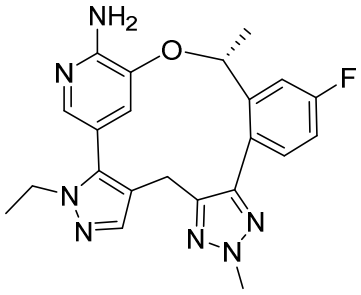
CLAIMS

WHAT IS CLAIMED IS:

1. A solid form comprising a compound of Formula (I), or a pharmaceutically acceptable salt thereof:



(I)

wherein:

(a) the solid form comprises a free base of a compound of Formula (I), and is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 10.7, 15.0, and 21.2º 2θ ± 0.2° 2θ;

(b) the solid form comprises a free base of a compound of Formula (I), and is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 8.6, 14.0, and 20.8º 2θ ± 0.2° 2θ;

(c) the solid form comprises a free base of a compound of Formula (I), and is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 13.4, 19.5, and 20.9º 2θ ± 0.2° 2θ;

(d) the solid form comprises a free base of a compound of Formula (I), and is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 12.1, 12.7, and 18.4º 2θ ± 0.2° 2θ;

(e) the solid form comprises a free base of a compound of Formula (I), and is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 10.5, 10.8, and 21.9º 2θ ± 0.2° 2θ;

(f) the solid form comprises a free base of a compound of Formula (I), and is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 8.6, 18.7, and 20.5º 2θ ± 0.2° 2θ;

(g) the solid form comprises a free base of a compound of Formula (I), and is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 12.5, 13.4, and 14.6º 2θ ± 0.2° 2θ;

(h) the solid form comprises a besylate salt of a compound of Formula (I), and is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 15.0, 17.9 and 23.0º 2θ ± 0.2° 2θ; or

(i) the solid form comprises a phosphate salt of a compound of Formula (I), and is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 10.8, 18.5, and 24.8º 2θ ± 0.2° 2θ.

2. The solid form of claim 1, which comprises a free base of a compound of Formula (I), and is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 10.7, 15.0, and 21.2º 2θ ± 0.2° 2θ.

3. The solid form of claim 2, wherein the XRPD pattern further comprises peaks at 17.4 and 21.3º 2θ ± 0.2° 2θ.

4. The solid form of claim 3, wherein the XRPD pattern further comprises peaks at 12.0, 12.2, and 13.9º 2θ ± 0.2° 2θ.

5. The solid form of claim 2, which is characterized by an XRPD pattern that matches the XRPD pattern depicted in **FIG. 1**.

6. The solid form of any one of claims 2 to 5, which exhibits an endothermic event, as characterized by DSC, with an onset temperature at 265 °C ± 2 °C and/or a peak temperature at 267 °C ± 2 °C;

is characterized by a DSC thermogram that matches the DSC thermogram depicted in **FIG. 3**;

which exhibits a weight increase of about 0.25 % when subjected to an increase in relative humidity from 0 to 90 % relative humidity; or

has approximately unit cell dimensions of: a = 8.4 Å, b = 8.4 Å, c = 14.9 Å, α = 90°, β = 106°, and γ = 90°.

7. The solid form of claim 1, wherein:

(b) the solid form is a solid form according to claim 1(b), wherein the XRPD pattern further comprises peaks at 6.8 and 13.8º 2θ ± 0.2° 2θ;

(c) the solid form is a solid form according to claim 1(c), wherein the XRPD pattern further comprises peaks at 11.4 and 22.9º 2θ ± 0.2° 2θ;

(d) the solid form is a solid form according to claim 1(d), wherein the XRPD pattern further comprises peaks at 15.0 and 21.9º 2θ ± 0.2° 2θ;

(e) the solid form is a solid form according to claim 1(e), wherein the XRPD pattern further comprises peaks at 12.1 and 12.8º 2θ ± 0.2° 2θ;

(f) the solid form is a solid form according to claim 1(f), wherein the XRPD pattern further comprises peaks at 15.9 and 20.8º 2θ ± 0.2° 2θ;

