

We claim:

1. A method for identifying a subject having esophageal squamous cell carcinoma (ESCC) comprising the steps of:

- (a) extracting genomic DNA from a sample obtained from the subject;
- (b) performing a conversion reaction on the genomic DNA *in vitro* to convert unmethylated cytosine to uracil by deamination; and
- (c) detecting nucleic acid methylation of one or more genes in the converted genomic DNA, wherein detecting nucleic acid methylation identifies the subject as having ESCC, wherein the one or more genes comprise:

1) zinc finger protein 542 (ZNF542) and zinc finger protein ZNF132 (ZNF132) and

2) one or more of cg20655070, tachykinin-1 (TAC1) and solute carrier family 35 member F1 (SLC35F1),

wherein the detecting identifies the subject for administration of an ESCC therapy.

2. The method of claim 1, wherein the detecting step (c) comprises a polymerase chain reaction (PCR)-based technique.

3. The method of claim 2, wherein the PCR-based technique is quantitative methylation specific PCR (QMSP).

4. The method of claim 1, wherein steps (a) and (b) are performed using methylation on beads technique.

5. The method of claim 1, wherein the sample is a cell sample.

6. The method of claim 5, wherein the cell sample is retrieved using a swallowable sponge device.

7. The method of claim 1, wherein an endoscopy is to be performed on the subject in step (d).

8. A method of diagnosing a subject diagnosed as having cancer comprising the steps of:

- (a) extracting genomic DNA from a sample obtained from the subject;

- (b) performing a conversion reaction on the genomic DNA in vitro to convert unmethylated cytosine to uracil by deamination; and
 - (c) detecting nucleic acid methylation of 1) zinc finger protein 542 (ZNF542) and zinc finger protein ZNF132 (ZNF132) and 2) one or more of cg20655070, tachykinin-1 (TAC1) and solute carrier family 35 member F1 (SLC35F1) in the converted genomic DNA, thereby diagnosing the subject as having cancer and identifying the subject for treatment with a cancer therapeutic.
9. The method of claim 8, wherein an endoscopy is to be performed on the subject in step (d).
10. The method of claim 1, wherein an ESCC therapy comprises demethylating agents, surgery, radiation, chemotherapy, chemoradiotherapy, gene therapy or combinations thereof.
11. The method of claim 1 wherein the one or more genes comprise two or more of cg20655070, tachykinin-1 (TAC1) and solute carrier family 35 member F1 (SLC35F1).
12. The method of claim 1 wherein the one or more genes comprise cg20655070, tachykinin-1 (TAC1) and solute carrier family 35 member F1 (SLC35F1).
13. The method of claim 8 wherein nucleic acid methylation is detected in two or more of cg20655070, tachykinin-1 (TAC1) and solute carrier family 35 member F1 (SLC35F1).
14. The method of claim 8 wherein nucleic acid methylation is detected cg20655070, tachykinin-1 (TAC1) and solute carrier family 35 member F1 (SLC35F1).