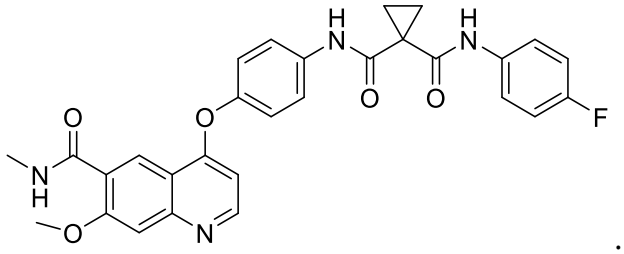
SUMMARY

[0006] The present disclosure provides crystalline forms of salts of Compound 1, N-(4-fluorophenyl)-N-(4-((7-methoxy-6-(methylcarbamoyl)quinolin-4-yl)oxy)phenyl)cyclopropane-1,1-dicarboxamide, which has the structure:

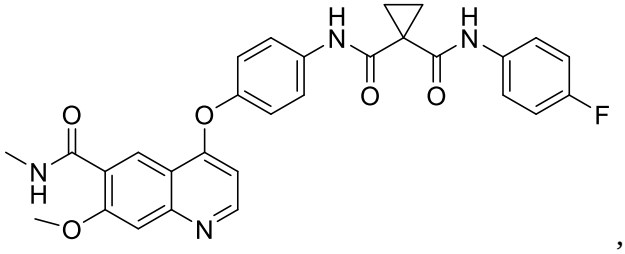


Compound 1

[0007] Compound 1 is disclosed in WO 2019/148044, the contents of which is incorporated herein by reference in its entirety.

[0008] Specific crystalline salt forms of an active pharmaceutical ingredient (API), such as Compound 1, can have several advantages over other polymorphic or amorphous forms, such as increased stability during storage or processing, more favorable solubility, and increased bioavailability. Reported herein are several stable crystalline salt forms of Compound 1.

[0008a] In one aspect of the present disclosure, there is provided a crystalline salt form of Compound 1



Compound 1

selected from the group consisting of Compound 1 Besylate Form A, Compound 1 Besylate Form B, Compound 1 Benzoate Form A, Compound 1 Camsylate Form A, Compound 1 Camsylate Form B, Compound 1 Citrate Form A, Compound 1 Citrate Form B, Compound 1 Esylate Form A, Compound 1 Esylate Form B, Compound 1 HBr Form A, Compound 1 HBr Form B, Compound 1 Lactate Form A, Compound 1 Malate Form A, Compound 1 Maleate Form A, Compound 1 Maleate Form B, Compound 1 Mesylate Form A, Compound 1 Mesylate Form B, Compound 1 Mesylate Form C, Compound 1 Oxalate Form A, Compound 1 Oxalate

Form B, Compound 1 Oxalate Form C, Compound 1 Propionate Form A, Compound 1 Succinate Form A, Compound 1 Sulfate Form A, Compound 1 Sulfate Form B, Compound 1 Sulfate Form C, Compound 1 Tartrate Form A, Compound 1 Hemitartrate Form B, Compound 1 Tartrate Form C, Compound 1 Tosylate Form A, and Compound 1 Tosylate Form B.

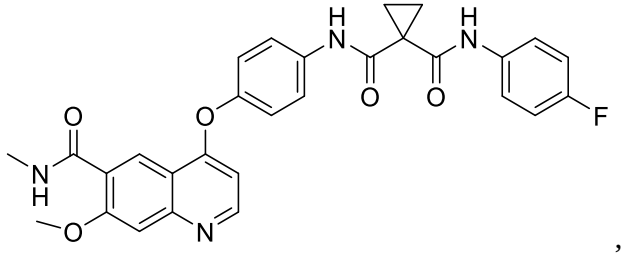
[0008b] In another aspect of the present disclosure, there is provided a pharmaceutical composition comprising a crystalline salt form disclosed herein and a pharmaceutically acceptable excipient.

[0008c] In a further aspect of the present disclosure, there is provided a crystalline salt form disclosed herein, or a pharmaceutical composition disclosed herein, for use in therapy.

[0008d] In another aspect of the present disclosure, there is provided a use of a crystalline salt form disclosed herein, or a pharmaceutical composition disclosed herein, in the manufacture of a medicament for treating a disease, disorder, or syndrome mediated at least in part by modulating *in vivo* activity of a protein kinase.

[0008e] In a further aspect of the present disclosure, there is provided a use of a crystalline salt form disclosed herein, in the manufacture of a medicament for inhibiting a protein kinase.

[0009] In one example, the present disclosure includes a crystalline salt form of Compound 1



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Compound 1

wherein the crystalline salt form is selected from Compound 1 Besylate Form A, Compound 1 Besylate Form B, Compound 1 Benzoate Form A, Compound 1 Camsylate Form A, Compound 1 Camsylate Form B, Compound 1 Citrate Form A, Compound 1 Citrate Form B, Compound 1 Esylate Form A, Compound 1 Esylate Form B, Compound 1 HBr Form A, Compound 1 HBr Form B, Compound 1 Lactate Form A, Compound 1 Malate Form A, Compound 1 Maleate Form A, Compound 1 Maleate Form B, Compound 1 Mesylate Form A, Compound 1 Mesylate Form B, Compound 1 Mesylate Form C, Compound 1 Oxalate Form A, Compound 1 Oxalate Form B, Compound 1 Oxalate Form C, Compound 1 Propionate Form A, Compound 1 Succinate Form A, Compound 1 Sulfate Form A, Compound 1 Sulfate Form B, Compound 1 Sulfate Form C, Compound 1 Tartrate Form A,

Compound 1 Hemitartrate Form B, Compound 1 Tartrate Form C, Compound 1 Tosylate Form A, and Compound 1 Tosylate Form B.

