

What is claimed is:

1. A method of diagnosing liver cancer in a subject, the method comprising determining in a sample obtained from the subject the gene expression level of at least one marker gene selected from the group consisting of the tumor necrosis factor, alpha-induced protein 3 (TNFAIP3) gene, the amphiregulin (AREG) gene and the GTPase IMAP family member 5 (GIMAP5) gene.
2. The method of claim 1, comprising determining the expression level of at least two of the marker genes selected from the group consisting of the TNFAIP3 gene, the AREG gene and the GIMAP5 gene.
3. The method of claim 2, comprising determining the expression level of all three of the TNFAIP3 gene, the AREG gene and the GIMAP5 gene.
4. The method of any of the preceding claims, wherein the liver cancer is hepatocellular carcinoma (HCC).
5. The method of any of the preceding claims, wherein the subject is a human.
6. The method of claim 5, wherein the human does not show signs of HCC.
7. The method of any of the preceding claims, wherein the determined expression level is compared to a control sample.
8. The method of claim 7, wherein an increased expression level in the sample of the subject relative to the control sample is indicative of a risk of developing HCC.
9. The method of any of claims 5 to 8, comprising distinguishing a subject suffering from HCC from a subject suffering from Chronic Hepatitis B
10. The method of claim 9, wherein the HCC is Barcelona Clinic Liver Cancer (BCLC) stage A HCC.
11. The method of any of claims 5 to 10, wherein the human has liver cirrhosis.
12. The method of any of the preceding claims, wherein the sample comprises a blood cell or liver tissue.
13. The method of claim 12, wherein the blood cell is a leukocyte.

14. The method of any of the preceding claims, wherein determining the gene expression level is carried out using a nucleic acid amplification assay.
15. The method of claim 14, wherein the amplification assay is a quantitative PCR assay or a real time PCR assay.
16. A method of assessing the risk of a subject having liver cirrhosis of developing liver cancer, the method comprising determining in a sample obtained from the subject the gene expression level of at least one marker gene selected from the group consisting of the tumor necrosis factor, alpha-induced protein 3 (TNFAIP3) gene, the amphiregulin (AREG) gene and the GTPase IMAP family member 5 (GIMAP5) gene.
17. The method of claim 16, wherein the liver cancer is hepatocellular carcinoma (HCC).
18. The method of claim 16 or 17, wherein the subject is a human.
19. The method of claim 18, wherein the human does not show signs of HCC.
20. The method of any of claims 16 to 19, wherein an increased expression level in the sample of the subject relative to the control sample is indicative of a risk of developing HCC.
21. The method of claim 20, which comprises monitoring the subject for the development of HCC in case of an increased expression level.
22. A method of diagnosing liver cancer in a subject, the method comprising determining in the sample obtained from the subject the presence or amount of at least one marker protein selected from the group consisting of tumor necrosis factor, alpha-induced protein 3 (TNFAIP3, SwissProt accession number: P21580), amphiregulin (AREG, SwissProt accession number P15514) and GTPase IMAP family member 5 (GIMAP5, SwissProt accession number Q96F15).
23. A kit for the diagnosis of liver cancer by determining the expression level of at least one marker gene selected from the group consisting of the tumor necrosis factor, alpha-induced protein 3 (TNFAIP3) gene, the amphiregulin (AREG) gene and the GTPase, IMAP family member 5 (GIMAP5) gene, the kit comprising one or more

oligonucleotides complementary to at least one of the marker gene nucleic acid molecule.

24. The kit of claim 23, comprising two kinds of one or more oligonucleotides, wherein each kind of oligonucleotide is complementary to one of at least two of the marker gene nucleic acid molecules.

25. The kit of claim 23 or 24, comprising three kinds of one or more oligonucleotides, wherein each kind of oligonucleotide is complementary to one at of the three marker gene nucleic acid molecules.

26. The kit of any of claims 23 to 25, wherein the oligonucleotides are oligonucleotide probes.

27. The kit of claim 26, wherein the oligonucleotides probes are amplification primers.

28. The kit of claim 27, wherein said amplification primers are suitable to amplify a marker nucleic acid molecule in an amplification step.

