CLAIMS

1. A method of using a nucleosome-protein adduct as a biomarker in a blood, serum or plasma sample for the diagnosis of cancer, wherein the protein adducted to the nucleosome comprises a transcription factor or a chromatin modifying enzyme.

2. The method as defined in claim 1, wherein the protein adducted to the nucleosome is a transcription factor.

3. The method as defined in claim 1 or claim 2, wherein the transcription factor is a nuclear hormone receptor.

4. The method as defined in claim 1, wherein the chromatin modifying enzyme is a histone acetylation, deacetylation, methylation, demethylation phosphorylation, dephosphorylation ubiquitination, deubiquitination sumoylation, desumoylation or DNA methyltransferase enzyme.

5. The method as defined in claim 1, wherein the chromatin modifying enzyme is EZH2.

6. The method as defined in claim 3, wherein the nuclear hormone receptor is the estrogen receptor, androgen receptor, progesterone receptor, thyroid hormone receptor, glucocorticoid receptor or retinoic acid receptor.

7. The method as defined in claim 3, wherein the nuclear hormone receptor is additionally bound to a hormone which is selected from a thyroid hormone, a glucocorticoid hormone or a steroid hormone including an estrogen, an androgen, a progestogen, a corticosteroid or retinoic acid.

8. A method for detecting the presence of a nucleosome-protein adduct in a ~~body fluid~~blood, serum or plasma sample which comprises the steps of:

(i) contacting the ~~body fluid~~ sample with a first binding agent which binds to nucleosomes or a component thereof;

(ii) contacting the nucleosomes or ~~body fluid~~ sample with a second binding agent which binds to a protein adducted to a nucleosome;

(iii) detecting or quantifying the binding of said second binding agent to the adducted protein in the ~~body fluid~~ sample; and

(iv) using the presence or degree of such binding as a measure of the presence of nucleosome-protein adducts in the ~~body fluid~~ sample;

wherein the protein adducted to the nucleosome comprises a transcription factor or a chromatin modifying enzyme.

9. A method for detecting the presence of a nucleosome-protein adduct in a ~~body fluid~~ blood, serum or plasma sample which comprises the steps of:

(i) contacting the ~~body fluid~~ sample with a first binding agent which binds to a protein adducted to a nucleosome;

(ii) contacting the nucleosomes or ~~body fluid~~ sample with a second binding agent which binds to nucleosomes or a component thereof;

(iii) detecting or quantifying the binding of said second binding agent to nucleosomes or a component thereof in the ~~body fluid~~ sample; and

(iv) using the presence or degree of such binding as a measure of the presence of nucleosome-protein adducts in the ~~body fluid~~ sample;

wherein the protein adducted to the nucleosome comprises a transcription factor or a chromatin modifying enzyme.

10. The method as defined in claim 8 or claim 9, wherein the protein adducted to the nucleosome is a transcription factor.

11. The method as defined in claim 10, wherein the transcription factor is a nuclear hormone receptor

12. The method as defined in claim 8 or claim 9, wherein the chromatin modifying enzyme is EZH2.

13. The method as defined in claim 11, wherein the nuclear hormone receptor is an estrogen receptor, androgen receptor, progesterone receptor, thyroid hormone receptor or retinoic acid receptor.

14. The method as defined in claim 11, wherein the nuclear hormone receptor is additionally bound to a hormone which is selected from a thyroid hormone, a glucocorticoid hormone or a steroid hormone including an estrogen, an androgen, a progestogen or retinoic acid.

15. The method as defined in claim 8 or claim 9, wherein the binding agent which binds to the nucleosome or nucleosome component is directed to bind to a particular epigenetic signal structure such that only a particular subset of nucleosome adducts containing said epigenetic signal structure are detected.

16. The method as defined in claim 8 or claim 9, wherein the binding agent is an antibody, an antibody fragment or an aptamer.

~~17. The method as defined in claim 8 or claim 9, wherein the body fluid sample is blood or serum or plasma.~~

17~~8~~. An *in vitro* method of providing information for use in detecting or diagnosing cancer in an animal or a human subject which comprises the steps of:

(i) detecting or measuring a nucleosome-protein adduct in a ~~body fluid~~ blood, serum or plasma sample obtained from the subject as defined in either of the methods of claim 8 or claim 9; and

(ii) using the nucleosome-protein adduct level detected to identify cancer in the subject.

18~~9~~. An *in vitro* method of providing information for use in assessment of an animal or a human subject with cancer for suitability for a medical treatment which comprises the steps of:

(i) detecting or measuring a nucleosome-protein adduct in a ~~body fluid~~ blood, serum or plasma sample obtained from the subject as defined in either of the methods of claim 8 or claim 9; and

(ii) using the nucleosome-protein adduct level detected as a parameter for the selection of a suitable treatment for the subject.

~~20~~19. An *in vitro* method for monitoring a treatment of an animal or a human subject with cancer which comprises the steps of:

(i) detecting or measuring a nucleosome-protein adduct in a ~~body fluid~~ blood, serum or plasma sample obtained from the subject as defined in either of the methods of claim 8 or claim 9;

(ii) repeating the detection or measurement of a nucleosome-protein adduct in a ~~body fluid~~ blood, serum or plasma of the subject on one or more occasions;

(iii) using any changes in the nucleosome adduct level detected as a parameter for any changes in the condition of the subject.

201. A method as defined in claim 178, wherein the nucleosome-protein adduct is detected or measured as one of a panel of measurements.

212. A method as defined in claim 189, wherein the nucleosome-protein adduct is detected or measured as one of a panel of measurements.

223. A method as defined in claim 2019, wherein the nucleosome-protein adduct is detected or measured as one of a panel of measurements.