[0010] In one example, the present disclosure includes a pharmaceutical composition comprising a crystalline salt form described herein and a pharmaceutically acceptable excipient.

[0011] In another example, the present disclosure includes a method of treating a disease, disorder, or syndrome mediated at least in part by modulating *in vivo* activity of a protein kinase, comprising administering to a subject in need thereof a crystalline salt form or pharmaceutical composition described herein.

[0012] In one example, the disease, disorder, or syndrome mediated at least in part by modulating *in vivo* activity of a protein kinase is cancer.

[0013] In another example, the present disclosure includes a method for inhibiting a protein kinase, the method comprising contacting the protein kinase with a crystalline salt form or pharmaceutical composition described herein.

[0014] In one example, the protein kinase is Axl, Mer, c-Met, KDR, or a combination thereof.

[0015] A further example provides processes for making the solid forms described herein.

BRIEF DESCRIPTION OF THE FIGURES

[0016] **FIG. 1** is an XRPD pattern of Compound 1 Besylate Form A.

[0017] **FIG. 2** is a DSC thermogram of Compound 1 Besylate Form A.

[0018] **FIG. 3** is a TGA thermogram of Compound 1 Besylate Form A.

[0019] **FIG. 4** is an XRPD pattern of Compound 1 Besylate Form B (mixture with Compound 1 Besylate Form A).

[0020] **FIG. 5** is an XRPD pattern of Compound 1 Benzoate Form A.

[0021] **FIG. 6** is an XRPD pattern of Compound 1 Camsylate Form A.

[0022] **FIG. 7** is a DSC thermogram of Compound 1 Camsylate Form A.

[0023] **FIG. 8** is a TGA thermogram of Compound 1 Camsylate Form A.

[0024] **FIG. 9** is an XRPD pattern of Compound 1 Camsylate Form B.

[0025] **FIG. 10** is an XRPD pattern of Compound 1 Citrate Form A (mixture with Compound 1 Form A).

[0026] **FIG. 11** is an XRPD pattern of Compound 1 Citrate Form B.

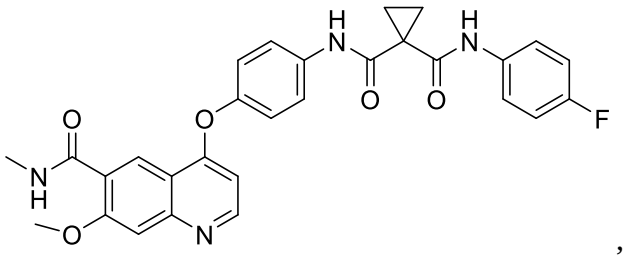
[0027] **FIG. 12** is a DSC thermogram of Compound 1 Citrate Form B.

[0028] **FIG. 13** is a TGA thermogram of Compound 1 Citrate Form B.

[0029] **FIG. 14** is a DVS isotherm plot of Compound 1 Citrate Form B.

WHAT IS CLAIMED IS:

1. A crystalline salt form of Compound 1



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Compound 1

selected from the group consisting of Compound 1 Besylate Form A, Compound 1 Besylate Form B, Compound 1 Benzoate Form A, Compound 1 Camsylate Form A, Compound 1 Camsylate Form B, Compound 1 Citrate Form A, Compound 1 Citrate Form B, Compound 1 Esylate Form A, Compound 1 Esylate Form B, Compound 1 HBr Form A, Compound 1 HBr Form B, Compound 1 Lactate Form A, Compound 1 Malate Form A, Compound 1 Maleate Form A, Compound 1 Maleate Form B, Compound 1 Mesylate Form A, Compound 1 Mesylate Form B, Compound 1 Mesylate Form C, Compound 1 Oxalate Form A, Compound 1 Oxalate Form B, Compound 1 Oxalate Form C, Compound 1 Propionate Form A, Compound 1 Succinate Form A, Compound 1 Sulfate Form A, Compound 1 Sulfate Form B, Compound 1 Sulfate Form C, Compound 1 Tartrate Form A, Compound 1 Hemitartrate Form B, Compound 1 Tartrate Form C, Compound 1 Tosylate Form A, and Compound 1 Tosylate Form B.

2. The crystalline salt form of claim 1, wherein:

Compound 1 Besylate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 3.78, 7.56, 10.08, 10.42, 11.70, 11.78, 12.00, 12.71, 13.20, 13.92, 14.06, 14.44, 14.93, 15.18, 15.96, 16.21, 16.40, 16.73, 16.86, 17.38, 18.32, 19.07, 20.07, 20.26, 20.51, 20.94, 21.45, 21.60, 22.30, 22.90, 23.05, 23.28, 23.71, 24.28, 24.97, 25.30, 25.69, 26.33, 26.71, 27.29, 27.65, 28.07, 29.22, and 29.50;

Compound 1 Besylate Form B is characterized by an XRPD pattern substantially identical to Figure 4;

Compound 1 Benzoate Form A is characterized by an XRPD pattern substantially identical to Figure 5;

Compound 1 Camsylate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.55, 7.90, 8.25, 8.38, 9.55, 9.87,