29. The kit of any of claims 23 to 28, wherein the oligonucleotides are up to about 30, about 60, or about 100 nucleotides in length.

30. The kit of any of claims 26 to claim 29, wherein said oligonucleotide probes are labelled.

31. The kit of claim 30, wherein the label is a radioactive, fluorescent, chemoluminescent, affinity, or enzymatic label.

What is claimed is:

1. A method of diagnosing liver cancer in a subject, the method comprising determining in a sample obtained from the subject the gene expression level of at least two marker genes selected from the group consisting of the tumor necrosis factor, alpha-induced protein 3 (TNFAIP3) gene, the amphiregulin (AREG) gene and the GTPase IMAP family member 5 (GIMAP5) gene.
2. The method of claim 1, comprising determining the expression level of all three of the TNFAIP3 gene, the AREG gene and the GIMAP5 gene.
3. The method of any of the preceding claims, wherein the liver cancer is hepatocellular carcinoma (HCC).
4. The method of any of the preceding claims, wherein the subject is a human.
5. The method of claim 6, wherein the human does not show signs of HCC.
6. The method of any of the preceding claims, wherein the determined expression level is compared to a control sample.
7. The method of any of claims 4 to 6, comprising distinguishing a subject suffering from HCC from a subject suffering from Chronic Hepatitis B
8. The method of claim 7, wherein the HCC is Barcelona Clinic Liver Cancer (BCLC) stage A HCC.
9. The method of any of claims 4 to 8, wherein the human has liver cirrhosis.
10. The method of any of the preceding claims, wherein the sample comprises a blood cell or liver tissue.
11. The method of claim 12, wherein the blood cell is a leukocyte.
12. The method of any of the preceding claims, wherein determining the gene expression level is carried out using a nucleic acid amplification assay.
13. The method of claim 12, wherein the amplification assay is a quantitative PCR assay or a real time PCR assay.

14. A method of assessing the risk of a subject having liver cirrhosis of developing liver cancer, the method comprising determining in a sample obtained from the subject the gene expression level of all three marker genes selected from the group consisting of the tumor necrosis factor, alpha-induced protein 3 (TNFAIP3) gene, the amphiregulin (AREG) gene and the GTPase IMAP family member 5 (GIMAP5) gene.
15. The method of claim 14, wherein the liver cancer is hepatocellular carcinoma (HCC).
16. The method of claim 14 or 15, wherein the subject is a human.
17. The method of claim 16, wherein the human does not show signs of HCC.
18. The method of any of claims 14 to 17, wherein an increased expression level in the sample of the subject relative to the control sample is indicative of a risk of developing HCC.
19. The method of claim 18, which comprises monitoring the subject for the development of HCC in case of an increased expression level.
20. A method of diagnosing liver cancer in a subject, the method comprising determining in the sample obtained from the subject the presence or amount of at least two marker proteins selected from the group consisting of tumor necrosis factor, alpha-induced protein 3 (TNFAIP3, SwissProt accession number: P21580), amphiregulin (AREG, SwissProt accession number P15514) and GTPase IMAP family member 5 (GIMAP5, SwissProt accession number Q96F15).
21. A kit for the diagnosis of liver cancer by determining the expression level of at all three markers gene selected from the group consisting of the tumor necrosis factor, alpha-induced protein 3 (TNFAIP3) gene, the amphiregulin (AREG) gene and the GTPase, IMAP family member 5 (GIMAP5) gene, the kit comprising three kinds of one or more oligonucleotides, wherein each kind of oligonucleotide is complementary to one at of the three marker gene nucleic acid molecules.
22. The kit of claim 21, wherein the oligonucleotides are oligonucleotide probes.
23. The kit of claim 22, wherein the oligonucleotides probes are amplification primers.

24. The kit of claim 23, wherein said amplification primers are suitable to amplify a marker nucleic acid molecule in an amplification step.

25. The kit of any of claims 21 to 24, wherein the oligonucleotides are up to about 30, about 60, or about 100 nucleotides in length.

26. The kit of any of claims 21 to claim 25, wherein said oligonucleotide probes are labelled.

27. The kit of claim 26, wherein the label is a radioactive, fluorescent, chemoluminescent, affinity, or enzymatic label.