

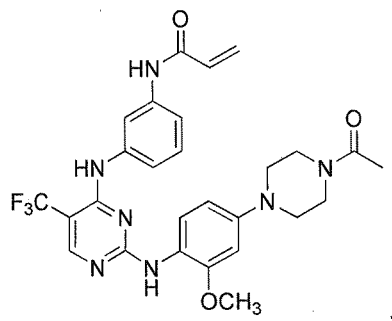
the L858R/T790M mutation who never received gefitinib treatment. In addition, germline EGFR T790M mutations are linked with certain familial lung cancers.

[0007] Current drugs in development, including second-generation covalent inhibitors, such as BIBW2992, HKI-272 and PF-0299804, are effective against the T790M resistance mutation but exhibit dose-limiting toxicities due to concurrent inhibition of WT EGFR. Accordingly, there remains a need to find mutant-selective EGFR kinase inhibitors useful as therapeutic agents.

SUMMARY OF THE INVENTION

[0007] It has now been found that the novel solid forms of the present invention, and compositions thereof, are useful as mutant-selective inhibitors of one or more EGFR kinases and exhibits desirable characteristics for the same. In general, these solid forms, and pharmaceutically acceptable compositions thereof, are useful for treating or lessening the severity of a variety of diseases or disorders as described in detail herein.

[0007a] In a first aspect of the present disclosure, there is provided a solid form of Compound 1:



wherein Compound 1 is a free base.

[0007b] In a second aspect of the present disclosure, there is provided a composition comprising the solid form as described herein and a pharmaceutically acceptable carrier or excipient.

[0007c] In a third aspect of the present disclosure, there is provided a method for inhibiting at least one mutant of EGFR selectively as compared to wild type EGFR (WT EGFR) in a biological sample, comprising contacting the biological sample with a solid form as described herein, or a composition thereof.

[0007d] In a fourth aspect of the present disclosure, there is provided a use of a solid form as described herein, or a composition thereof, in the manufacture of a medicament for

inhibiting at least one mutant of EGFR selectively as compared to wild type EGFR (WT EGFR), in a biological sample or in a patient.

[0007e] In a fifth aspect of the present disclosure, there is provided a use of a composition as described herein, in the manufacture of a medicament for treating a mutant EGFR-mediated disorder or condition in a patient.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] **Figure 1** depicts the x-ray powder diffraction (XRPD) pattern for Form A of Compound 1.

[0009] **Figure 2** depicts the thermogravimetric analysis/differential thermal analyser (TGA/DTA) pattern for Form A of Compound 1.

[0010] **Figure 3** depicts the differential scanning calorimetry (DSC) pattern for Form A of Compound 1.

[0011] **Figure 4** depicts the infrared (IR) spectrum for Form A of Compound 1.

[0012] **Figure 5** depicts the dynamic vapour sorption (DVS) pattern for Form A of Compound 1.

[0013] **Figure 6** depicts the XRPD pattern for Form B of Compound 1.

[0014] **Figure 7** depicts the TGA/DTA pattern for Form B of Compound 1.

[0015] **Figure 8** depicts the DSC pattern for Form B of Compound 1.

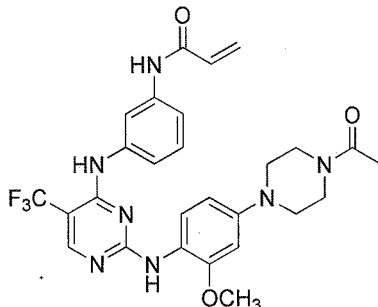
[0016] **Figure 9** depicts the IR spectrum for Form B of Compound 1.

[0017] **Figure 10** depicts the DVS pattern for Form B of Compound 1.

CLAIMS

We claim:

1. A solid form of Compound 1:



wherein Compound 1 is a free base.

2. The solid form of claim 1, wherein the solid form is amorphous.
3. The solid form of claim 1, wherein the solid form is crystalline.
4. The solid form of claim 3, wherein Compound 1 is unsolvated.
- ~~5. The solid form of claim 4, wherein the solid form is Form A.~~
- ~~65. The solid form of claim 54, having one or more peaks in its X-ray powder diffraction pattern selected from those at about 6.73, about 18.30, about 18.96 and about 25.48 degrees 2-theta.~~
- ~~6. The solid form of claim 5, wherein the solid form is Form A.~~
- ~~7. The solid form of claim 4, wherein the solid form is Form B.~~
- ~~87. The solid form of claim 74, having one or more peaks in its X-ray powder diffraction pattern selected from those at about 10.67, about 12.21, about 18.11, about 19.24 and about 21.53 degrees 2-theta.~~
- ~~8. The solid form of claim 7, wherein the solid form is Form B.~~
9. The solid form of claim 3, wherein Compound 1 is a dimethylformamide solvate.
- ~~10. The solid form of claim 9, wherein the solid form is Form C.~~

~~11~~10. The solid form of claim ~~10~~9, having one or more peaks in its X-ray powder diffraction pattern selected from those at about 16.32, about 18.82, about 20.26, about 22.58 and about 25.36 degrees 2-theta.