10.26, 11.12, 11.34, 12.50, 12.94, 13.40, 13.65, 14.79, 15.83, 16.16, 16.41, 16.54, 16.82, 17.10, 17.69, 18.02, 18.22, 18.47, 18.91, 19.10, 19.47, 20.04, 20.87, 21.05, 22.16, 22.36, 22.93, 23.71, 24.55, 25.33, 26.02, 26.40, 27.09, 27.33, 27.97, 28.32, 28.68, and 28.98;

Compound 1 Camsylate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.25, 8.32, 8.51, 8.76, 9.05, 9.58, 9.88, 10.00, 10.52, 10.80, 11.06, 11.96, 12.24, 12.58, 13.98, 15.62, 15.81, 16.15, 16.70, 17.12, 17.42, 17.71, 18.41, 19.37, 19.55, 20.63, 21.13, 21.56, 21.89, 22.50, 23.04, 24.43, 26.08, 27.07, 27.97, 28.22, and 28.73;

Compound 1 Citrate Form A is characterized by an XRPD pattern substantially identical to Figure 10;

Compound 1 Citrate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.58, 5.95, 7.61, 8.88, 9.19, 9.94, 11.93, 13.26, 13.79, 14.29, 14.68, 15.26, 15.95, 16.64, 17.11, 17.87, 18.21, 18.43, 18.90, 19.36, 19.67, 20.14, 20.57, 21.47, 22.30, 22.64, 23.06, 23.80, 24.25, 24.55, 24.81, 25.10, 25.45, 25.54, 25.85, 26.35, 26.51, 26.83, 27.16, 27.57, 27.85, 28.08, and 28.47;

Compound 1 Esylate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 3.97, 7.95, 9.89, 10.62, 10.92, 11.03, 11.34, 11.77, 12.03, 12.53, 12.71, 13.27, 14.00, 14.70, 15.08, 15.94, 16.17, 16.92, 17.01, 17.19, 17.35, 17.61, 18.15, 18.76, 19.03, 19.66, 19.89, 20.26, 20.65, 20.78, 21.44, 22.08, 23.14, 23.27, 23.99, 24.32, 25.43, 25.66, 25.85, 26.52, 26.87, 27.61, 27.96, 28.18, 28.40, and 28.91;

Compound 1 Esylate Form B is characterized by an XRPD pattern substantially identical to Figure 18;

Compound 1 HBr Form A is characterized by an XRPD pattern substantially identical to Figure 19;

Compound 1 HBr Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.26, 8.29, 9.75, 9.91, 10.56, 10.72, 12.25, 12.50, 12.75, 13.31, 13.54, 14.11, 14.72, 14.89, 15.87, 16.29, 16.50, 17.36, 17.78, 18.09, 18.44, 18.75, 19.12, 19.24, 19.56, 19.92, 20.40, 20.55, 20.69, 21.18, 22.09, 22.64, 23.24, 24.56, 25.80, 26.52, 27.23, 27.43, 28.13, 28.46, 28.76, 29.08, 29.66, and 30.07;

Compound 1 Lactate Form A is characterized by an XRPD pattern substantially identical to Figure 21;

Compound 1 Malate Form A is characterized by an XRPD pattern substantially identical to Figure 22;

Compound 1 Maleate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 7.58, 8.34, 10.92, 12.38, 12.87, 14.17, 15.13, 15.78, 16.43, 16.91, 17.51, 18.09, 18.71, 20.30, 21.60, 21.99, 22.30, 22.49, 23.32, 23.56, 23.92, 24.79, 26.04, 26.41, 26.92, 27.62, 28.18, 28.54, and 29.01;

Compound 1 Maleate Form B is characterized by an XRPD pattern substantially identical to Figure 28.

Compound 1 Mesylate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.06, 6.65, 7.66, 8.35, 10.16, 10.72, 11.98, 12.62, 13.32, 14.41, 14.79, 15.42, 15.72, 15.89, 16.23, 16.77, 17.20, 17.59, 18.08, 18.40, 18.81, 19.33, 19.53, 19.71, 20.14, 20.38, 20.73, 21.05, 21.56, 21.83, 22.16, 23.14, 24.06, 24.54, 24.77, 25.75, 26.82, 27.71, 27.94, 28.71, 29.27, and 29.85;

Compound 1 Mesylate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.14, 6.62, 7.72, 7.89, 10.33, 10.73, 12.74, 13.31, 13.88, 14.23, 14.61, 15.21, 15.52, 15.87, 16.17, 17.18, 17.41, 17.88, 18.15, 18.46, 18.73, 19.13, 19.54, 20.15, 20.53, 20.75, 20.98, 21.27, 21.60, 22.03, 22.28, 23.07, 23.32, 24.16, 24.42, 24.87, 25.13, 25.64, 26.24, 26.95, 27.17, 27.49, 27.77, 28.42, and 29.54;

Compound 1 Mesylate Form C is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 7.55, 9.53, 10.25, 11.04, 11.49, 11.65, 12.24, 12.51, 13.88, 14.44, 15.36, 15.66, 16.29, 16.58, 17.16, 17.54, 19.04, 19.20, 19.79, 20.54, 21.12, 21.24, 21.62, 22.22, 23.15, 23.57, 23.99, 24.61, 24.77, 25.22, 25.61, 25.99, 26.60, 26.89, 27.29, 27.91, 29.03, and 29.29;

