

CLAIMS

1. Use 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 biomarker is the level of cell free nucleosomes and/or an epigenetic feature of a cell free nucleosome.
4. The use as defined in claim 3, wherein the epigenetic feature of the cell free nucleosome is a histone isoform, such as a histone isoform of a core nucleosome, in particular a histone H3 isoform.
5. The use as defined in claim 4, wherein the histone isoform is H3.1.
6. The use as defined in claim 3, wherein the epigenetic feature of the cell free nucleosome is a histone post translational modification (PTM), such as a histone PTM of a core nucleosome, in particular a histone H3 PTM.
7. The use as defined in claim 6, wherein the histone PTM is selected from citrullination (such as H3 citrulline) or methylation (such as H3K27me3).
8. The use as defined in any one of claims 1 to 7, wherein the haematological cancer is selected from leukaemia or lymphoma.
9. The use as defined in claim 8, wherein the leukaemia is selected from Acute Lymphocytic Leukaemia (ALL) and Acute Myeloid Leukaemia (AML).
10. The use as defined in claim 8, wherein the lymphoma is Non-Hodgkin Lymphoma (NHL).
11. The use as defined in any one of claims 1 to 7, wherein the vascular cancer is selected from angiosarcoma or hemangiosarcoma.

12. 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; and
 - (ii) using the level of cell free nucleosomes detected to diagnose the subject with the vascular or haematological cancer.
13. 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; and
 - (ii) using the level of cell free nucleosomes detected as indicative of the prognosis of said vascular or haematological cancer.
14. 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; and
 - (ii) comparing the level of cell free nucleosomes detected with an earlier plasma sample taken from said subject to determine the efficacy of said therapy.
15. The method as defined in any one of claims 12 to 14, wherein said detection or measurement comprises an immunoassay, immunochemical, mass spectroscopy, chromatographic, chromatin immunoprecipitation or biosensor method.
16. The method as defined in any one of claims 12 to 15, wherein the subject is a human or an animal subject.
17. The method as defined in any one of claims 12 to 16, wherein the subject is suspected of relapse to a vascular or haematological cancer.
18. The method as defined in any one of claims 12 to 17, wherein the subject has a high level of leucocytosis/a high white blood cell count.

19. The method as defined in any one of claims 12 to 18, additionally comprising comparing the level of said cell free nucleosomes in said plasma sample with one or more controls.
20. The method as defined in claim 19, wherein the control is a healthy subject.
21. The method as defined in claim 19, wherein the control is a subject with a cancer which is not a vascular or haematological cancer.
22. The method as defined in claim 19, wherein the control is a subject with a high level of leucocytosis.
23. The method as defined in any one of claims 12 to 22, wherein the level of cell free nucleosomes is elevated compared to the control.
24. The method as defined in any one of claims 12 to 23, wherein the level of cell free nucleosomes is detected or measured as one of a panel of measurements.
25. The method as defined in claim 24, wherein the panel comprises one or more interleukins.
26. The method as defined in claim 25, wherein the one or more interleukins selected from the group consisting of: IL-6, IL-10 and IL-1 β .