

CLAIMS

1. A method comprising:

a) measuring the levels of Sonic Hedgehog (SHH) protein and PGAM1, and optionally the level of at least one, two, three, four, five, six, seven, eight, nine, ten, eleven, or twelve ~~or thirteen~~ proteins selected from the group consisting of ~~PGAM1~~, PGAM2, C4A.C4B, PTPN4, TNFSF14, FAM49B, RBP7, IHH, DDX39B, S100A12, IL21R, TMEM9 and ADAM9 in a sample from a human subject; and

b) identifying the sample as an analysis sample or negative sample based on the level of SHH and PGAM1, and optionally the level of the one, two, three, four, five, six, seven, eight, nine, ten, eleven, or twelve ~~or thirteen~~ proteins;

wherein, the analysis sample is a sample that is used in one or more of the following: protein biomarker discovery analysis, protein expression level analysis, a diagnostic method or a prognostic method, and the negative sample is a sample that is not used as an analysis sample.

2. The method of claim 1, wherein the measuring is performed using mass spectrometry, an aptamer based assay and/or an antibody based assay.

3. The method of claim 1, wherein the sample is selected from blood, plasma, serum or urine.

4. The method of claim 1, wherein the method comprises measuring SHH and PGAM1; ~~SHH and PTPN4, SHH and TNFSF14, SHH and FAM49B, SHH and RBP7, SHH and IHH, SHH and DDX39B, SHH and S100A12, SHH and PGAM2, SHH and C4A.C4B, SHH and IL21R, SHH and TMEM9 or SHH and ADAM9.~~

5. The method of claim 1, wherein the method comprises measuring SHH, PGAM1 and TNFSF14; SHH, PGAM1 and RBP7; SHH, PGAM1 and PTPN4; SHH, PGAM1 and DDX39B; SHH, PGAM1 and FAM49B; SHH, PGAM1 and IHH; SHH, PGAM1 and S100A12; SHH, PGAM1 and ADAM9; ~~SHH, PTPN4 and RBP7; SHH,~~

~~PTPN4 and TNFSF14; SHH, PTPN4 and IHH; SHH, RBP7 and FAM49B; SHH, RBP7 AND IHH; SHH, FAM49B and TNFSF14; SHH, DDX39B and PTPN4; SHH, TNFSF14 and S100A12; SHH, IHH and RBP7; SHH, IHH and TNFSF14; SHH RBP7 and~~

~~TNFSF14; SHH, RBP7 and S100A12; SHH, RBP7 and DDX39B; SHH, TNFSF14 and DDX39B; SHH, S100A12 and DDX39B; SHH, FAM49B and S100A12; SHH, IHH and FAM49B; SHH, IHH and DDX39B; SHH, TNFSF14 and ADAM9; SHH, FAM49B and DDX39B; SHH, IHH and ADAM9; SHH, PGAM1 and C4A.C4B; SHH, PGAM2 and RBP7; SHH, PGAM1 and IL21R; SHH, PGAM2 and PTPN4; SHH, PGAM2 and ADAM9, SHH, PGAM2 and C4A.C4B; SHH, PGAM2 and IL21R; SHH, IHH and PGAM2; SHH, PGAM1 and PGAM2; SHH, TMEM9 and PGAM2 or SHH, TMEM9 and PGAM1.~~

6. The method of claim 1, wherein the method comprises measuring SHH and PGAM1, and at least two of the following proteins selected from RBP7, TNFSF14, PTPN4, DDX39B, FAM49B, S100A12, IHH, PGAM2, C4A.C4B, IL21R, TMEM9 and ADAM9.

7. The method of claim 1, wherein the method comprises measuring SHH and ~~IHH~~PGAM1, and at least ~~two~~three of the following proteins selected from RBP7, TNFSF14, PTPN4, DDX39B, FAM49B, S100A12, PGAM1, IHH, PGAM2, C4A.C4B, IL21R, TMEM9 and ADAM9.

