Claims

1. A method for diagnosing or determining the likelihood that an individual does or does not have lung cancer, the method comprising:

detecting, in a biological sample from an individual, biomarker values that each correspond to one of at least N protein biomarkers selected from Table 21, wherein at least one of said biomarkers is selected from Table 20; wherein said biomarker values provide an indication as to the likelihood that the individual does or does not having lung cancer based, and wherein N = 2 - 86.

2. The method of claim 1, wherein detecting the biomarker values comprises performing an *in vitro* assay.

3. The method of claim 2, wherein said *in vitro* assay comprises at least one capture reagent corresponding to each of said biomarkers, and further comprising selecting said at least one capture reagent from the group consisting of aptamers, antibodies, and a nucleic acid probe.

4. The method of claim 3, wherein said at least one capture reagent is an aptamer.

5. The method of claim 2, wherein the *in vitro* assay is selected from the group consisting of an immunoassay, an aptamer-based assay, a histological or cytological assay, and an mRNA expression level assay.

6. The method of claim 1, wherein each biomarker value is evaluated based on a predetermined value or a predetermined range of values.

7. The method claim 1, wherein the biological sample is lung tissue and wherein the biomarker values derive from a histological or cytological analysis of said lung tissue.

8. The method of claim 1, wherein the biological sample is selected from the group consisting of whole blood, plasma, and serum.

9. The method of claim 1, wherein the biological sample is serum.

10. The method of claim 1, wherein the individual is a human.

11. The method of claim 1, wherein N = 3-86.

12. The method of claim 1, wherein N = 4-86.

13. The method of claim 1, wherein N = 5-86.

14. The method of claim 1, wherein the individual is a smoker.

15. The method of claim 1, wherein the individual has a pulmonary nodule.

16. The method of claim 1, wherein the lung cancer is non-small cell lung cancer.

17. A computer-implemented method for indicating a likelihood of lung cancer, the method comprising:

retrieving on a computer biomarker information for an individual, wherein the biomarker information comprises biomarker values that each correspond to one of at least N protein biomarkers selected from Table 21, wherein at least one of said N biomarkers is selected from Table 20;

performing with the computer a classification of each of said biomarker values; and

indicating a likelihood that said individual has lung cancer based upon a plurality of classifications, and wherein N = 2 - 86.

18. The method of claim 17, wherein indicating the likelihood that the individual has lung cancer comprises displaying the likelihood on a computer display.

19. A computer program product for indicating a likelihood of lung cancer, the computer program product comprising:

a computer readable medium embodying program code executable by a processor of a computing device or system, the program code comprising:

code that retrieves data attributed to a biological sample from an individual, wherein the data comprises biomarker values that each correspond to one of at least N protein biomarkers selected from Table 21, wherein at least one of said N biomarkers is selected from Table 20, wherein said biomarkers were detected in the biological sample; and

code that executes a classification method that indicates a lung disease status of the individual as a function of said biomarker values; and wherein N = 2 - 86.

20. The computer program product of claim 19, wherein said classification method uses a probability density function.

21. The computer program product of claim 20, wherein said classification method uses two or more classes.

22. A method for diagnosing or determining the likelihood that an individual does or does not have lung cancer, the method comprising:

detecting, in a biological sample from an individual, biomarker values that each correspond to one of at least N protein biomarkers selected from Table 20, wherein said biomarker values provide an indication as to the likelihood that the individual does or does not having lung cancer based, and wherein N = 2 - 25.

23. The method of claim 22, wherein detecting the biomarker values comprises performing an *in vitro* assay.

24. The method of claim 23, wherein said *in vitro* assay comprises at least one capture reagent corresponding to each of said biomarkers, and further comprising selecting said at least one capture reagent from the group consisting of aptamers, antibodies, and a nucleic acid probe.

25. The method of claim 24, wherein said at least one capture reagent is an aptamer.

26. The method of claim 23, wherein the *in vitro* assay is selected from the group consisting of an immunoassay, an aptamer-based assay, a histological or cytological assay, and an mRNA expression level assay.

27. The method of claim 22, wherein each biomarker value is evaluated based on a predetermined value or a predetermined range of values.

28. The method claim 22, wherein the biological sample is lung tissue and wherein the biomarker values derive from a histological or cytological analysis of said lung tissue.

29. The method of claim 22, wherein the biological sample is selected from the group consisting of whole blood, plasma, and serum.

