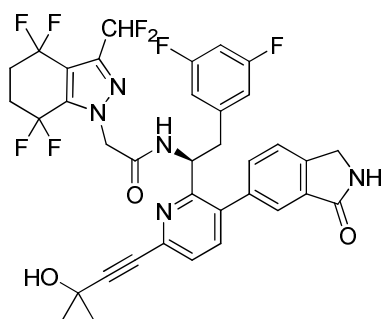
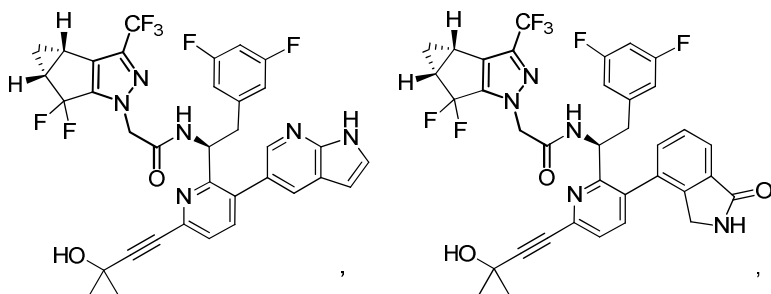
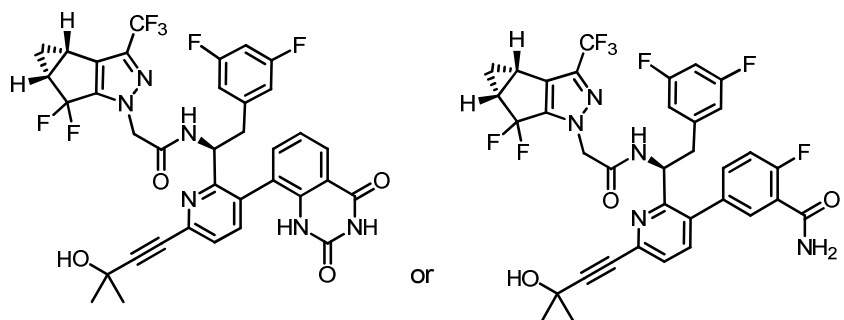
(vi) of formula:



or a pharmaceutically acceptable salt thereof.

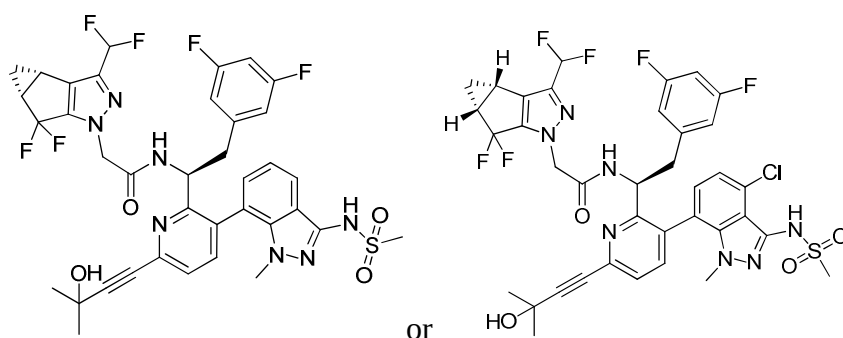
27. The compound of Claim 1, or a pharmaceutically acceptable salt thereof, which is:

- 413 -



28. The compound of Claim 1, or a pharmaceutically acceptable salt thereof, which is:

- 414 -



29. A pharmaceutical composition comprising a compound of any one of claims 1-28, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

30. A pharmaceutical composition comprising a compound of any one of claims 1-28, or a pharmaceutically acceptable salt thereof, and an additional therapeutic agent, wherein the additional therapeutic agent is an HIV protease inhibiting compound, an HIV non-nucleoside inhibitor of reverse transcriptase, an HIV nucleoside inhibitor of reverse transcriptase, an HIV nucleotide inhibitor of reverse transcriptase, an HIV integrase inhibitor, a gp41 inhibitor, a CXCR4 inhibitor, a gp120 inhibitor, a CCR5 inhibitor, a capsid polymerization inhibitor, or a non-catalytic site site HIV integrase inhibitor and combinations thereof.

31. A compound of any of claims 1-28, or a pharmaceutically acceptable salt thereof, for use in medical therapy.

32. A compound of any one of claims 1-28, or a pharmaceutically acceptable salt thereof, for the prophylactic or therapeutic treatment of an HIV virus infection.

33. The use of a compound of any one of claims 1-28, or a pharmaceutically acceptable salt thereof, for the manufacture of a medicament for treating an HIV virus infection in a mammal.

34. The use of a compound of any one of claims 1-28, or a pharmaceutically acceptable salt thereof, for the manufacture of a medicament for treating an HIV virus infection in a

- 415 -

mammal, wherein the medicament is for co-administration with a therapeutically effective amount of an additional therapeutic agent, wherein the additional therapeutic agent is an HIV protease inhibiting compound, an HIV non-nucleoside inhibitor of reverse transcriptase, an HIV nucleoside inhibitor of reverse transcriptase, an HIV nucleotide inhibitor of reverse transcriptase, an HIV integrase inhibitor, a gp41 inhibitor, a CXCR4 inhibitor, a gp120 inhibitor, a CCR5 inhibitor, a capsid polymerization inhibitor, or a non-catalytic site HIV integrase site inhibitor and combinations thereof.