(g) the solid form is a solid form according to claim 1(g), wherein the XRPD pattern further comprises peaks at 20.9 and 22.8º 2θ ± 0.2° 2θ;

(h) the solid form is a solid form according to claim 1(h), wherein the XRPD pattern further comprises peaks at 10.7 and 14.6º 2θ ± 0.2° 2θ; or

(i) the solid form is a solid form according to claim 1(i), wherein the XRPD pattern further comprises peaks at 22.3 and 24.1º 2θ ± 0.2° 2θ.

8. The solid form of claim 7, wherein:

(b) the solid form is a solid form according to claim 7(b), wherein the XRPD pattern further comprises peaks at 10.0 and 21.2º 2θ ± 0.2° 2θ, or the XRPD pattern matches the XRPD pattern depicted in **FIG. 7**;

(c) the solid form is a solid form according to claim 7(c), wherein the XRPD pattern further comprises peaks at 9.7 and 16.2º 2θ ± 0.2° 2θ; or the XRPD pattern matches the XRPD pattern depicted in **FIG. 12**;

(d) the solid form is a solid form according to claim 7(d), wherein the XRPD pattern further comprises peaks at 23.9 and 24.3º 2θ ± 0.2° 2θ; or the XRPD pattern matches the XRPD pattern depicted in **FIG. 14**;

(e) the solid form is a solid form according to claim 7(e), wherein the XRPD pattern further comprises peaks at 7.6 and 15.0º 2θ ± 0.2° 2θ; or the XRPD pattern matches the XRPD pattern depicted in **FIG. 16**;

(f) the solid form is a solid form according to claim 7(f), wherein the XRPD pattern further comprises peaks at 10.0 and 14.1º 2θ ± 0.2° 2θ; or the XRPD pattern matches the XRPD pattern depicted in **FIG. 17**;

(g) the solid form is a solid form according to claim 7(g), wherein the XRPD pattern further comprises peaks at 11.4 and 15.8º 2θ ± 0.2° 2θ; or the XRPD pattern matches the XRPD pattern depicted in **FIG. 19**; or wherein the solid form has approximately unit cell dimensions of: a = 8.0 Å, b = 14.8 Å, c = 18.0 Å, α = 90°, β = 90°, and γ = 90°;

(h) the solid form is a solid form according to claim 7(h), wherein the XRPD pattern further comprises peaks at 4.6 and 25.7º 2θ ± 0.2° 2θ; or the XRPD pattern matches the XRPD pattern depicted in **FIG. 24**; or

(i) the solid form is a solid form according to claim 7(i), wherein the XRPD pattern further comprises peaks at 14.2 and 17.7º 2θ ± 0.2° 2θ; or the XRPD pattern matches the XRPD pattern depicted in **FIG. 28**.

9. The solid form of claim 1, wherein:

(b) the solid form is a solid form according to claim 1(b), and which exhibits an endothermic event, as characterized by DSC, with an onset temperature at 96 °C ± 2 °C; and/or an exothermic event, as characterized by DSC, with an onset temperature at 169 °C ± 2 °C;

(c) the solid form is a solid form according to claim 1(c), and which exhibits an exothermic event, as characterized by DSC, with an onset temperature at 168 °C ± 2 °C;

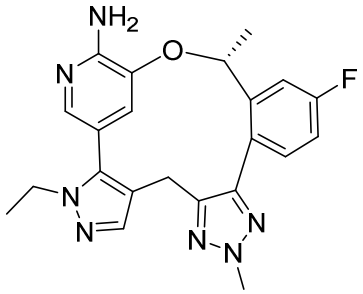
(d) the solid form is a solid form according to claim 1(d), and which exhibits an endothermic event, as characterized by DSC, with an onset temperature at 135 °C ± 2 °C;

(f) the solid form is a solid form according to claim 1(f), and which exhibits an endothermic event, as characterized by DSC, with an onset temperature at 126 °C ± 2 °C; or

(h) the solid form is a solid form according to claim 1(h), and which exhibits an endothermic event, as characterized by DSC, with an onset temperature at 128 °C ± 2 °C and/or a peak temperature at 136 °C ± 2 °C.