30. The method of claim 22, wherein the biological sample is serum.

31. The method of claim 22, wherein the individual is a human.

32. The method of claim 22, wherein N = 3-25.

33. The method of claim 22, wherein N = 4-25.

34. The method of claim 22, wherein N = 5-25.

35. The method of claim 22, wherein the individual is a smoker.

36. The method of claim 22, wherein the individual has a pulmonary nodule.

37. The method of claim 22, wherein the lung cancer is non-small cell lung cancer.

38. A computer-implemented method for indicating a likelihood of lung cancer, the method comprising:

retrieving on a computer biomarker information for an individual, wherein the biomarker information comprises biomarker values that each correspond to one of at least N biomarkers selected from Table 20;

performing with the computer a classification of each of said biomarker values; and

indicating a likelihood that said individual has lung cancer based upon a plurality of classifications, and wherein N = 2 - 25.

39. The method of claim 38, wherein indicating the likelihood that the individual has lung cancer comprises displaying the likelihood on a computer display.

40. A computer program product for indicating a likelihood of lung cancer, the computer program product comprising:

a computer readable medium embodying program code executable by a processor of a computing device or system, the program code comprising:

code that retrieves data attributed to a biological sample from an individual, wherein the data comprises biomarker values that each correspond to one of at least N biomarkers selected from Table 20, wherein said biomarkers were detected in the biological sample; and

code that executes a classification method that indicates a lung disease status of the individual as a function of said biomarker values; and wherein N = 2 - 25.

41. The computer program product of claim 40, wherein said classification method uses a probability density function.

42. The computer program product of claim 40, wherein said classification method uses two or more classes.

43. A method for determining information about lung cancer in an individual comprising:

detecting, in a biological sample from an individual, biomarker values that each correspond to one of at least N protein biomarkers selected from Table 21, wherein at least one of said biomarkers is selected from Table 20; wherein N = 2-86; and wherein said biomarker value provides information about the lung cancer in the individual.

44. The method of claim 43, wherein detecting the biomarker values comprises performing an *in vitro* assay.

45. The method of claim 44, wherein said *in vitro* assay comprises at least one capture reagent corresponding to each of said biomarkers, and further comprising selecting said at least one capture reagent from the group consisting of aptamers, antibodies, and a nucleic acid probe.

46. The method of claim 45, wherein said at least one capture reagent is an aptamer.

47. The method of claim 44, wherein the *in vitro* assay is selected from the group consisting of an immunoassay, an aptamer-based assay, a histological or cytological assay, and an mRNA expression level assay.

48. The method of claim 43, wherein each biomarker value is evaluated based on a predetermined value or a predetermined range of values.

49. The method claim 43, wherein the biological sample is lung tissue and wherein the biomarker values derive from a histological or cytological analysis of said lung tissue.

50. The method of claim 43, wherein the biological sample is selected from the group consisting of whole blood, plasma, and serum.

51. The method of claim 43, wherein the biological sample is serum.

52. The method of claim 43, wherein the individual is a human.

53. The method of claim 43, wherein N = 3-86.

54. The method of claim 43, wherein N = 4-86.

55. The method of claim 43, wherein N = 5-86.

56. The method of claim 43, wherein the individual is a smoker.

57. The method of claim 43, wherein the individual has a pulmonary nodule.

58. The method of claim 43, wherein the lung cancer is non-small cell lung cancer.

59. The method of claim 43, wherein the information comprises prognosis, cancer classification, prediction of disease risk, or selection of treatment.

60. A method for determining information about lung cancer in an individual comprising:

detecting, in a biological sample from an individual, biomarker values that each correspond to one of at least N biomarkers selected from Table 20, wherein N = 2-25; and wherein said biomarker value provides information about the lung cancer in the individual.

61. The method of claim 60, wherein detecting the biomarker values comprises performing an *in vitro* assay.

62. The method of claim 61, wherein said *in vitro* assay comprises at least one capture reagent corresponding to each of said biomarkers, and further comprising

selecting said at least one capture reagent from the group consisting of aptamers, antibodies, and a nucleic acid probe.

63. The method of claim 62, wherein said at least one capture reagent is an aptamer.

64. The method of claim 61, wherein the *in vitro* assay is selected from the group consisting of an immunoassay, an aptamer-based assay, a histological or cytological assay, and an mRNA expression level assay.

65. The method of claim 60, wherein each biomarker value is evaluated based on a predetermined value or a predetermined range of values.

66. The method claim 60, wherein the biological sample is lung tissue and wherein the biomarker values derive from a histological or cytological analysis of said lung tissue.

67. The method of claim 60, wherein the biological sample is selected from the group consisting of whole blood, plasma, and serum.

