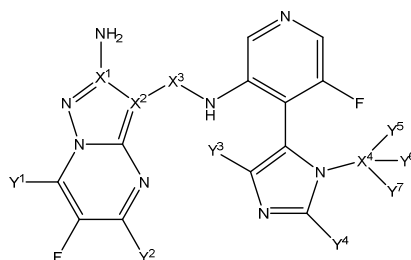


CLAIMS

1. A compound of Formula **I-A**:



I-A

or a pharmaceutically acceptable salt thereof, wherein:

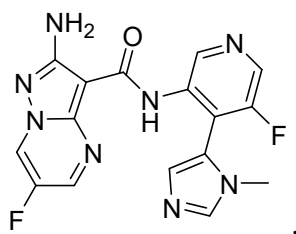
each Y¹, Y², Y³, Y⁴, Y⁵, Y⁶, and Y⁷ is independently hydrogen or deuterium; provided at least one of Y¹, Y², Y³, Y⁴, Y⁵, Y⁶, and Y⁷ is deuterium;

each X¹, X², and X⁴ is independently selected from ¹²C or ¹³C; and

X³ is -¹²C(O)- or -¹³C(O)-.

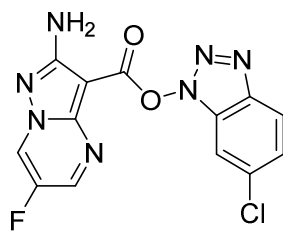
2. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein Y¹, Y², Y³, and Y⁴ are independently selected from deuterium or hydrogen; and Y⁵, Y⁶, and Y⁷ are deuterium.
3. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein Y¹ and Y² are independently selected from deuterium or hydrogen; and Y³, Y⁴, Y⁵, Y⁶, and Y⁷ are deuterium.
4. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein Y¹, Y², Y⁵, Y⁶, and Y⁷ are independently selected from deuterium or hydrogen; and Y³ and Y⁴ are deuterium.
5. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein Y¹, Y³, and Y⁴ are independently selected from deuterium or hydrogen; and Y², Y⁵, Y⁶, and Y⁷ are deuterium.

6. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein X⁴ is ¹³C.
7. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein X¹ and X⁴ are ¹³C.
8. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein X³ is -¹³C(O)-.
9. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein Y¹, Y³, Y⁴, Y⁵, Y⁶, and Y⁷ are hydrogen; Y² is deuterium; and X⁴ is ¹³C.
10. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein Y¹, Y², Y³, and Y⁴ are hydrogen; Y⁵, Y⁶, and Y⁷ are deuterium; and X¹ is ¹³C.
11. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein Y¹, Y³, Y⁴, Y⁵, Y⁶, and Y⁷ are hydrogen; Y² is deuterium; and X¹ is ¹³C.
12. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein Y¹, Y², Y³, Y⁵, Y⁶, and Y⁷ are hydrogen; Y⁴ is deuterium; and X¹ is ¹³C.
13. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein Y¹ is hydrogen; Y², Y³, Y⁴, Y⁵, Y⁶, and Y⁷ are deuterium; X² is ¹³C; and X³ is -¹³C(O)-.
14. A process for preparing a compound of formula **I-1**:



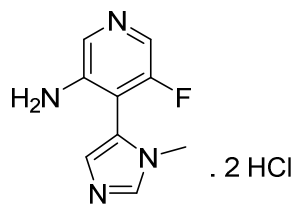
I-1

comprising a step of reacting the compound of formula **6b**:



6b

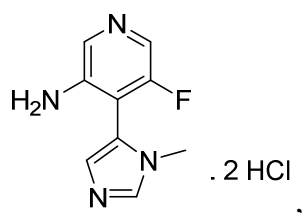
with a compound of formula **11**:



11

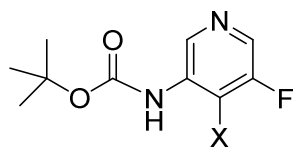
under suitable conditions to form an amide bond.