~~8. The method of anyone of the preceding claims, wherein the protein levels are used to predict the length of time between the sample collection from the human subject and sample centrifugation and/or the length of time between sample centrifugation and sample decanting.~~

~~9. The method of claim 8, wherein the time between sample collection and sample centrifugation is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours, and/or the time between sample centrifugation and sample decanting is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours.~~

~~108.~~ A method comprising:

a) contacting a sample from a human subject with a set of capture reagents, wherein each capture reagent has affinity for a different protein of the set of proteins comprising Sonic Hedgehog (SHH) and PGAM1, and optionally at least one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve or thirteen proteins selected from the group consisting of PGAM1, PTPN4, TNFSF14, FAM49B, RBP7, IHH, DDX39B, S100A12, ADAM9, PGAM2, C4A.C4B, IL21R and TMEM9; and

b) measuring the level of each protein of the set of proteins based with the set of capture reagents.

~~119~~. The method of claim ~~108~~, wherein the set of capture reagents are selected from aptamers, antibodies and ~~a~~ combinations of aptamers and antibodies.

~~1210~~. The method of claim ~~108~~, wherein the sample is selected from blood, plasma, serum or urine.

~~1311~~. The method of claim ~~108~~, wherein the method comprises measuring SHH and PGAM1, ~~SHH and PTPN4, SHH and TNFSF14, SHH and FAM49B, SHH and RBP7, SHH and IHH, SHH and DDX39B, SHH and S100A12, SHH and PGAM2, SHH and C4A.C4B, SHH and IL21R, SHH and TMEM9 or SHH and ADAM9.~~

~~1412~~. The method of claim ~~108~~, wherein the method comprises measuring SHH, PGAM1 and TNFSF14; SHH, PGAM1 and RBB7; SHH, PGAM1 and PTPN4; SHH, PGAM1 and DDX39B; SHH, PGAM1 and FAM49B; SHH, PGAM1 and IHH; SHH, PGAM1 and S100A12; SHH, PGAM1 and ADAM9; ~~SHH, PTPN4 and RBP7; SHH, PTPN4 and TNFSF14; SHH, PTPN4 and IHH; SHH, RBP7 and FAM49B; SHH, RBP7 AND IHH; SHH, FAM49B and TNFSF14; SHH, DDX39B and PTPN4; SHH, TNFSF14 and S100A12; SHH, IHH and RBP7; SHH, IHH and TNFSF14; SHH RBP7 and TNFSF14; SHH, RBP7 and S100A12; SHH, RBP7 and DDX39B; SHH, TNFSF14 and DDX39B; SHH, S100A12 and DDX39B; SHH, FAM49B and S100A12; SHH, IHH and FAM49B; SHH, IHH and DDX39B; SHH, TNFSF14 and ADAM9; SHH FAM49B and DDX39B; SHH, IHH and ADAM9; SHH, PGAM1 and C4A.C4B; SHH, PGAM2 and RBP7; SHH, PGAM1 and IL21R; SHH, PGAM2 and PTPN4; SHH, PGAM2 and ADAM9, SHH, PGAM2 and C4A.C4B; SHH, PGAM2 and IL21 R; SHH, IHH and PGAM2; SHH, PGAM1 and PGAM2; SHH, TMEM9 and PGAM2 or SHH, TMEM9 and PGAM1.~~

~~1513~~. The method of claim ~~108~~, wherein the method comprises measuring SHH and PGAM1, and at least two of the following proteins selected from RBP7, TNFSF14, PTPN4, DDX39B, FAM49B, S100A12, IHH and ADAM9.

~~1614~~. The method of claim ~~108~~, wherein the method comprises measuring SHH and ~~IHH~~~~PGAM1~~, and at least ~~two~~~~three~~ of the following proteins selected from RBP7, TNFSF14, PTPN4, DDX39B, FAM49B, S100A12, ~~PGAM1~~~~IHH~~ and ADAM9.