68. The method of claim 60, wherein the biological sample is serum.

69. The method of claim 60, wherein the individual is a human.

70. The method of claim 60, wherein N = 3-25.

71. The method of claim 60, wherein N = 4-25.

72. The method of claim 60, wherein N = 5-25.

73. The method of claim 60, wherein the individual is a smoker.

74. The method of claim 60, wherein the individual has a pulmonary nodule.

75. The method of claim 60, wherein the lung cancer is non-small cell lung cancer.

76. The method of claim 60, wherein the information comprises prognosis, cancer classification, prediction of disease risk, or selection of treatment.

77. The method of claim 1, wherein at least one of said biomarkers selected from Table 20 is MMP-12.

Claims 129-146 (cancel)

78. The method of claim 17 wherein at least one of said biomarker(s) selected from Table 20 is MMP-12.

Claims

1. A method for diagnosing or determining the likelihood that an individual does or does not have lung cancer, the method comprising:

providing a biomarker panel comprising N of the biomarker proteins listed in Table 21, wherein 3-25 of the biomarker proteins are selected from Table 20;

measuring in a biological sample from the individual, biomarker values that each correspond to one of the N protein biomarkers in the panel; wherein said biomarker values provide an indication as to the likelihood that the individual does or does not having lung cancer, and wherein N = 3 - 86.

2. The method of claim 1, wherein at least one of said biomarkers selected from Table 20 is MMP-12.

3. The method of claim 1 or claim 2, wherein measuring the biomarker values comprises performing an *in vitro* assay.

4. The method of claim 3, wherein said *in vitro* assay comprises at least one capture reagent corresponding to each of said biomarkers, and further comprising selecting said at least one capture reagent from the group consisting of aptamers and antibodies.

5. The method of claim 3 or claim 4, wherein the *in vitro* assay is selected from the group consisting of an immunoassay, an aptamer-based assay and a histological or cytological assay.

6. The according to any of claims 1 to, wherein each biomarker value is evaluated based on a predetermined value or a predetermined range of values.

7. The method according to any of claims 1 to 6, wherein the biological sample is lung tissue and wherein the biomarker values derive from a histological or cytological analysis of said lung tissue.

8. The method according to any of claims 1 to 7, wherein the biological sample is selected from the group consisting of whole blood, plasma, and serum.

9. The method according to any of claims 1 to 7, wherein the biological sample is serum.

10. The method of claim 1, wherein the individual is a human.

11. The method according to any of claims 1 to 10, wherein N = 4 - 86.

12. The method according to any of claims 1 to 10, wherein N = 5 - 86.

13. The method according to any of claims 1 to 12, wherein the individual is a smoker.

14. The method according to any of claims 1 to 13, wherein the individual has a pulmonary nodule.

15. The method according to any of claims 1 to 14, wherein the lung cancer is non-small cell lung cancer.

16. A computer-implemented method for indicating a likelihood of lung cancer, the method comprising:

providing a biomarker panel comprising N of the biomarker proteins listed in Table 21, wherein 3-25 of the biomarker proteins is selected from Table 20;

retrieving on a computer biomarker information for an individual, wherein the biomarker information comprises biomarker values that each correspond to one of the N protein biomarkers in the panel, wherein N = 3 - 86;

performing with the computer a classification of each of said biomarker values; and

indicating a likelihood that said individual has lung cancer based upon a plurality of classifications.

17. The method of claim 16 wherein at least one of said biomarker(s) selected from Table 20 is MMP-12.

18. The method of claim 16 or claim 17, wherein indicating the likelihood that the individual has lung cancer comprises displaying the likelihood on a computer display.

19. A method for diagnosing or determining the likelihood that an individual does or does not have lung cancer, the method comprising:

providing a biomarker panel comprising N of the biomarker proteins listed in Table 20;

measuring in a biological sample from the individual, biomarker values that each correspond to one of the N protein biomarkers in the panel, wherein said biomarker values provide an indication as to the likelihood that the individual does or does not have lung cancer, and wherein N = 3 - 25.

20. The method of claim 19, wherein measuring the biomarker values comprises performing an *in vitro* assay.

21. The method of claim 21, wherein said *in vitro* assay comprises at least one capture reagent corresponding to each of said protein biomarkers, and further comprising selecting said at least one capture reagent from the group consisting of aptamers and antibodies.

22. The method according to any of claims 19 to 21, wherein the method is selected from the group consisting of an immunoassay, an aptamer-based assay, a histological assay or a cytological assay.

23. The method according to any of claims 19 to 22, wherein each biomarker value is evaluated based on a predetermined value or a predetermined range of values.

24. The method according to any of claims 19 to 23, wherein the biological sample is lung tissue and wherein the biomarker values derive from a histological or cytological analysis of said lung tissue.

25. The method according to any of claims 19 to 24, wherein the biological sample is selected from the group consisting of whole blood, plasma, and serum.

