

CLAIMS

1. A method of testing a nucleic acid sample of a human, comprising:
testing a nucleic acid sample obtained from a human and determining presence of a somatic mutation in a promoter of a *telomerase reverse transcriptase* (*TERT*) gene, wherein the nucleic acid is from a cancer selected from the group consisting of: a sarcoma, a hepatocellular carcinoma, urinary tract cancer, a head and neck cancer, a medulloblastoma, a glioma, an astrocytoma, an oligodendroglioma, and an oligoastrocytoma.
2. The method of claim 1 wherein the cancer is a sarcoma.
3. The method of claim 1 wherein the cancer is a hepatocellular carcinoma.
4. The method of claim 1 wherein the cancer is a head and neck cancer.
5. The method of claim 1 wherein the cancer is a medulloblastoma.
6. The method of claim 1 wherein the cancer is a glioma.
7. The method of claim 1 wherein the cancer is an astrocytoma.
8. The method of claim 1 wherein the cancer is an oligodendroglioma.
9. The method of claim 1 wherein the cancer is an oligoastrocytoma.
10. The method of claim 1 wherein the cancer is a urinary tract cancer.
11. The method of claim 2 wherein the cancer is a myxoid liposarcoma.
12. The method of claim 10 wherein the cancer is a urothelial carcinoma of the bladder.
13. The method of claim 10 wherein the cancer is a urothelial carcinoma of the upper urinary tract.
14. The method of claim 4 wherein the cancer is a squamous cell carcinoma of the tongue.
15. The method of claim 6 wherein the cancer is a primary glioblastoma.
16. The method of claim 6 wherein the cancer is an astrocytoma.
17. The method of claim 6 wherein the cancer is an oligodendroglioma.
18. The method of claim 6 wherein the cancer is an oligoastrocytoma.
19. The method of claim 1 wherein the nucleic acid sample is obtained from a primary tumor.

20. The method of claim 1 wherein the nucleic acid is tested by amplifying the promoter or part of the promoter to form an amplicon.
21. The method of claim 20 wherein the part of the promoter comprises at least one nucleotide selected from the group consisting of chr5 1,295,228 ("228"), chr5 1,295,229 ("229"), and chr5 1,295,250 ("250").
22. The method of claim 1 wherein a mutation is detected which is selected from C228T, C250T, C228A, and C229A.
23. The method of claim 20 wherein the amplicon is sequenced.
24. The method of claim 20 wherein the amplicon is hybridized to a mutation specific oligonucleotide.
25. A modified nucleic acid probe comprising at least 18 nucleotides of a human TERT promoter, wherein the 18 nucleotides include C228A or C229A.
26. A modified nucleic acid primer comprising at least 18 nucleotides of a human TERT promoter, wherein the 18 nucleotides include C228A or C229A.
27. The modified probe of claim 25 which comprises a detectable label.
28. The modified primer of claim 26 which additionally comprises a sequence of at least 10 nucleotides which are not contiguous to the 18 nucleotides of the human TERT promoter.
29. The method of claim 1 wherein prior to the step of testing, nucleic acids are extracted from a primary tumor sample.

CLAIMS

1. A method of testing a nucleic acid sample of a human, comprising:
testing a nucleic acid sample obtained from a human and determining presence of a somatic mutation in a promoter of a *telomerase reverse transcriptase* (*TERT*) gene, wherein the nucleic acid is from a cancer selected from the group consisting of: a sarcoma, a urothelial carcinoma of the upper urinary epithelium, a head and neck cancer, a medulloblastoma, a glioma, an astrocytoma, an oligodendroglioma, and an oligoastrocytoma.
2. The method of claim 1 wherein the cancer is a sarcoma.
3. The method of claim 1 wherein the cancer is a head and neck cancer.
4. The method of claim 1 wherein the cancer is a medulloblastoma.
5. The method of claim 1 wherein the cancer is a glioma.
6. The method of claim 2 wherein the cancer is a myxoid liposarcoma.
7. The method of claim 1 wherein the cancer is a urothelial carcinoma of the upper urinary tract.
8. The method of claim 3 wherein the cancer is a squamous cell carcinoma of the tongue.
9. The method of claim 5 wherein the cancer is a primary glioblastoma.
10. The method of claim 5 wherein the cancer is an astrocytoma.
11. The method of claim 5 wherein the cancer is an oligodendroglioma.
12. The method of claim 5 wherein the cancer is an oligoastrocytoma.
13. The method of claim 1 wherein the nucleic acid sample is obtained from a primary tumor.

14. The method of claim 1 wherein the nucleic acid is tested by amplifying the promoter or part of the promoter to form an amplicon.
15. The method of claim 14 wherein the part of the promoter comprises at least one nucleotide selected from the group consisting of chr5 1,295,228 ("228"), chr5 1,295,229 ("229"), and chr5 1,295,250 ("250").
16. The method of claim 1 wherein a mutation is detected which is selected from C228T, C250T, C228A, and C229A.
17. The method of claim 14 wherein the amplicon is sequenced.
18. The method of claim 14 wherein the amplicon is hybridized to a mutation specific oligonucleotide.
19. A modified nucleic acid probe comprising at least 18 nucleotides of a human TERT promoter, wherein the 18 nucleotides include C228A or C229A.
20. A modified nucleic acid primer comprising at least 18 nucleotides of a human TERT promoter, wherein the 18 nucleotides include C228A or C229A.
21. The modified probe of claim 19 which comprises a detectable label.
22. The modified primer of claim 20 which additionally comprises a sequence of at least 10 nucleotides which are not contiguous to the 18 nucleotides of the human TERT promoter.
23. The method of claim 1 wherein prior to the step of testing, nucleic acids are extracted from a primary tumor sample.