~~1715~~. The method of any ~~one~~ of the preceding claims, wherein the protein levels are used to predict the length of time between the sample collection from the human subject and

sample centrifugation and/or the length of time between sample centrifugation and sample decanting.

~~1816.~~ The method of claim ~~1715~~, wherein the time between sample collection and sample centrifugation is ~~about~~ from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours, and/or the time between sample centrifugation and sample decanting is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours.

~~19. A method comprising:~~

~~a) measuring the level of at least three, four, five, six, seven or eight proteins selected from the group consisting of IHH, PTPN4, TNFSF14, FAM49B, RBP7, DDX39B, S100A12, and ADAM9 in a sample from a subject; and~~

~~b) identifying the sample as an analysis sample or negative sample based on the level of the three, four, five, six, seven or eight proteins;~~

~~wherein, the analysis sample is a sample that is used in one or more of the following: protein biomarker discovery analysis, protein expression level analysis, a diagnostic method or a prognostic method, and the negative sample is a sample that is not used as an analysis sample.~~

~~20. The method of claim 19, wherein the measuring is performed using mass spectrometry, an aptamer based assay and/or an antibody based assay.~~

~~21. The method of claim 19, wherein the sample is selected from blood, plasma, serum or urine.~~

~~22. The method of claim 19, wherein the method comprises measuring IHH, RB7 and PTPN4; IHH, RB7 and TNFSF14; IHH, RB7 and FAM49B; IHH, RBP7 and DDX39B; IHH, RBP7 and S100A12; IHH, RB7 and ADAM9; IHH, TNFSF14 and PTPN4; IHH, TNFSF14 and FAM49B; IHH, TNFSF14 and DDX39B; IHH, TNFSF14 and S100A12; IHH, TNFSF14 and ADAM9; IHH, FAM49 and PTPN4; IHH, FAM49 and TNFSF14; IHH, FAM49 and DDX39B; IHH, FAM49 and S100A12; IHH, ADAM9 and PTPN4 or IHH, FAM49 and ADAM9.~~

~~23. The method of anyone of the preceding claims, further comprising measuring SHH and/or PGAM1.~~

~~24. The method of anyone of the preceding claims, wherein the protein levels are used to predict the length of time between the sample collection from the human subject and sample centrifugation and/or the length of time between sample centrifugation and sample decanting.~~

~~25. The method of claim 19, wherein the time between sample collection and sample centrifugation is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours, and/or the time between sample centrifugation and sample decanting is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours.~~

~~26. A method comprising:~~

~~a) contacting a sample from a human subject with a set of capture reagents, wherein each capture reagent has affinity for a different protein of the set of proteins comprising three, four, five, six, seven or eight proteins selected from the group consisting of IHH, PTPN4, TNFSF14, FAM49B, RBP7, DDX39B, S100A12, and ADAM9 in a sample from a subject; and~~

~~b) measuring the level of each protein of the set of proteins with the set of capture reagents.~~

~~27. The method of claim 26, wherein the set of capture reagents are selected from aptamers, antibodies and a combinations of aptamers and antibodies.~~

~~28. The method of claim 26, wherein the sample is selected from blood, plasma, serum or urine.~~

~~29. The method of claim 26, wherein the method comprises measuring IHH, RB7 and PTPN4; IHH, RB7 and TNFSF14; IHH, RB7 and FAM49B; IHH, RBP7 and DDX39B; IHH, RBP7 and S100A12; IHH, RB7 and ADAM9; IHH, TNFSF14 and~~

~~PTPN4; IHH, TNFSF14 and FAM49B; IHH, TNFSF14 and DDX39B; IHH, TNFSF14 and S100A12; IHH, TNFSF14 and ADAM9; IHH, FAM49 and PTPN4; IHH, FAM49 and TNFSF14; I F I F I, FAM49 and DDX39B; I F I F I, FAM49 and S100A12; or I F I F I, FAM49 and ADAM9.~~