15. The process of claim 14, further comprising a step of preparing the compound of formula **11**:



11

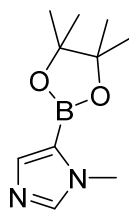
comprising reacting a compound of formula **9**:



9

wherein X is a halogen;

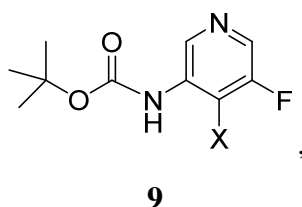
with a compound of formula **10**:



10

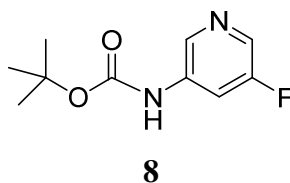
under suitable metal catalyzed cross-coupling conditions to form an adduct containing a protected amine group; and
subjecting the resulting adduct to suitable deprotection conditions.

16. The process of claim 15, further comprising a step of preparing a compound of formula **9**:



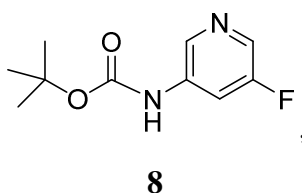
wherein X is a halogen;

comprising reacting the compound of formula **8**:

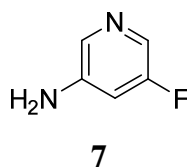


under suitable halogenation conditions.

17. The process of claim 16, further comprising a step of preparing a compound of formula **8**:

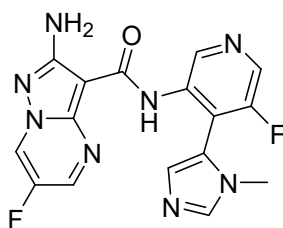


comprising reacting a compound of formula **7**:



under suitable conditions to generate a protected amine group.

18. A solid form of a compound of formula **I-1**:



I-1

wherein the form is selected from the group consisting of Compound **I-1** anhydrous free base, ~~Compound **I-1** hydrate, and Compound **I-1** tartaric acid.~~

19. The solid form of claim 18, wherein the form is crystalline Compound **I-1** anhydrous free base.
20. The solid form of claim 19, characterized by one or more peaks expressed in 2-theta $\pm$ 0.2 at about 9.9, 12.8, 15.4, 17.0, 23.1, 27.8, 29.0, and 30.1 degrees in an X-Ray powder diffraction pattern obtained using Cu K alpha radiation.
21. The solid form of claim 19, characterized as having an X-ray powder diffraction pattern substantially the same as that shown in Figure 1a.
- ~~22. The solid form of claim 18, wherein the form is crystalline Compound **I-1** hydrate.~~
- ~~23. The solid form of claim 22, wherein the crystalline Compound **I-1** hydrate has a Compound **I-1** to water ratio of 1:3.~~
- ~~24. The solid form of claim 22, characterized by a weight loss of from about 12.6% in a temperature range from about 40 °C and about 100 °C.~~
- ~~25. The solid form of claim 22, characterized by one or more peaks expressed in 2 theta $\pm$ 0.2 at about 27.5, 20.6, and 9.7 degrees in an X Ray powder diffraction pattern obtained using Cu K alpha radiation.~~
- ~~26. The solid form of claim 22, characterized as having an X-ray powder diffraction pattern substantially the same as that shown in Figure 1b.~~

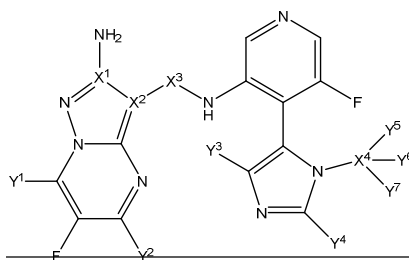
27. The solid form of claim 18, wherein the form is crystalline Compound **I-1** tartaric acid.

28. The solid form of claim 27, wherein the crystalline Compound **I-1** tartaric acid has a Compound **I-1** to tartaric acid of 1:1.

