

CLAIMS

1. An in vitro method of selecting an individual diagnosed with or suspected of having a solid tumor cancer who will benefit from treatment with a telomerase inhibitor that comprises an oligonucleotide complementary to the RNA component of telomerase, the method comprising:

- a. determining relative telomere length by analyzing the relative length of telomeric nucleic acids in solid tumor 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 solid tumor 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;

wherein the one or more known standards is a telomere length range established from a plurality of naturally occurring tumors from a plurality of individuals wherein cancer cells from the plurality of naturally occurring tumors are of the same type as the cancer cells present in the biological sample from the individual; or

the one or more known standards are characterized cell lines representative of the type of solid tumor cancer cells present in the biological sample.

2. Use of an effective amount of a telomerase inhibitor that comprises an oligonucleotide complementary to the RNA component of telomerase in the manufacture of a medicament for treating an individual diagnosed with a solid tumor cancer, wherein the average relative telomere length in solid tumor 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;

wherein the one or more known standards is a telomere length range established from a plurality of naturally occurring tumors from a plurality of individuals wherein cancer cells from the plurality of naturally occurring tumors are of the same type as the cancer cells present in the biological sample from the individual; or

the one or more known standards are characterized cell lines representative of the type of solid tumor cancer cells present in the biological sample.

3. The method of claim 1 or the use of claim 2, wherein the oligonucleotide is 10-20 base pairs in length and comprises at least one N3'→P5' thiophosphoramidate internucleoside linkage.
4. The method of claim 1 or the use of claim 2, wherein the telomerase inhibitor is Imetelstat.
5. The method of claim 1 or the use of claim 2, wherein the cancer is selected from lung cancer, breast cancer, liver cancer, ovarian cancer, gastric cancer, gastrointestinal cancer, gallbladder cancer, bladder cancer, glioblastoma, a sarcoma, melanoma, colorectal cancer and pancreatic cancer.
6. The method of claim 1 or the use of claim 2, wherein the cancer is non-small cell lung cancer.
7. The method of claim 1 or the use of claim 2, wherein the cancer is non-small cell lung cancer and the telomerase inhibitor is Imetelstat.
8. The use of claim 2, wherein the telomerase inhibitor is to be administered to the individual with a pharmaceutically acceptable excipient.
9. The use of claim 2 wherein the telomerase inhibitor is to be administered, to the individual with a therapeutically effective amount of one or more additional cancer therapeutic agents.
10. The in vitro method of claim 1 or the use of claim 2, wherein relative telomere length is determined by qPCR, telo-FISH, or Southern Blot.
11. The in vitro method of claim 1 or the use of claim 2, wherein the individual is a human.

12. The in vitro method of claim 1 or the use of claim 2, wherein said one or more known standards are characterized cell lines representative of the type of solid tumor cancer cells present in the biological sample.
13. The method of claim 12, wherein the characterized cell lines are selected from the group consisting of: M14 cells, A549 cells, SK-5 cells, and Ovar5 cells.
14. The method of claim 12, wherein the characterized cell lines are non-small cell lung cancer cell lines, hepatocellular cancer cell lines, or ovarian cancer cell lines.
15. The method of claim 1 or the use of claim 2, wherein said one or more of the known standards is said telomere length range established from a plurality of naturally occurring tumors from a plurality of individuals wherein cancer cells from the plurality of naturally occurring tumors are of the same type as the cancer cells present in the biological sample from the individual.
16. The method of claim 1 or the use of claim 2, wherein the average relative telomere length in the cancer cells present in the biological sample is determined to be in the 35th percentile, 30th percentile, 25th percentile, 20th percentile, 15th percentile, 10th percentile or 5th percentile or less of the relative telomere length range determined from the one or more known standards.
17. The method of claim 1 or the use of claim 2, wherein:
 - the cancer is non-small cell lung cancer;
 - the telomerase inhibitor is Imetelstat; and
 - the average relative telomere length in the cancer cells present in the biological sample is determined to be in the 35th percentile or less of the relative telomere length range determined from the one or more known standards.
18. The method or the use of claim 17, wherein:

the average relative telomere length in the cancer cells present in the biological sample is determined to be in the 20th percentile or less of the relative telomere length range determined from the one or more known standards.