Compound 1 Oxalate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.90, 5.25, 6.20, 8.05, 9.87, 10.54, 12.29, 14.79, 15.35, 15.84, 16.49, 16.89, 17.55, 18.27, 18.67, 19.12, 19.40, 19.81, 20.26, 20.50, 21.06, 21.74, 22.17, 22.93, 23.26, 23.50, 23.81, 24.66, 25.06, 25.95, 26.90, 27.82, and 28.24;

Compound 1 Oxalate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.20, 7.59, 8.02, 8.42, 10.53, 12.36, 12.66, 13.09, 13.35, 13.88, 14.15, 14.46, 15.06, 15.23, 17.42, 17.75, 18.28, 19.07, 19.52, 20.33, 21.18, 21.43, 21.74, 22.08, 22.59, 23.53, 24.21, 24.52, 24.71, 25.24, 25.85, 26.24, 26.55, 26.90, 27.43, 28.56, 29.30, and 29.51;

Compound 1 Oxalate Form C is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.13, 7.70, 10.29, 10.59, 13.09, 13.70, 14.13, 15.33, 15.87, 16.57, 17.19, 17.50, 17.83, 18.15, 18.61, 19.24, 19.42, 20.11, 20.34, 20.64, 21.07, 21.47, 21.59, 21.91, 22.56, 22.92, 23.37, 23.87, 24.35, 25.35, 25.91, 26.47, 26.68, 27.74, 28.47, and 29.14;

Compound 1 Propionate Form A is characterized by an XRPD pattern substantially identical to Figure 38;

Compound 1 Succinate Form A is characterized by an XRPD pattern substantially identical to Figure 39;

Compound 1 Sulfate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.74, 5.85, 9.47, 10.04, 11.74, 11.95, 13.77, 14.99, 15.42, 15.71, 16.48, 17.36, 17.66, 17.92, 18.59, 18.95, 19.36, 19.74, 20.22, 20.77, 21.38, 21.86, 22.74, 23.30, 23.70, 24.33, 25.07, 25.32, 25.67, 26.23, and 27.00;

Compound 1 Sulfate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.27, 8.57, 9.32, 10.95, 11.29, 12.07, 12.87, 13.25, 13.82, 14.13, 14.67, 16.94, 17.21, 17.64, 19.99, 20.26, 21.03, 21.44, 22.00, 22.71, 23.85, 25.20, and 26.02;

Compound 1 Sulfate Form C is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 3.19, 5.35, 9.04, 9.62, 10.73, 11.31, 11.60, 12.27, 12.67, 13.76, 14.31, 14.65, 15.21, 15.63, 16.11, 16.33, 16.63, 17.11, 18.32, 18.75, 18.99, 19.36, 19.47, 20.16, 20.55, 21.01, 21.52, 21.62, 21.89, 22.19, 22.53, 23.19, 23.79, 24.23, 24.81, 25.07, 25.41, 26.06, 26.73, 27.58, 28.16, 28.63, 28.90, 29.22, 29.47, and 29.73;

Compound 1 Tartrate Form A is characterized by an XRPD pattern substantially identical to Figure 43;

Compound 1 Hemitartrate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.17, 5.66, 7.22, 9.27, 10.10, 10.40, 11.37, 11.55, 12.77, 13.94, 14.51, 15.60, 16.06, 16.48, 17.09, 17.69, 17.90, 18.27, 18.94, 19.15, 19.59, 19.81, 20.06, 20.32, 21.23, 21.83, 22.34, 22.84, 23.53, 24.26, 24.70, 25.26, 25.80, 26.78, 27.29, 27.90, 29.04, and 29.45;

Compound 1 Tartrate Form C is characterized by an XRPD pattern substantially identical to Figure 69;

Compound 1 Tosylate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.81, 7.05, 8.52, 9.74, 10.40, 10.99, 11.26, 11.66, 12.58, 12.81, 14.28, 14.62, 15.30, 15.80, 16.03, 16.34, 17.12, 17.55, 18.03, 18.94, 19.26, 19.67, 20.31, 20.65, 21.02, 21.43, 22.11, 22.44, 22.66, 22.94, 23.07, 23.54, 23.79, 24.55, 24.88, 25.42, 25.83, 26.10, 26.53, 27.70, 28.11, 28.62, 29.18, 29.40, 29.66, and 29.83; and

Compound 1 Tosylate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.61, 8.69, 9.25, 10.68, 12.44, 12.69, 13.76, 14.42, 14.81, 15.47, 16.08, 16.57, 17.45, 17.76, 18.44, 18.83, 19.01, 19.35, 20.42, 20.84, 21.15, 21.69, 22.09, 22.86, 23.12, 24.08, 24.53, 24.86, 25.22, 25.91, 26.33, 26.82, 27.63, 28.61, 29.11, and 29.77.