26. The method of claim 25, wherein the biological sample is serum.

27. The method according to any of claims 19 to 26, wherein N = 4 - 25.

28. The method according to any of claims 19 to 26, wherein N = 5 - 25.

29. The method according to any of claims 19 to 28, wherein the individual is a smoker.

30. The method according to any of claims 19 to 29, wherein the individual has a pulmonary nodule.

31. The method according to any of claims 19 to 30, wherein the lung cancer is non-small cell lung cancer.

32. A computer-implemented method for indicating a likelihood of lung cancer, the method comprising:

retrieving on a computer biomarker information for an individual, wherein the biomarker information comprises biomarker values that each correspond to one of at least N biomarkers selected from Table 20;

performing with the computer a classification of each of said biomarker values; and

indicating a likelihood that said individual has lung cancer based upon a plurality of classifications, and wherein N = 3 - 25.

33. The method of claim 32, wherein indicating the likelihood that the individual has lung cancer comprises displaying the likelihood on a computer display.

34. A method for determining information about lung cancer in an individual comprising:

providing a biomarker panel comprising N of the biomarker proteins listed in Table 21, wherein 3-25 of the biomarker proteins is selected from Table 20;

measuring in a biological sample from the individual, biomarker values that each correspond to one of the N protein biomarkers in the panel; wherein N = 3-86; and wherein said biomarker value provides information about the lung cancer in the individual.

35. The method of claim 34, wherein at least one of said biomarkers selected from Table 20 is MMP-12.

36. The method of claim 34 or claim 35, wherein measuring the biomarker values comprises performing an *in vitro* assay.

37. The method of claim 36, wherein said *in vitro* assay comprises at least one capture reagent corresponding to each of said biomarkers, and further comprising selecting said at least one capture reagent from the group consisting of aptamers and antibodies.

38. The method of claim 36, wherein the *in vitro* assay is selected from the group consisting of an immunoassay, an aptamer-based assay, a histological assay or a cytological assay.

39. The method according to any of claims 34 to 38, wherein each biomarker value is evaluated based on a predetermined value or a predetermined range of values.

40. The method according to any of claims 34 to 39, wherein the biological sample is lung tissue and wherein the biomarker values derive from a histological or cytological analysis of said lung tissue.

41. The method according to any of claims 34 to 40, wherein the biological sample is selected from the group consisting of whole blood, plasma, and serum.

42. The method of claim 34, wherein the biological sample is serum.

43. The method according to any of claims 34 to 42, wherein N = 4 - 86.

44. The method according to any of claims 34 to 43, wherein N = 5 - 86.

45. The method according to any of claims 34 to 44, wherein the individual is a smoker.

46. The method according to any of claims 34 to 45, wherein the individual has a pulmonary nodule.

47. The method according to any of claims 34 to 44, wherein the lung cancer is non-small cell lung cancer.

48. The method according to any of claims 34 to 47, wherein the information comprises prognosis, cancer classification, prediction of disease risk, or selection of treatment.

49. A method for determining information about lung cancer in an individual comprising:

providing a biomarker panel comprising N of the biomarker proteins listed in Table 20;

measuring in a biological sample from the individual, biomarker values that each correspond to one of the N biomarkers in the panel, wherein N = 3-25; and wherein said biomarker values provide information about the lung cancer in the individual.

50. The method of claim 49, wherein measuring the biomarker values comprises performing an *in vitro* assay.

51. The method of claim 50, wherein said *in vitro* assay comprises at least one capture reagent corresponding to each of said biomarkers, and further comprising selecting said at least one capture reagent from the group consisting of aptamers and antibodies.

52. The method according to any of claims 49 to 51, wherein the method is selected from the group consisting of an immunoassay, an aptamer-based assay and a histological or cytological assay.

53. The method according to any of claims 49 to 52, wherein each biomarker value is evaluated based on a predetermined value or a predetermined range of values.

54. The method according to any of claims 49 to 53, wherein the biological sample is lung tissue and wherein the biomarker values derive from a histological or cytological analysis of said lung tissue.

55. The method according to any of claims 49 to 54, wherein the biological sample is selected from the group consisting of whole blood, plasma, and serum.

56. The method of claim 49, wherein the biological sample is serum.

57. The method according to any of claims 49 to 56, wherein N = 4 - 25.

58. The method according to any of claims 49 to 57, wherein N = 5 - 25.

59. The method according to any of claims 49 to 58, wherein the individual is a smoker.

60. The method according to any of claims 49 to 59, wherein the individual has a pulmonary nodule.

61. The method according to any of claims 49 to 60, wherein the lung cancer is non-small cell lung cancer.

62. The method according to any of claims 49 to 61, wherein the information comprises prognosis, cancer classification, prediction of disease risk, or selection of treatment.