CLAIMS

What is claimed is:

1. A method of selecting an individual diagnosed with or suspected of having cancer who will benefit from treatment with a telomerase inhibitor, the method comprising:
    a. determining relative telomere length by analyzing the relative length of telomeric nucleic acids in cancer cells present in a biological sample from the individual; and
    b. selecting an individual who will benefit from treatment with a telomerase inhibitor when the average relative telomere length in the cancer cells present in a biological sample from the individual is determined to be in the 50th percentile or less of a relative telomere length range determined from one or more known standards.
2. A method of treating an individual diagnosed with or suspected of having cancer, the method comprising:
    a. determining relative telomere length by analyzing the relative length of telomeric nucleic acids in cancer cells present in a biological sample from the individual;
    b. selecting an individual who will benefit from treatment with a telomerase inhibitor when the average relative telomere length in the cancer cells present in a biological sample from the individual is determined to be in the 50th percentile or less of a relative telomere length range determined from one or more known standards; and
    c. administering a therapeutically effective amount of the telomerase inhibitor to the individual.
3. A method of treating an individual diagnosed with or suspected of having cancer, the method comprising: administering a therapeutically effective amount of a telomerase inhibitor to the individual when the average relative telomere length in cancer cells present in a biological sample from the individual has been determined to be in the 50th percentile or less of a relative telomere length range determined from one or more known standards.

4. The method of claim 2, wherein the telomerase inhibitor comprises an oligonucleotide.
5. The method of claim 4, wherein the oligonucleotide is complementary to the RNA component of telomerase.
6. The method of claim 5, wherein the oligonucleotide is 10-20 base pairs in length and comprises at least one N3'→ P5' thiophosphoramidate internucleoside linkage.
7. The method of claim 5, wherein the telomerase inhibitor is Imetelstat.
8. The method of claim 1, wherein the cancer is a solid tumor.
9. The method of claim 1, wherein the cancer is non-small cell lung cancer, small cell lung cancer, bladder cancer, upper gastrointestinal cancer, gastric cancer, gallbladder cancer, ovarian cancer, glioblastoma, a sarcoma or a hematological cancer.
10. The method of claim 2, wherein the telomerase inhibitor is administered with a pharmaceutically acceptable excipient.
11. The method of claim 1, further comprising administering to the individual a therapeutically effective amount of one or more additional cancer therapeutic agents.
12. The method of claim 1, wherein average telomere length is determined by qPCR, telo-FISH, or Southern Blot.
13. The method of claim 1, wherein the individual is a human.
14. The method of claim 1, wherein said one or more known standards are characterized cell lines.
15. The method of claim 14, wherein the cell lines are selected from the group consisting of: M14 cells, A549 cells, SK-5 cells, and Ovcar5 cells.
16. The method of claim 14, wherein the characterized cell lines are selected from cell lines representative of the type of biological sample of claim 1.
17. The method of claim 16, wherein the characterized cell lines are non-small cell lung cancer cell lines, hepatocellular cell lines, or ovarian cell lines.
18. The method of claim 1, wherein said one of more of the known standards is a telomere length range established from a plurality of naturally occurring tumors from a plurality of individuals.

19. The method of claim 18, wherein said cancer cells from a plurality of naturally occurring tumors is of the same type as the cancer cells present in the biological sample from the individual.

20. The method of claim 1 wherein the telomere length in the cancer cells present in the biological sample is determined to be in the 40th percentile, 35th percentile, 30th percentile, 25th percentile, 20th percentile, 15th percentile, 10th percentile, 5th percentile, or less than the telomere length range.

CLAIMS

1. An in vitro method of selecting an individual diagnosed with or suspected of having cancer who will benefit from treatment with a telomerase inhibitor, the method comprising:
    a. determining relative telomere length by analyzing the relative length of telomeric nucleic acids in cancer cells present in a biological sample from the individual; and
    b. selecting an individual who will benefit from treatment with a telomerase inhibitor when the average relative telomere length in the cancer cells present in a biological sample from the individual is determined to be in the 50th percentile or less of a relative telomere length range determined from one or more known standards.
2. Use of a therapeutically effective amount of a telomerase inhibitor for treating an individual diagnosed with or suspected of having cancer by the method as defined in claim 1.
3. Use of an effective amount of a telomerase inhibitor for treating an individual diagnosed with or suspected of having cancer, wherein the average relative telomere length in cancer cells present in a biological sample from the individual has been determined to be in the 50th percentile or less of a relative telomere length range determined from one or more known standards.
4. The method of claim 1 or the use of claims 2 or 3, wherein the telomerase inhibitor comprises an oligonucleotide.
5. The method of claim 4, wherein the oligonucleotide is complementary to the RNA component of telomerase.
6. The method of claim 5, wherein the oligonucleotide is 10-20 base pairs in length and comprises at least one N3'→ P5' thiophosphoramidate internucleoside linkage.
7. The method of claim 5, wherein the telomerase inhibitor is Imetelstat.

8. The method of claim 1 or the use of claims 2 or 3, wherein the cancer is a solid tumor.

9. The method of claim 1 or the use of claims 2 or 3, wherein the cancer is non-small cell lung cancer, small cell lung cancer, bladder cancer, upper gastrointestinal cancer, gastric cancer, gallbladder cancer, ovarian cancer, glioblastoma, a sarcoma or a hematological cancer.

10. The use of claims 2 or 3, wherein the telomerase inhibitor is administered to the individual with a pharmaceutically acceptable excipient.

11. The use of any of claims 2 or 3 wherein the telomerase inhibitor is administered, to the individual with a therapeutically effective amount of one or more additional cancer therapeutic agents.

12. The in vitro method of claim 1 or the use of claims 2 or 3, wherein average telomere length is determined by qPCR, telo-FISH, or Southern Blot.

13. The in vitro method of claim 1 or the use of claims 2 or 3, wherein the individual is a human.

14. The in vitro method of claim 1 or the use of claims 2 or 3, wherein said one or more known standards are characterized cell lines.

15. The method of claim 14, wherein the cell lines are selected from the group consisting of: M14 cells, A549 cells, SK-5 cells, and Ovcar5 cells.

16. The method of claim 14, wherein the characterized cell lines are selected from cell lines representative of the type of biological sample from the individual.

17. The method of claim 16, wherein the characterized cell lines are non-small cell lung cancer cell lines, hepatocellular cell lines, or ovarian cell lines.

18. The method of claim 1 or the use of claims 2 or 3, wherein said one of more of the known standards is a telomere length range established from a plurality of naturally occurring tumors from a plurality of individuals.

19. The method of claim 18, wherein said cancer cells from a plurality of naturally occurring tumors is of the same type as the cancer cells present in the biological sample from the individual.

20. The method of claim 1 or the use of claims 2 or 3, wherein the telomere length in the cancer cells present in the biological sample is determined to be in the 40th percentile, 35th percentile, 30th percentile, 25th percentile, 20th percentile, 15th percentile, 10th percentile, 5th percentile, or less than the telomere length range.