

We Claim:

1. ~~A method of reducing an activity of a KIF5B-RET fusion comprising:~~
~~optionally, acquiring knowledge of the presence of the KIF5B-RET fusion; and~~
~~contacting the KIF5B-RET fusion, or a KIF5B-RET-expressing cell, with~~ Use of an agent
that inhibits an activity or expression of KIF5B-RET in the manufacture of a medicament for
reducing an activity of a KIF5B-RET fusion, wherein knowledge of the presence of the KIF5B-
RET fusion is optionally acquired, and wherein the medicament is to be contacted with the
KIF5B-RET fusion, or a KIF5B-RET-expressing cell.
2. The ~~method~~ use of claim 1, wherein the contacting step is effected *in vitro*.
3. The ~~use method~~ of claim 1, wherein the contacting step is effected in cells in culture.
4. The ~~use method~~ of claim 1, wherein the contacting step is effected in a subject.
5. The ~~use method~~ of claim 1, wherein the contacting step is effected in an animal
subject.
6. ~~A method of treating a subject having cancer, comprising:~~
~~acquiring knowledge of the presence of a KIF5B-RET fusion in said subject; and~~
~~administering to the subject an effective amount~~ Use of an anti cancer agent in the
manufacture of a medicament for treating a subject having cancer, wherein knowledge of the
presence of a KIF5B-RET fusion in said subject has been acquired,
~~thereby treating cancer in the subject.~~
7. The ~~method~~ use of claim 6, wherein said anti cancer agent is a kinase inhibitor.
8. The ~~method~~ use of claim 7, wherein the kinase inhibitor is to be administered
responsive to the determination of presence of the KIF5B-RET fusion in a tumor sample from
said subject.

9. The ~~method-use~~ of claim 6, wherein ~~the medicament said administration is to be~~ administered responsive to acquiring knowledge or information of the presence of the KIF5B-RET fusion in said subject.

10. The ~~method-use~~ of claim 6, wherein ~~said administration~~ the medicament is to be administered responsive to acquiring knowledge or information of the presence of the KIF5B-RET fusion in said subject from another party.

11. The ~~method-use~~ of claim 6, wherein ~~the method comprises receiving a~~ communication of the presence of the KIF5B-RET fusion in a subject is received.

12. The ~~method-use~~ of claim 6, wherein ~~said administration~~ the medicament is to be administered responsive to an identification of the presence of the KIF5B-RET fusion in a subject, wherein said identification arises from collaboration with another party.

13. The ~~method-use~~ of claim 6, ~~comprising determining wherein~~ the presence of the KIF5B-RET fusion is determined by sequencing.

14. The ~~method-use~~ of claim 6, wherein said cancer is chosen from pancreatic cancer, melanoma, colorectal cancer, esophageal-gastric cancer, thyroid cancer, or adenocarcinoma.

15. The ~~method-use~~ of claim 14, wherein said cancer is lung cancer.

16. The ~~method-use~~ of claim 15, wherein said lung cancer is chosen from: small cell lung cancer (SCLC), adenocarcinoma of the lung, bronchogenic carcinoma, or a combination thereof.

17. The ~~method-use~~ of claim 15, wherein the lung cancer is non-small cell lung cancer (NSCLC).

18. The use method of claim 15, wherein the lung cancer is squamous cell carcinoma (SCC).
19. The use method of claim 6, wherein the anti-cancer agent is a multi-kinase inhibitor.
20. The use method of claim 6, wherein the anti-cancer agent is a RET-specific inhibitor.
21. The use method of claim 6, wherein the anti-cancer agent is sorafenib (NEXAVAR®).
22. The use method of claim 6, wherein the anti-cancer agent is sunitinib (SUTENT®, SU11248).
23. The use method of claim 6, wherein the anti-cancer agent is vandetanib (CAPRELSA®, ZD6474).
24. The use method of claim 6, wherein the anti-cancer agent is NVP-AST487.
25. The use method of claim 7, wherein the kinase inhibitor inhibits the expression of nucleic acid encoding KIF5B-RET.
26. The use method of claim 7, wherein the kinase inhibitor is selected from antisense molecules, ribozymes, RNAi, triple helix molecules that hybridize to a nucleic acid encoding KIF5B-RET, or a transcription regulatory region that blocks or reduces mRNA expression of KIF5B-RET.
27. The use method of claim 7, wherein the kinase inhibitor is administered in combination with a second therapeutic agent or a different therapeutic modality.