10. A pharmaceutical composition comprising the solid form of any one of claims 1 to 9 and a pharmaceutically acceptable excipient.

11. A process for preparing a solid form of a free base of a compound of Formula (I):



(I),

wherein the solid form is characterized by an XRPD pattern, when measured using Cu Kα radiation, comprising peaks at 10.7, 15.0, and 21.2º 2θ ± 0.2° 2θ;

comprising

(i) dissolving the compound of Formula (I) in a solvent;

(ii) adding an anti-solvent; and

(iii) recovering the solid form.

12. The process of claim 11, wherein the solvent comprises 2-MeTHF, isopropyl acetate, acetone, anisole, ethanol, ethyl acetate, or methyl ethyl ketone.

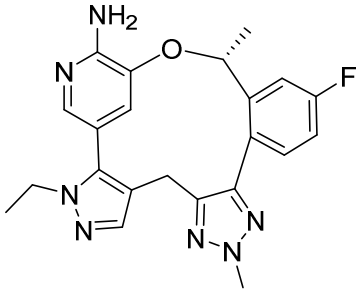
13. The process of claim 12, wherein the solvent is ethyl acetate.

14. The process of any one of claims 11 to 13, wherein the anti-solvent is water or a hydrocarbon solvent.

15. The process of claim 14, wherein the anti-solvent is heptane.

16. The process of claim 11, wherein the solvent is ethyl acetate and the anti-solvent is heptane.

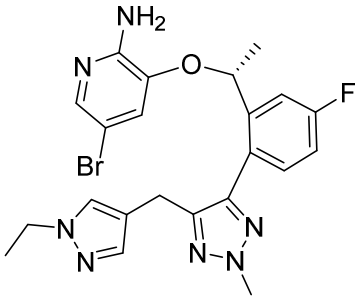
17. A process for preparing a compound of Formula (I):



(I)

or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof, comprising:

(step 1.0) cyclizing a compound of Formula (II):



(II)

or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof, to provide a compound of Formula (I), or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof.

18. The process of claim 17, wherein step 1.0 occurs in the presence of a base.

19. The process of claim 18, wherein the base is potassium pivalate.

20. The process of any one of claims 17 to 19, wherein step 1.0 occurs in the presence of a catalyst precursor.

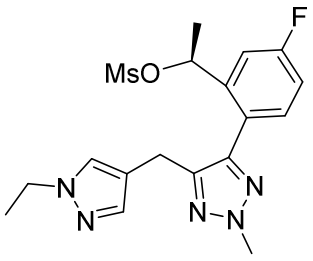
21. The process of claim 20, wherein the catalyst precursor comprises $Pd(OAc)_2$.

22. The process of claim 20 or 21, wherein the catalyst precursor comprises cataCXium A ligand.

23. The process of any one of claims 17 to 22, wherein step 1.0 occurs in a solvent of t-amyl alcohol (tAmOH).

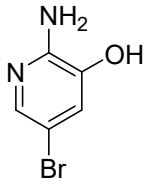
24. The process of any one of claims 17 to 23, wherein the compound of Formula (II), or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof, is prepared by a process comprising:

(step 2.0) reacting a compound of Formula (III):



(III)

or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof, with a compound of Formula (IV):

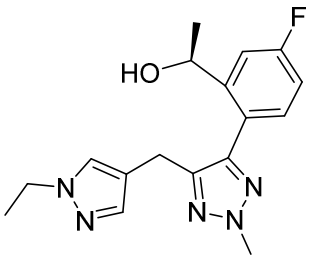


(IV)

or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof.

