[0013a] In one aspect, there is provided the use of a telomerase inhibitor for the manufacture of a medicament for alleviating at least one symptom associated with myeloproliferative neoplasms or myelodysplastic syndrome in an individual in need thereof.

[0013b] In one aspect, there is provided the use of a telomerase inhibitor for the manufacture of a medicament for reducing neoplastic progenitor cell proliferation in an individual diagnosed with or suspected of having a myeloproliferative neoplasm or myelodysplastic syndrome.

[0013c] In one aspect, there is provided the use of a telomerase inhibitor for the manufacture of a medicament for maintaining blood platelet counts of between less than about 400 x 10^3 / μL in the blood of an individual diagnosed with or suspected of having essential thrombocythemia.

[0013d] In one aspect, there is provided the use of a telomerase inhibitor for the manufacture of a medicament for reducing bone marrow fibrosis in an individual diagnosed with or suspected of having a myeloproliferative neoplasm or myelodysplastic syndrome.

[0013d] In one aspect, there is provided the use of a telomerase inhibitor in the manufacture of a medicament for alleviating at least one symptom associated with myelofibrosis (MF) in an individual in need thereof, wherein the telomerase inhibitor is imetelstat or a pharmaceutically acceptable salt thereof.

[0014] The disclosure provided herein discloses, *inter alia*, methods for using telomerase inhibitor compounds to treat and alleviate symptoms associated with myeloproliferative

Claims

What is claimed is:

1. Use of a telomerase inhibitor for the manufacture of a medicament for alleviating at least one symptom associated with myeloproliferative neoplasms or myelodysplastic syndrome in an individual in need thereof.
2. The use of a telomerase inhibitor according to claim 1 wherein the myeloproliferative neoplasm is selected from the group consisting of Essential Thrombocythemia (ET), Polycythemia vera (PV), ChronicMyelogenous Leukemia (CML), myelofibrosis (MF), chronic neutrophilic leukemia, chronic eosinophilic leukemia and acute myelogenous leukemia (AML).
3. The use of a telomerase inhibitor according to claim 2, wherein the symptom comprises headache, dizziness or lightheadedness, chest pain, weakness, fainting, vision changes, numbness or tingling of extremities, redness, throbbing or burning pain in extremities (erythromelalgia), enlarged spleen, nosebleeds, bruising, bleeding from mouth or gums, bloody stool, or stroke.
4. The use of a telomerase inhibitor according to claim 2 wherein the myeloproliferative neoplasm (MPN) is Essential Thrombocythemia (ET) or Polycythemia vera (PV).
5. The use of a telomerase inhibitor according to claim 2 wherein the myeloproliferative neoplasm (MPN) is myelofibrosis (MF).
6. The use of a telomerase inhibitor according to claim 2 wherein the myeloproliferative neoplasm (MPN) is acute myelogenous leukemia (AML).
7. The use of a telomerase inhibitor according to claim 1 wherein the myelodysplastic syndrome is selected from the group consisting of refractory anemia, refractory anemia with excess blasts, refractory cytopenia with multilineage dysplasia, refractory cytopenia with unilineage dysplasia, and chronic myelomonocytic leukemia (CMML).
8. The use of a telomerase inhibitor according to claim 7 wherein the myelodysplastic syndrome (MDS) is chronic myelomonocytic leukemia (CMML).

9. Use of a telomerase inhibitor for the manufacture of a medicament for reducing neoplastic progenitor cell proliferation in an individual diagnosed with or suspected of having a myeloproliferative neoplasm or myelodysplastic syndrome.

10. The use of a telomerase inhibitor according to claim 9 wherein the myeloproliferative neoplasm is selected from the group consisting of Essential Thrombocythemia (ET), Polycythemia vera (PV), ChronicMyelogenous Leukemia (CML), myelofibrosis (MF), chronic neutrophilic leukemia, chronic eosinophilic leukemia and acute myelogenous leukemia (AML).

11. The use of a telomerase inhibitor according to claim 10 wherein the myeloproliferative neoplasm (MPN) is Essential Thrombocythemia (ET) or Polycythemia vera (PV).

12. The use of a telomerase inhibitor according to claim 10 wherein the myeloproliferative neoplasm (MPN) is myelofibrosis (MF).

13. The use of a telomerase inhibitor according to claim 10 wherein the myeloproliferative neoplasm (MPN) is acute myelogenous leukemia (AML).

14. The use of a telomerase inhibitor according to claim 9 wherein the myelodysplastic syndrome is selected from the group consisting of refractory anemia, refractory anemia with excess blasts, refractory cytopenia with multilineage dysplasia, refractory cytopenia with unilineage dysplasia, and chronic myelomonocytic leukemia (CMML).