~~30. The method of anyone of the preceding claims, further comprising measuring SFHFI and/or PGAM1.~~

~~31. The method of anyone of the preceding claims, wherein the protein levels are used to predict the length of time between the sample collection from the human subject and sample centrifugation and/or the length of time between sample centrifugation and sample decanting.~~

~~32. The method of claim 26, wherein the time between sample collection and sample centrifugation is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours, and/or the time between sample centrifugation and sample decanting is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours.~~

~~33. A method comprising:~~

~~a) measuring the level of RB7, FAM49B, TNFSF14, ADAM9, PGAM1 and at least one protein selected from DDX39B and S100A12 in a sample from a human subject; and~~

~~b) identifying the sample as an analysis sample or negative sample based on the level of RB7, FAM49B, TNFSF14, ADAM9, PGAM1 and the at least one protein;~~

~~wherein, the analysis sample is a sample that is used in one or more of the following: protein biomarker discovery analysis, protein expression level analysis, a diagnostic method or a prognostic method, and the negative sample is a sample that is not used as an analysis sample.~~

~~34. The method of claim 33, wherein the measuring is performed using mass spectrometry, an aptamer based assay and/or an antibody based assay.~~

~~35. The method of claim 33, wherein the sample is selected from blood, plasma, serum or urine.~~

~~36. The method of claim 33, wherein the method comprises measuring RB7, FAM49B, TNFSF14, ADAM9, PGAM1 and S100A12; or RB7, FAM49B, TNFSF14, ADAM9, PGAM1 and DDX39B.~~

~~37. The method of anyone of the preceding claims, wherein the protein levels are used to predict the length of time between the sample collection from the human subject and sample centrifugation and/or the length of time between sample centrifugation and sample decanting.~~

~~38. The method of claim 33, wherein the time between sample collection and sample centrifugation is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours, and/or the time between sample centrifugation and sample decanting is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours.~~

~~39. A method comprising:~~

~~a) contacting a sample from a human subject with a set of capture reagents, wherein each capture reagent has affinity for a different protein of the set of proteins comprising RB7, FAM49B, TNFSF14, ADAM9, PGAM1 and at least one protein selected from DDX39B and S100A12; and~~

~~b) measuring the level of each protein of the set of proteins based with the set of capture reagents.~~

~~40. The method of claim 39, wherein the set of capture reagents are selected from aptamers, antibodies and a combinations of aptamers and antibodies.~~

~~41. The method of claim 39, wherein the sample is selected from blood, plasma, serum or urine.~~

~~42. The method of claim 39, wherein the method comprises measuring RB7, FAM49B, TNFSF14, ADAM9, PGAM1 and S100A12; or RB7, FAM49B, TNFSF14, ADAM9, PGAM1 and DDX39B.~~

~~43. The method of anyone of the preceding claims, wherein the protein levels are used to predict the length of time between the sample collection from the human subject and sample centrifugation and/or the length of time between sample centrifugation and sample decanting.~~

~~44. The method of claim 39, wherein the time between sample collection and sample centrifugation is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours, and/or the time between sample centrifugation and sample decanting is about from 0 hours to 0.5 hours; 0.5 hours to 1.5 hours; 1.5 hours to 3 hours; 3 hours to 9 hours; 9 hours to 24 hours or greater than 24 hours.~~

~~45~~17. The method of any one of ~~the preceding claims~~claims 8-16, wherein the protein level or levels are used to assign a quality score to the sample, wherein the quality score is then used to determine whether the sample is an analysis sample or a non-analysis sample.

~~46~~18. The method of any one of the preceding claims, wherein the protein level or levels are used to assign a quality score to the sample, wherein the quality score is then used to determine if the sample is used for further analysis of additional proteins in the sample.