25. The process of claim 24, wherein the compound of Formula (III), or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof, is prepared by a process comprising:

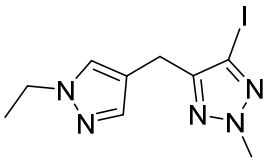
(step 3.0) reacting a compound of Formula (V):


(V)

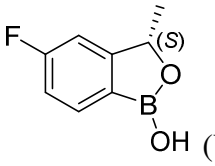
or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof, with a mesylating reagent.

26. The process of claim 25, wherein the compound of Formula (V), or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof, is prepared by a process comprising:

(step 4.0) reacting a compound of Formula (VI):

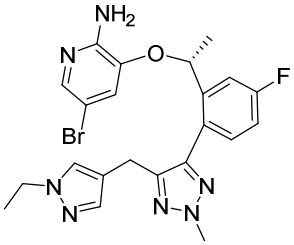

(VI)

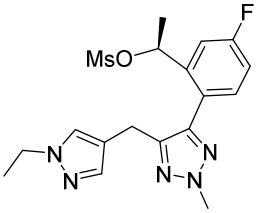
or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof, with a compound of Formula (VII):

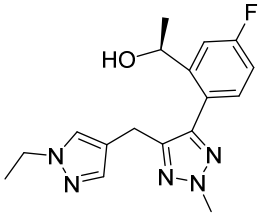

(VII)

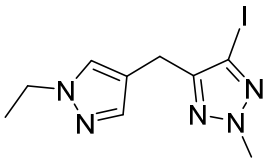
or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof.

27. A compound of Formula (II), (III), (V), or (VI):


(II),

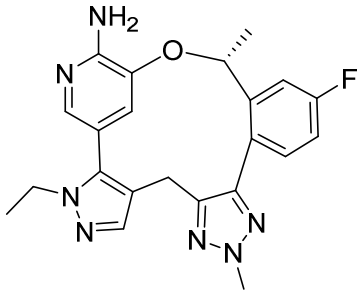

(III),


(V), or


(VI),

or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof.

28. A pharmaceutical composition comprising Compound 1:



(I)

or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof, and a diluent, a binder, a disintegrant, and a lubricant; wherein:

the amount of Compound 1, or a stereoisomer, or a mixture of stereoisomers thereof, or a pharmaceutically acceptable salt thereof, in the pharmaceutical composition is from 1% to 30% w/w;

the amount of the diluent in the pharmaceutical composition is from 50% to 95% w/w;

the amount of the binder in the pharmaceutical composition is from 1% to 20% w/w;

the amount of the disintegrant in the pharmaceutical composition is from 1% to 8% w/w; and

the amount of the lubricant in the pharmaceutical composition is from 1% to 1.2% w/w.

29. The pharmaceutical composition of claim 28, wherein:

the diluent is mannitol;

the binder is a mixture of hydroxypropyl cellulose and silicified microcrystalline cellulose;

the disintegrant is sodium starch glycolate; and

the lubricant is magnesium stearate.

30. The pharmaceutical composition of claim 29, comprising:

Compound 1 at an amount of about 16.7% w/w of the total weight of the pharmaceutical composition;

mannitol at an amount of about 65% w/w of the total weight of the pharmaceutical composition;

silicified microcrystalline cellulose at an amount of about 12.2% w/w of the total weight of the pharmaceutical composition;

hydroxypropyl cellulose at an amount of about 1.1% w/w of the total weight of the pharmaceutical composition;

sodium starch glycolate at an amount of about 3.9% w/w of the total weight of the pharmaceutical composition; and

magnesium stearate at an amount of about 1.1% w/w of the total weight of the pharmaceutical composition.

31. The composition of any one of claims 28 to 30, which is a tablet.

32. Use of the solid form of any one of claims 1 to 9 or the pharmaceutical composition of any one of claims 10 or 28 to 31 in the manufacture of a medicament for treating cancer.

33. The use of claim 32, wherein the cancer is lung cancer.

34. The use of claim 33, wherein the lung cancer is non-small cell lung cancer.