15. The use of a telomerase inhibitor according to claim 11, wherein reduced neoplastic progenitor cell proliferation results in platelet counts of less than about 600 x 10^3 / μL in the blood of the individual.

16. The use of a telomerase inhibitor according to claim 9, wherein the individual is resistant or intolerant to a prior non- telomerase inhibitor-based therapy.

17. Use of a telomerase inhibitor for the manufacture of a medicament for maintaining blood platelet counts of between less than about 400 x 10^3 / μL in the blood of an individual diagnosed with or suspected of having essential thrombocythemia.

18. The use of a telomerase inhibitor according to claim 17, wherein the telomerase inhibitor is used no more than once every two weeks.

19. Use of a telomerase inhibitor for the manufacture of a medicament for reducing bone marrow fibrosis in an individual diagnosed with or suspected of having a myeloproliferative neoplasm or myelodysplastic syndrome.

20. The use of a telomerase inhibitor according to any one of claims 1, 9, 17 and 19, wherein the telomerase inhibitor comprises an oligonucleotide.

21. The use of a telomerase inhibitor according to claim 20, wherein the oligonucleotide is complementary to the RNA component of telomerase.

22. The use of a telomerase inhibitor according to claim 21, wherein the oligonucleotide is 10-20 base pairs in length.

23. The telomerase inhibitor of claim 22, wherein the oligonucleotide comprises the sequence TAGGGTTAGACAA.

24. The use of a telomerase inhibitor according to claim 20, wherein the oligonucleotide comprises at least one N3'→ P5' thiophosphoramidate internucleoside linkage.

25. The use of a telomerase inhibitor according to claim 24, wherein the oligonucleotide comprises N3'→ P5' thiophosphoramidate internucleoside linkages.

26. The use of a telomerase inhibitor according to claim 20, wherein the oligonucleotide further comprises a lipid moiety linked to the 5' and/or 3' end of the oligonucleotide.

27. The use of a telomerase inhibitor according to claim 26, wherein the lipid moiety is linked to the 5' and/or 3' end of the oligonucleotide via a linker.

28. The use of a telomerase inhibitor according to claim 27, wherein the linker is a glycerol or aminoglycerol linker.

29. The use of a telomerase inhibitor according to claim 27, wherein the lipid moiety is a palmitoyl (C16) moiety.

30. The use of a telomerase inhibitor according to any one of claims 1, 9, 17 and 19, wherein the telomerase inhibitor is imetelstat.

31. The use of a telomerase inhibitor according to any one of claims 1, 9, 17 and 19, wherein the telomerase inhibitor is used with a pharmaceutically acceptable excipient.

32. The use of a telomerase inhibitor according to any one of claims 1, 9, 17 and 19, wherein the telomerase inhibitor is formulated for oral, intravenous, subcutaneous, intramuscular, topical, intraperitoneal, intranasal, inhalation, or intraocular administration.

33. The use of a telomerase inhibitor according to claim 9, wherein use of the therapeutically effective amount of the telomerase inhibitor comprises contacting one or more neoplastic progenitor cells with the telomerase inhibitor.

34. The use of a telomerase inhibitor according to claim 30, wherein the effective amount of a telomerase inhibitor is 7.5 mg/kg to 9.3 mg/kg.

35. The use of a telomerase inhibitor according to claim 30, wherein the effective amount of a telomerase inhibitor is 9.5 mg/kg to 11.7 mg/kg.

36. The use of a telomerase inhibitor according to any one of claims 1, 9, 17 and 19, wherein use of the telomerase inhibitor does not inhibit cytokine-dependent megakaryocyte growth.

37. The use of a telomerase inhibitor according to any one of claims 1, 9, 17 and 19, wherein the individual carries a V617F gain of function mutation in the Janus kinase 2 (JAK2) gene.

38. The use of a telomerase inhibitor according to claim 37, wherein use of the telomerase inhibitor decreases the percentage of JAK2 V617F allelic burden in the individual.

39. The use of a telomerase inhibitor according to any one of claims 1, 9, 17 and 19, wherein use of the telomerase inhibitor inhibits cytokine-independent megakaryocyte growth.

40. The use of a telomerase inhibitor according to any one of claims 1, 9, 17 and 19, wherein use of the telomerase inhibitor inhibits CFU-mega.

41. The use of a telomerase inhibitor according to claim 40, wherein inhibition of CFU-Mega is independent of reduction in JAK2 allelic burden.

42. The use of a telomerase inhibitor according to any one of claims 1, 9, 17 and 19, wherein the telomerase inhibitor is imetelstat sodium.