3. The crystalline salt form of claim 1 or 2, wherein:

Compound 1 Besylate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 3.78, 7.56, 10.42, 20.51, 20.94, 21.60, and 25.30;

Compound 1 Camsylate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.55, 9.87, 10.26, 16.16, 16.82, 20.87, 22.36, and 23.71;

Compound 1 Camsylate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.25, 10.52, 16.15, 21.13, 21.56, and 21.89;

Compound 1 Citrate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.58, 5.95, 8.88, 11.93, 13.79, 14.29, 16.64, 18.90, 21.47, 23.80, 24.25, and 25.85;

Compound 1 Esylate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 3.97, 7.95, 9.89, 10.62, 13.27, 15.08, 16.17, 16.92, 17.01, 20.65, 20.78, 21.44, 22.08, 23.99, 25.43, and 26.52;

Compound 1 HBr Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.26, 9.91, 10.72, 20.55, 20.69, 21.18, 22.09, 23.24, 24.56, and 25.80;

Compound 1 Maleate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 10.92, 15.13, 15.78, 16.43, 18.09, 18.71, 20.30, 21.99, 22.30, 22.49, 23.32, 23.56, 24.79, 26.41, 26.92, and 29.01;

Compound 1 Mesylate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.06, 7.66, 14.79, 15.42, 16.23, 17.20, 17.59, 18.40, 19.33, 19.53, 20.38, 20.73, 21.83, 22.16, 23.14, 24.06, and 24.77;

Compound 1 Mesylate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 14.61, 15.21, 16.17, 17.18, 17.41, 18.46, 19.13, 19.54, 20.15, 20.53, 20.75, 20.98, 21.27, 21.60, 22.03, 23.32, 24.16, 24.42, 24.87, and 25.13;

Compound 1 Mesylate Form C is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 7.55, 9.53, 11.49, 12.51, 14.44, 19.04, 20.54, 21.12, 21.24, and 23.15;

Compound 1 Oxalate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.90, 5.25, 9.87, 10.54, 12.29, 15.35, 18.67, 19.40, 19.81, 20.26, 22.93, and 24.66;

Compound 1 Oxalate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.20, 7.59, 10.53, 15.06, 15.23, 19.52, 21.18, 21.43, 22.59, 24.21, and 25.85;

Compound 1 Oxalate Form C is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 7.70, 10.29, 10.59, 13.09, 13.70, 15.33, 17.83, 18.15, 20.11, 21.07, 21.91, and 22.56;

Compound 1 Sulfate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.74, 5.85, 9.47, 10.04, 11.74, 11.95, 16.48, 20.22, and 22.74;

Compound 1 Sulfate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.27, 8.57, 9.32, 16.94, 19.99, 21.03, 21.44, 22.00, and 26.02;

Compound 1 Sulfate Form C is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 3.19, 5.35, 9.62, 12.27, 16.33, 17.11, 18.75, 18.99, 19.36, 19.47, 20.55, 21.01, 21.52, 21.62, 21.89, 22.19, 23.79, 25.07, and 26.06;

Compound 1 Hemitartrate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 5.17, 5.66, 10.10, 10.40, 11.37, 11.55, 14.51, 17.09, 21.23, 21.83, 23.53, 24.26, 25.26, and 26.78;

Compound 1 Tosylate Form A is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 8.52, 9.74, 14.28, 16.03, 17.55, 18.94, 19.26, 20.31, 21.02, 21.43, 22.11, 22.44, 22.66, 23.07, 24.55, and 27.70; and
Compound 1 Tosylate Form B is characterized by one or more peaks in an XRPD pattern on a 2 Theta scale, wherein the one or more peaks is selected from 4.61, 9.25, 12.44, 15.47, 17.76, 19.01, 19.35, 25.91, 26.33, and 27.63.

4. The crystalline salt form of any one of claims 1-3, wherein the Compound 1 Besylate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 3.78, 7.56, 10.42, 20.51, 20.94, 21.60, and 25.30;
Compound 1 Camsylate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.55, 9.87, 10.26, 16.16, 16.82, 20.87, 22.36, and 23.71;
Compound 1 Camsylate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.25, 10.52, 16.15, 21.13, 21.56, and 21.89;
Compound 1 Citrate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.58, 5.95, 8.88, 11.93, 13.79, 14.29, 16.64, 18.90, 21.47, 23.80, 24.25, and 25.85;
Compound 1 Esylate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 3.97, 7.95, 9.89, 10.62, 13.27, 15.08, 16.17, 16.92, 17.01, 20.65, 20.78, 21.44, 22.08, 23.99, 25.43, and 26.52;
Compound 1 HBr Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.26, 9.91, 10.72, 20.55, 20.69, 21.18, 22.09, 23.24, 24.56, and 25.80;
Compound 1 Maleate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 10.92, 15.13, 15.78, 16.43, 18.09, 18.71, 20.30, 21.99, 22.30, 22.49, 23.32, 23.56, 24.79, 26.41, 26.92, and 29.01;
Compound 1 Mesylate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.06, 7.66, 14.79, 15.42, 16.23, 17.20, 17.59, 18.40, 19.33, 19.53, 20.38, 20.73, 21.83, 22.16, 23.14, 24.06, and 24.77;
Compound 1 Mesylate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 14.61, 15.21, 16.17, 17.18, 17.41, 18.46, 19.13, 19.54, 20.15, 20.53, 20.75, 20.98, 21.27, 21.60, 22.03, 23.32, 24.16, 24.42, 24.87, and 25.13;

Compound 1 Mesylate Form C is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 7.55, 9.53, 11.49, 12.51, 14.44, 19.04, 20.54, 21.12, 21.24, and 23.15;

Compound 1 Oxalate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.90, 5.25, 9.87, 10.54, 12.29, 15.35, 18.67, 19.40, 19.81, 20.26, 22.93, and 24.66;

Compound 1 Oxalate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.20, 7.59, 10.53, 15.06, 15.23, 19.52, 21.18, 21.43, 22.59, 24.21, and 25.85;