11. The solid form of claim 10, wherein the solid form is Form C.

12. The solid form of claim 3, wherein Compound 1 is a 1,4-dioxane solvate.

~~13. The solid form of claim 12, wherein the solid form is Form D.~~

~~14~~13. The solid form of claim ~~13~~12, having one or more peaks in its X-ray powder diffraction pattern selected from those at about 18.40, about 19.31, about 20.14, about 20.53 and about 25.25 degrees 2-theta.

14. The solid form of claim 13, wherein the solid form is Form D.

15. The solid form of claim 3, wherein Compound 1 is a methyl ethyl ketone solvate.

~~16. The solid form of claim 15, wherein the solid form is Form E.~~

~~17~~16. The solid form of claim ~~16~~15, having one or more peaks in its X-ray powder diffraction pattern selected from those at about 5.78, about 12.57, about 15.34, about 19.10 and about 24.80 degrees 2-theta.

17. The solid form of claim 16, wherein the solid form is Form E.

18. The solid form of claim 3, wherein Compound 1 is a N-methyl-2-pyrrolidone solvate.

~~19. The solid form of claim 18, wherein the solid form is Form F.~~

~~20~~19. The solid form of claim ~~19~~18, having one or more peaks in its X-ray powder diffraction pattern selected from those at about 15.51, about 16.86, about 18.80, about 20.97 and about 23.32 degrees 2-theta.

20. The solid form of claim 19, wherein the solid form is Form F.

~~21. The solid form of claim 18, wherein the solid form is Form G.~~

~~22~~21. The solid form of claim ~~24~~18, having one or more peaks in its X-ray powder diffraction pattern selected from those at about 6.79, about 17.86, about 19.43, about 19.98 and about 22.35 degrees 2-theta.

~~22.~~ The solid form of claim 21, wherein the solid form is Form G.

23. The solid form of claim 3, wherein Compound 1 is a hydrate.

~~24.~~ The solid form of claim 23, wherein the solid form is Form H.

~~25~~24. The solid form of claim ~~24~~23, having one or more peaks in its X-ray powder diffraction pattern selected from those at about 10.82, about 11.08, about 18.45, about 22.85 and about 25.06 degrees 2-theta.

~~25.~~ The solid form of claim 24, wherein the solid form is Form H.

~~26.~~ The solid form of claim 23, wherein the solid form is Form I.

~~27~~26. The solid form of claim ~~26~~23, having one or more peaks in its X-ray powder diffraction pattern selected from those at about 6.13, about 12.22, about 15.91, about 18.35, about 18.88, and about 21.90 degrees 2-theta.

~~27.~~ The solid form of claim 26, wherein the solid form is Form I.

28. A composition comprising the solid form of claim 1- and a pharmaceutically acceptable carrier or excipient.

29. A method for inhibiting at least one mutant of EGFR selectively as compared to wild type EGFR (WT EGFR), in a biological sample ~~or in a patient~~, comprising contacting the biological sample with, ~~or administering to the patient~~, a solid form according to claim 1-, or a composition thereof.

30. The method according to claim 29, wherein said method is sparing for WT EGFR.

31. The method according to claim 29, wherein the at least one mutant is an activating mutant, a deletion mutant, a point mutation, or a mutant selected from T790M, delE746-A750, L858R or G719S.

~~32. A method for treating a mutant EGFR-mediated disorder or condition in a patient, comprising administering to the patient a composition according to claim 28.~~

~~33. The method of claim 32, wherein the disorder or condition is a cancer.~~

32. Use of a solid form according to claim 1, or a composition thereof, in the manufacture of a medicament for inhibiting at least one mutant of EGFR selectively as compared to wild type EGFR (WT EGFR), in a biological sample or in a patient.

33. Use of a composition according to claim 28, in the manufacture of a medicament for treating a mutant EGFR-mediated disorder or condition in a patient.

34. The use according to claim 33, wherein the disorder or condition is a cancer.