43. The use of a telomerase inhibitor according to claim 42, wherein the effective amount of a telomerase inhibitor is 7.5 mg/kg to 9.3 mg/kg.

44. The use of a telomerase inhibitor according to claim 42, wherein the effective amount of a telomerase inhibitor is 9.5 mg/kg to 11.7 mg/kg.

CLAIMS

What is claimed is:

1. Use of a telomerase inhibitor in the manufacture of a medicament for alleviating at least one symptom associated with myelofibrosis (MF) in an individual in need thereof, wherein the telomerase inhibitor is imetelstat or a pharmaceutically acceptable salt thereof.

2. The use of a telomerase inhibitor according to claim 1, wherein the symptom alleviated comprises enlarged spleen and splenic pain, early satiety, anemia, bone pain, fatigue, fever, night sweats, weight loss, weakness, fainting nosebleeds, bruising, bleeding from mouth or gums, bloody stool, or stroke.

3. The use of a telomerase inhibitor according to claim 1, wherein the symptom alleviated comprises bone pain, fatigue, fever, night sweats, weight loss, weakness, fainting nosebleeds, bruising, bleeding from mouth or gums, bloody stool, or stroke.

4. The use of a telomerase inhibitor according to claim 1, wherein the inhibitor reduces neoplastic progenitor cell proliferation in an individual diagnosed with or suspected of having myelofibrosis (MF).

5. The use of a telomerase inhibitor according to claim 1, wherein the inhibitor reduces bone marrow fibrosis in an individual diagnosed with or suspected of having myelofibrosis (MF).

6. The use of a telomerase inhibitor according to claim 1, wherein the inhibitor reduces anemia.

7. The use of a telomerase inhibitor according to claim 1, wherein the inhibitor provides red blood cell transfusion independence in an individual diagnosed with or suspected of having myelofibrosis (MF) and requiring red blood cell transfusions.

8. The use of a telomerase inhibitor according to claim 1, wherein the symptom alleviated is palpable splenomegaly in an individual diagnosed with or suspected of having myelofibrosis (MF).

9. The use of a telomerase inhibitor according to claim 8, wherein the palpable splenomegaly is reduced by 50% or more.

10. The use of a telomerase inhibitor according to any one of claims 1 to 8, wherein the individual carries a V617F gain of function mutation in the Janus kinase 2 (JAK2) gene and the use of the telomerase inhibitor decreases the percentage of JAK2 V617F allelic burden in the individual.

11. The use of a telomerase inhibitor according to any one of claims 1 to 10, wherein the individual is resistant or intolerant to a prior non-telomerase inhibitor-based therapy.

12. The use of a telomerase inhibitor according to any one of claims 1 to 11, wherein the telomerase inhibitor is used with a pharmaceutically acceptable excipient.

13. The use of a telomerase inhibitor according to any one of claims 1 to 11, wherein the telomerase inhibitor is formulated for oral, intravenous, subcutaneous, intramuscular, topical, intraperitoneal, intranasal, inhalation, or intraocular administration.

14. The use of a telomerase inhibitor according to claim 4, wherein one or more neoplastic progenitor cells is contacted with the telomerase inhibitor.

15. The use of a telomerase inhibitor according to any one of claims 1 to 11, wherein the effective amount of a telomerase inhibitor is 7.5 mg/kg to 9.4 mg/kg.

16. The use of a telomerase inhibitor according to any one of claims 1 to 11, wherein the effective amount of a telomerase inhibitor is 9.5 mg/kg to 11.7 mg/kg.

17. The use of a telomerase inhibitor according to any one of claims 1 to 11, wherein use of the telomerase inhibitor does not inhibit cytokine-dependent megakaryocyte growth.

18. The use of a telomerase inhibitor according to any one of claims 1 to 11, wherein use of the telomerase inhibitor inhibits cytokine-independent megakaryocyte growth.

19. The use of a telomerase inhibitor according to any one of claims 1 to 11, wherein use of the telomerase inhibitor inhibits CFU-mega.

20. The use of a telomerase inhibitor according to claim 19, wherein inhibition of CFU-Mega is independent of reduction in JAK2 allelic burden.

21. The use of a telomerase inhibitor according to any one of claims 1 to 14, wherein the telomerase inhibitor is imetelstat sodium.

22. The use of a telomerase inhibitor according to claim 21, wherein the effective amount of a telomerase inhibitor is 7.5 mg/kg to 9.4 mg/kg.

23. The use of a telomerase inhibitor according to claim 21, wherein the effective amount of a telomerase inhibitor is 9.5 mg/kg to 11.7 mg/kg.