63. The method of claim 36, wherein responsive to the direct acquisition of knowledge of the presence of the KIF5B-RET fusion, the subject is classified as a candidate to receive treatment with a kinase inhibitor.

64. The method of claim 36, wherein responsive to the direct acquisition of knowledge of the presence of the KIF5B-RET fusion, the subject, *e.g.*, a patient, can further be assigned to a particular class if a KIF5B-RET fusion is identified in a sample of the patient.

65. The method of claim 36, wherein a patient identified as having a KIF5B-RET fusion can be classified as a candidate to receive treatment with a kinase inhibitor.

66. The method of claim 36, wherein responsive to the direct acquisition of knowledge of presence of the KIF5B-RET fusion, the subject is identified as likely to respond to a treatment that comprises a kinase inhibitor.

67. A method of evaluating a patient, comprising:
~~identifying, selecting, or obtaining information or knowledge that the patient has participated in a clinical trial or has been treated for cancer;~~
~~acquiring genotype information that identifies a KIF5B-RET fusion as being in the patient;~~
~~wherein the presence of the KIF5B-RET fusion identifies the patient as having an increased risk for, or having, a cancer associated with the KIF5B-RET fusion; and~~
~~treating the subject with~~ Use of a kinase inhibitor in the manufacture of a medicament for treating a cancer associated with the KIF5B-RET fusion in a patient, wherein the patient is selected according to the method, comprising:
identifying, selecting, or obtaining information or knowledge that the patient has participated in a clinical trial or has been treated for cancer;
acquiring genotype information that identifies a KIF5B-RET fusion as being in the patient,
identifying the patient as having an increased risk for, or having, a cancer associated with the KIF5B-RET fusion by detecting the presence of the KIF5B-RET fusion.

68. The ~~method~~ use of claim ~~36~~ 67, further comprising providing a report to another party.

69. The use ~~method~~ of claim 68, wherein the party is the patient, a caregiver, a physician, an oncologist, a hospital, clinic, third-party payor, insurance company or government office.

70. The ~~use method~~ of claim 68, wherein said report is in electronic, web-based, or paper form.

71. The ~~use method~~ of claim 68, wherein a report is generated which identifies the presence or absence of an alteration described herein, and optionally includes an identifier for the patient from which the sequence was obtained.

72. The ~~use method~~ of claim 68, wherein said report comprises;
information on the role of a KIF5B-RET fusion, or wildtype sequence, in disease;
information on prognosis, resistance, or potential or suggested therapeutic options;
information on the likely effectiveness of a therapeutic option, the acceptability of a therapeutic option, or the advisability of applying the therapeutic option to a patient; or
information, or a recommendation on, the administration of a drug.

73. A method for generating a personalized cancer treatment report, by obtaining a sample from a subject, detecting a KIF5B-RET fusion in the sample, and selecting a treatment based on the mutation identified.

74. An isolated or purified nucleic acid molecule that encodes a KIF5B-RET fusion or a breakpoint comprising fragment thereof.

75. An isolated or purified nucleic KIF5B-RET nucleic acid molecule operatively linked to a native or a heterologous regulatory sequence.

76. An isolated or purified vector comprising a nucleic acid molecule that encodes a KIF5B-RET fusion or a breakpoint comprising fragment thereof.

77. A host cell comprising a vector of claim 76.