

CLAIMS

1. Use of a H3.1 histone isoform of a cell free nucleosome as a biomarker in a plasma sample, for the diagnosis or detection of a vascular or haematological cancer.
2. The use as defined in claim 1, wherein the cell free nucleosome is a mononucleosome or oligonucleosome.
3. The use as defined in claim 1 or claim 2, wherein the haematological cancer is selected from leukaemia, lymphoma or myeloma.
4. The use as defined in claim 3, wherein the leukaemia is selected from Acute Lymphocytic Leukaemia (ALL) and Acute Myeloid Leukaemia (AML).
5. The use as defined in claim 4, wherein the lymphoma is Non-Hodgkin Lymphoma (NHL).
6. The use as defined in any one of claims 1 to 5, wherein the vascular cancer is selected from angiosarcoma or hemangiosarcoma.
7. A method for diagnosing or detecting a vascular or haematological cancer which comprises the steps of:
 - (i) contacting a plasma sample obtained from the subject with a binding agent to detect or measure cell free nucleosomes containing histone isoform H3.1; and
 - (ii) using the level of cell free nucleosomes containing histone isoform H3.1 detected to diagnose the subject with the vascular or haematological cancer.
8. A method for determining the prognosis of a subject with a vascular or haematological cancer, which comprises the steps of:
 - (i) contacting a plasma sample obtained from the subject with a binding agent to detect or measure cell free nucleosomes containing histone isoform H3.1; and
 - (ii) using the level of cell free nucleosomes containing histone isoform H3.1 detected as indicative of the prognosis of said vascular or haematological cancer.
9. A method for monitoring the efficacy of a therapy in a subject having, suspected of having, or being predisposed to a vascular or haematological cancer, which comprises the steps of:

- (i) contacting a plasma sample obtained from the subject with a binding agent to detect or measure cell free nucleosomes containing histone isoform H3.1; and
- (ii) comparing the level of cell free nucleosomes containing histone isoform H3.1, detected with an earlier plasma sample taken from said subject to determine the efficacy of said therapy.

10. The method as defined in any one of claims 7 to 9, wherein said detection or measurement comprises an immunoassay, immunochemical, mass spectroscopy, chromatographic, chromatin immunoprecipitation or biosensor method.

11. The method as defined in any one of claims 7 to 10, wherein said detection or measurement comprises a 2-site immunoassay employing a labelled anti-nucleosome detection binding agent in combination with an immobilized anti-histone H3.1 binding agent.

12. The method as defined in any one of claims 7 to 11, wherein the subject is a human or an animal subject.

13. The method as defined in any one of claims 7 to 12, wherein the subject is suspected of relapse to a vascular or haematological cancer.

14. The method as defined in any one of claims 7 to 13, wherein the subject has a high level of leucocytosis/a high white blood cell count.

15. The method as defined in any one of claims 7 to 14, additionally comprising comparing the level of said cell free nucleosomes containing histone isoform H3.1 in said plasma sample with one or more controls.

16. The method as defined in claim 15, wherein the control is a healthy subject.

17. The method as defined in claim 16, wherein the control is a subject with a cancer which is not a vascular or haematological cancer.

18. The method as defined in claim 17, wherein the control is a subject with a high level of leucocytosis.

19. The method as defined in any one of claims 7 to 18, wherein the level of cell free nucleosomes containing histone isoform H3.1 is elevated compared to the control.

20. The method as defined in any one of claims 7 to 19, wherein the level of cell free nucleosomes containing histone isoform H3.1 is detected or measured as one of a panel of measurements.

21. The method as defined in claim 20, wherein the panel comprises one or more interleukins.

22. The method as defined in claim 21, wherein the one or more interleukins selected from the group consisting of: IL-6, IL-10 and IL-1 β .