Compound 1 Oxalate Form C is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 7.70, 10.29, 10.59, 13.09, 13.70, 15.33, 17.83, 18.15, 20.11, 21.07, 21.91, and 22.56;

Compound 1 Sulfate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.74, 5.85, 9.47, 10.04, 11.74, 11.95, 16.48, 20.22, and 22.74;

Compound 1 Sulfate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.27, 8.57, 9.32, 16.94, 19.99, 21.03, 21.44, 22.00, and 26.02;

Compound 1 Sulfate Form C is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 3.19, 5.35, 9.62, 12.27, 16.33, 17.11, 18.75, 18.99, 19.36, 19.47, 20.55, 21.01, 21.52, 21.62, 21.89, 22.19, 23.79, 25.07, and 26.06;

Compound 1 Hemitartrate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.17, 5.66, 10.10, 10.40, 11.37, 11.55, 14.51, 17.09, 21.23, 21.83, 23.53, 24.26, 25.26, and 26.78;

Compound 1 Tosylate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 8.52, 9.74, 14.28, 16.03, 17.55, 18.94, 19.26, 20.31, 21.02, 21.43, 22.11, 22.44, 22.66, 23.07, 24.55, and 27.70; and

Compound 1 Tosylate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.61, 9.25, 12.44, 15.47, 17.76, 19.01, 19.35, 25.91, 26.33, and 27.63.

5. The crystalline salt form of any one of claims 1-4, wherein the Compound 1 Besylate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 3.78, 7.56, 10.08, 10.42, 11.70, 11.78, 12.00, 12.71, 13.20, 13.92, 14.06, 14.44, 14.93, 15.18, 15.96, 16.21, 16.40, 16.73, 16.86, 17.38, 18.32, 19.07, 20.07, 20.26, 20.51, 20.94,

21.45, 21.60, 22.30, 22.90, 23.05, 23.28, 23.71, 24.28, 24.97, 25.30, 25.69, 26.33, 26.71, 27.29, 27.65, 28.07, 29.22, and 29.50;

Compound 1 Camsylate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.55, 7.90, 8.25, 8.38, 9.55, 9.87, 10.26, 11.12, 11.34, 12.50, 12.94, 13.40, 13.65, 14.79, 15.83, 16.16, 16.41, 16.54, 16.82, 17.10, 17.69, 18.02, 18.22, 18.47, 18.91, 19.10, 19.47, 20.04, 20.87, 21.05, 22.16, 22.36, 22.93, 23.71, 24.55, 25.33, 26.02, 26.40, 27.09, 27.33, 27.97, 28.32, 28.68, and 28.98;

Compound 1 Camsylate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.25, 8.32, 8.51, 8.76, 9.05, 9.58, 9.88, 10.00, 10.52, 10.80, 11.06, 11.96, 12.24, 12.58, 13.98, 15.62, 15.81, 16.15, 16.70, 17.12, 17.42, 17.71, 18.41, 19.37, 19.55, 20.63, 21.13, 21.56, 21.89, 22.50, 23.04, 24.43, 26.08, 27.07, 27.97, 28.22, and 28.73;

Compound 1 Citrate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.58, 5.95, 7.61, 8.88, 9.19, 9.94, 11.93, 13.26, 13.79, 14.29, 14.68, 15.26, 15.95, 16.64, 17.11, 17.87, 18.21, 18.43, 18.90, 19.36, 19.67, 20.14, 20.57, 21.47, 22.30, 22.64, 23.06, 23.80, 24.25, 24.55, 24.81, 25.10, 25.45, 25.54, 25.85, 26.35, 26.51, 26.83, 27.16, 27.57, 27.85, 28.08, and 28.47;

Compound 1 Esylate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 3.97, 7.95, 9.89, 10.62, 10.92, 11.03, 11.34, 11.77, 12.03, 12.53, 12.71, 13.27, 14.00, 14.70, 15.08, 15.94, 16.17, 16.92, 17.01, 17.19, 17.35, 17.61, 18.15, 18.76, 19.03, 19.66, 19.89, 20.26, 20.65, 20.78, 21.44, 22.08, 23.14, 23.27, 23.99, 24.32, 25.43, 25.66, 25.85, 26.52, 26.87, 27.61, 27.96, 28.18, 28.40, and 28.91;

Compound 1 HBr Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.26, 8.29, 9.75, 9.91, 10.56, 10.72, 12.25, 12.50, 12.75, 13.31, 13.54, 14.11, 14.72, 14.89, 15.87, 16.29, 16.50, 17.36, 17.78, 18.09, 18.44, 18.75, 19.12, 19.24, 19.56, 19.92, 20.40, 20.55, 20.69, 21.18, 22.09, 22.64, 23.24, 24.56, 25.80, 26.52, 27.23, 27.43, 28.13, 28.46, 28.76, 29.08, 29.66, and 30.07;

Compound 1 Maleate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 7.58, 8.34, 10.92, 12.38, 12.87, 14.17, 15.13, 15.78, 16.43, 16.91, 17.51, 18.09, 18.71, 20.30, 21.60, 21.99, 22.30, 22.49, 23.32, 23.56, 23.92, 24.79, 26.04, 26.41, 26.92, 27.62, 28.18, 28.54, and 29.01;