29. The solid form of claim 27, characterized by one or more peaks expressed in 2-theta $\pm$ 0.2 at about 7.1, 18.3, and 13.2 degrees in an X-Ray powder diffraction pattern obtained using Cu K alpha radiation.

30. The solid form of claim 27, characterized as having an X-ray powder diffraction pattern substantially the same as that shown in Figure 1c.

31. A compound of Formula **I-A**:



I-A

or a pharmaceutically acceptable salt thereof, wherein:

each Y¹, Y², Y³, Y⁴, Y⁵, Y⁶, and Y⁷ is hydrogen;

each X¹, X², and X⁴ is independently selected from ¹²C or ¹³C; and

X³ is independently selected from ¹²C(O) or ¹³C(O);

—wherein at least one of X¹ and X⁴ is ¹³C or wherein X³ is ¹³C(O).

32. The compound of claim 31 or the pharmaceutically acceptable salt thereof, wherein X⁴ is ¹³C.

33. The compound of claim 31 or the pharmaceutically acceptable salt thereof, wherein X¹ and X⁴ are ¹³C.

~~34. The compound of claim 31 or the pharmaceutically acceptable salt thereof, wherein X^3 is $^{13}C(O)$.~~

~~35~~22. The process of claim 14, wherein the step of reacting a compound of formula **6b** with a compound of formula **11** occurs in the presence of a solvent and an organic base.

~~36~~23. The process of claim ~~35~~22, wherein the solvent is selected from NMP, DMF or anisole.

~~37~~24. The process of claim ~~35~~22, wherein the organic base is an aliphatic amine.

~~38~~25. The process of claim ~~37~~24, wherein the aliphatic amine is selected from triethylamine or DIPEA.

~~39~~26. The process of claim 15, wherein suitable metal catalyzed cross-coupling conditions comprise a metal catalyst, a suitable solvent, and a suitable base.

~~40~~27. The process of claim ~~39~~26, wherein the metal catalyst is a palladium catalyst.

~~41~~28. The process of claim ~~40~~27, wherein palladium catalyst is selected from $PdCl_2(PPh_3)_2$, $Pd(Ph_3)_4$, and $PdCl_2(dppf)$.

~~42~~29. The process of claim ~~39~~26, wherein the suitable base comprises one or more of potassium phosphate, K_2CO_3 , $tBuOK$ and Na_2CO_3 .

~~43~~30. The process of claim ~~39~~26, wherein the suitable solvent comprises one or more of DME, tetrahydrofuran, toluene, and ethanol.

~~44~~31. The process of claim 14, further comprising a step of treating Compound **I-1** under suitable conditions to provide crystalline Compound **I-1** anhydrous free base.

~~45~~32. The process of claim ~~44~~31, wherein the crystalline Compound **I-1** anhydrous free base is characterized by having one or more peaks expressed in $2\text{-theta} \pm 0.2$ at about 9.9, 12.8, 15.4, 17.0, 23.1, 27.8, 29.0, and 30.1 degrees in an X-Ray powder diffraction

pattern obtained using Cu K alpha radiation.

~~46. The process of claim 44, further comprising a step of treating crystalline Compound I-1 anhydrous free base under suitable conditions to provide crystalline Compound I-1 hydrate.~~

~~47. The process of claim 46, wherein the crystalline Compound I-1 hydrate is characterized by having one or more peaks expressed in $2\theta \pm 0.2$ at about 27.5, 20.6, and 9.7 degrees in an X-Ray powder diffraction pattern obtained using Cu K alpha radiation.~~

~~48. The process of claim 44, further comprising a step of treating crystalline Compound I-1 anhydrous free base under suitable conditions to provide crystalline Compound I-1 tartaric acid.~~

~~49. The process of claim 48, wherein the crystalline Compound I-1 tartaric acid is characterized by having one or more peaks expressed in $2\theta \pm 0.2$ at about 7.1, 18.3, and 13.2 degrees in an X-Ray powder diffraction pattern obtained using Cu K alpha radiation.~~