Compound 1 Mesylate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.06, 6.65, 7.66, 8.35, 10.16, 10.72, 11.98, 12.62, 13.32, 14.41, 14.79, 15.42, 15.72, 15.89, 16.23, 16.77, 17.20, 17.59, 18.08, 18.40, 18.81, 19.33, 19.53, 19.71, 20.14, 20.38, 20.73, 21.05, 21.56, 21.83, 22.16, 23.14, 24.06, 24.54, 24.77, 25.75, 26.82, 27.71, 27.94, 28.71, 29.27, and 29.85;

Compound 1 Mesylate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.14, 6.62, 7.72, 7.89, 10.33, 10.73, 12.74, 13.31, 13.88, 14.23, 14.61, 15.21, 15.52, 15.87, 16.17, 17.18, 17.41, 17.88, 18.15, 18.46, 18.73, 19.13, 19.54, 20.15, 20.53, 20.75, 20.98, 21.27, 21.60, 22.03, 22.28, 23.07, 23.32, 24.16, 24.42, 24.87, 25.13, 25.64, 26.24, 26.95, 27.17, 27.49, 27.77, 28.42, and 29.54;

Compound 1 Mesylate Form C is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 7.55, 9.53, 10.25, 11.04, 11.49, 11.65, 12.24, 12.51, 13.88, 14.44, 15.36, 15.66, 16.29, 16.58, 17.16, 17.54, 19.04, 19.20, 19.79, 20.54, 21.12, 21.24, 21.62, 22.22, 23.15, 23.57, 23.99, 24.61, 24.77, 25.22, 25.61, 25.99, 26.60, 26.89, 27.29, 27.91, 29.03, and 29.29;

Compound 1 Oxalate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.90, 5.25, 6.20, 8.05, 9.87, 10.54, 12.29, 14.79, 15.35, 15.84, 16.49, 16.89, 17.55, 18.27, 18.67, 19.12, 19.40, 19.81, 20.26, 20.50, 21.06, 21.74, 22.17, 22.93, 23.26, 23.50, 23.81, 24.66, 25.06, 25.95, 26.90, 27.82, and 28.24;

Compound 1 Oxalate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.20, 7.59, 8.02, 8.42, 10.53, 12.36, 12.66, 13.09, 13.35, 13.88, 14.15, 14.46, 15.06, 15.23, 17.42, 17.75, 18.28, 19.07, 19.52, 20.33, 21.18, 21.43, 21.74, 22.08, 22.59, 23.53, 24.21, 24.52, 24.71, 25.24, 25.85, 26.24, 26.55, 26.90, 27.43, 28.56, 29.30, and 29.51;

Compound 1 Oxalate Form C is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.13, 7.70, 10.29, 10.59, 13.09, 13.70, 14.13, 15.33, 15.87, 16.57, 17.19, 17.50, 17.83, 18.15, 18.61, 19.24, 19.42, 20.11, 20.34, 20.64, 21.07, 21.47, 21.59, 21.91, 22.56, 22.92, 23.37, 23.87, 24.35, 25.35, 25.91, 26.47, 26.68, 27.74, 28.47, and 29.14;

Compound 1 Sulfate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.74, 5.85, 9.47, 10.04, 11.74, 11.95, 13.77, 14.99, 15.42, 15.71, 16.48, 17.36, 17.66, 17.92, 18.59, 18.95, 19.36, 19.74, 20.22, 20.77, 21.38, 21.86, 22.74, 23.30, 23.70, 24.33, 25.07, 25.32, 25.67, 26.23, and 27.00;

Compound 1 Sulfate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.27, 8.57, 9.32, 10.95, 11.29, 12.07, 12.87, 13.25, 13.82, 14.13, 14.67, 16.94, 17.21, 17.64, 19.99, 20.26, 21.03, 21.44, 22.00, 22.71, 23.85, 25.20, and 26.02;

Compound 1 Sulfate Form C is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 3.19, 5.35, 9.04, 9.62, 10.73, 11.31, 11.60, 12.27, 12.67, 13.76, 14.31, 14.65, 15.21, 15.63, 16.11, 16.33, 16.63, 17.11, 18.32, 18.75, 18.99, 19.36, 19.47, 20.16, 20.55, 21.01, 21.52, 21.62, 21.89, 22.19, 22.53, 23.19, 23.79, 24.23, 24.81, 25.07, 25.41, 26.06, 26.73, 27.58, 28.16, 28.63, 28.90, 29.22, 29.47, and 29.73;

Compound 1 Hemitartrate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.17, 5.66, 7.22, 9.27, 10.10, 10.40, 11.37, 11.55, 12.77, 13.94, 14.51, 15.60, 16.06, 16.48, 17.09, 17.69, 17.90, 18.27, 18.94, 19.15, 19.59, 19.81, 20.06, 20.32, 21.23, 21.83, 22.34, 22.84, 23.53, 24.26, 24.70, 25.26, 25.80, 26.78, 27.29, 27.90, 29.04, and 29.45;

Compound 1 Tosylate Form A is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 5.81, 7.05, 8.52, 9.74, 10.40, 10.99, 11.26, 11.66, 12.58, 12.81, 14.28, 14.62, 15.30, 15.80, 16.03, 16.34, 17.12, 17.55, 18.03, 18.94, 19.26, 19.67, 20.31, 20.65, 21.02, 21.43, 22.11, 22.44, 22.66, 22.94, 23.07, 23.54, 23.79, 24.55, 24.88, 25.42, 25.83, 26.10, 26.53, 27.70, 28.11, 28.62, 29.18, 29.40, 29.66, and 29.83; and

Compound 1 Tosylate Form B is characterized by all of the following peaks in an XRPD pattern on a 2 Theta scale, selected from 4.61, 8.69, 9.25, 10.68, 12.44, 12.69, 13.76, 14.42, 14.81, 15.47, 16.08, 16.57, 17.45, 17.76, 18.44, 18.83, 19.01, 19.35, 20.42, 20.84, 21.15, 21.69, 22.09, 22.86, 23.12, 24.08, 24.53, 24.86, 25.22, 25.91, 26.33, 26.82, 27.63, 28.61, 29.11, and 29.77.

6. The crystalline salt form of any one of claims 1-5, wherein the Compound 1 Besylate Form A is characterized by a first endotherm at a temperature of about 144 ºC and a second endotherm at a temperature of about 170 ºC in a DSC thermogram;

Compound 1 Camsylate Form A is characterized by a first endotherm at a temperature of about 110 ºC and a second endotherm at a temperature of about 174 ºC in a DSC thermogram;

Compound 1 Citrate Form B is characterized by an endotherm with an onset temperature at about 175 ºC in a DSC thermogram;

Compound 1 Esylate Form A is characterized by a first endotherm at a temperature of about 69 ºC, a second endotherm at about 156 ºC, and a third endotherm at a temperature of about 190 ºC, in a DSC thermogram;

Compound 1 Maleate Form A is characterized by an endotherm at a temperature of about 117 ºC in a DSC thermogram;

Compound 1 Mesylate Form C is characterized by a first endotherm with a peak at a temperature of about 69 °C, wherein the first endotherm has a lower limit of about 36 and an upper limit of a temperature of about 96 °C, and a second endotherm with a peak at a temperature of about 208 °C, wherein the second endotherm has a lower limit of a temperature of about 169 and an upper limit of a temperature of about 219 °C;

Compound 1 Hemitartrate Form B is characterized by a first endotherm at a temperature of about 111 ºC, and a second endotherm at a temperature of about 148 ºC in a DSC thermogram;

Compound 1 Tosylate Form A is characterized by an endotherm with an onset temperature at about 214 ºC in a DSC thermogram; and

Compound 1 Tosylate Form B is characterized by a sharp endotherm with an onset temperature at ~183 °C in a DSC thermogram.

7. The crystalline salt form of any one of claims 1-6, wherein the Compound 1 Besylate Form A is characterized by a weight loss of about 7.9% over a temperature range of 39-177 ºC in a TGA thermogram;

Compound 1 Camsylate Form A is characterized by a weight loss of about 5.9% over a temperature range of 38-170 ºC in a TGA thermogram;

Compound 1 Citrate Form B is characterized by a weight loss beginning at a temperature of about 159 ºC and ending at about 220 ºC in a TGA thermogram;

Compound 1 Esylate Form A is characterized by a weight loss of about 8.5 wt% over a temperature range of 38-188 ºC in a TGA thermogram;

Compound 1 Maleate Form A is characterized by a weight loss of about 3.1 wt% in the temperature range of 42-146 ºC in a TGA thermogram;

Compound 1 Mesylate Form C is characterized by a weight loss of from 0.5 to 3.0 wt% in the temperature range of 36-130 ºC in a TGA thermogram;

Compound 1 Hemitartrate Form B is characterized by a weight loss of about 7.4 wt% in the temperature range of 39-157 ºC in a TGA thermogram;

Compound 1 Tosylate Form A is characterized by a weight loss of about 0.9 wt% in the temperature range of 72-231 ºC in a TGA thermogram; and

Compound 1 Tosylate Form B is characterized by a weight loss of about 0.7 wt% in the temperature range of 39-214 ºC in a TGA thermogram.

8. The crystalline salt form of any one of claims 1-7, wherein the Compound 1 Citrate Form B is characterized by about a 4.1 wt% increase, as measured by DVS, when taken from an environment of 5% relative humidity to an environment of 95% relative humidity;

Compound 1 Maleate Form A is characterized by about a 2.5 wt% increase, as measured by DVS, when taken from an environment of 5% relative humidity to an environment of 95% relative humidity;

Compound 1 Mesylate Form C is characterized by about a 5.1 wt% increase, as measured by DVS, when taken from an environment of 5% relative humidity to an environment of 95% relative humidity;

Compound 1 Tosylate Form A is characterized by about a 0.9 wt% increase, as measured by DVS, when taken from an environment of 5% relative humidity to an environment of 95% relative humidity; and

Compound 1 Tosylate Form B is characterized by about a 0.9 wt% increase, as measured by DVS, when taken from an environment of 5% relative humidity to an environment of 95% relative humidity.

9. A pharmaceutical composition comprising a crystalline salt form of any one of claims 1-8 and a pharmaceutically acceptable excipient.

10. A crystalline salt form of any one of claims 1-8, or a pharmaceutical composition of claim 9, for use in therapy.

11. Use of a crystalline salt form of any one of claims 1-8, or a pharmaceutical composition of claim 9, in the manufacture of a medicament for treating a disease, disorder, or syndrome mediated at least in part by modulating *in vivo* activity of a protein kinase.

12. The use of claim 10, wherein the disease, disorder, or syndrome mediated at least in part by modulating *in vivo* activity of a protein kinase is cancer.

13. Use of a crystalline salt form of any one of claims 1-8, in the manufacture of a medicament for inhibiting a protein kinase.

14. The use of any of claims 10-12, wherein the protein kinase is Axl, Mer, c-Met, KDR, or a combination thereof.