CLAIMS

1. Use of a DNA base associated with a cell free nucleosome as a biomarker in a body fluid sample for the diagnosis of cancer, cardiomyopathy, systemic lupus erythematosus, colitis, chronic obstructive pulmonary disorder, Crohn's disease and rheumatoid arthritis, wherein the DNA base is selected from: 5-methylcytosine or 5-hydroxymethylcytosine.

2. The use as defined in claim 1 wherein the cell free nucleosome is a mononucleosome or an oligonucleosome.

3. The use as defined in claim 1 or claim 2, wherein the DNA base associated with a cell free nucleosome is measured in a blood sample.

4. The use as defined in any one of claims 1 to 3, wherein the cancer is a cancer of the bladder, breast, colon, cervix, esophagus, kidney, large intestine, lung, oral cavity, ovary, pancreas, prostate, rectum, skin or stomach.

5. A method for detecting the presence of a DNA base associated with a cell free nucleosome in a body fluid sample which comprises the steps of:

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

(ii) contacting the nucleosomes bound in step (i) with a second binding agent which binds to the DNA base;

(iii) detecting or quantifying the binding of said second binding agent to the DNA base in the body fluid sample; and

(iv) using the presence or degree of such binding as a measure of the presence of nucleosomes containing the DNA base in the body fluid sample,

wherein the DNA base is selected from: 5-methylcytosine or 5-hydroxymethylcytosine.

6. A method for detecting the presence of a DNA base associated with a cell free nucleosome in a body fluid sample which comprises the steps of:

(i) contacting the body fluid sample with a first binding agent which binds to the DNA base;

(ii) contacting the DNA base bound in step (i) with a second binding agent which binds to nucleosomes;

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

(iv) using the presence or degree of such binding as a measure of the presence of nucleosomes containing the DNA base in the body fluid sample,

wherein the DNA base is selected from: 5-methylcytosine or 5-hydroxymethylcytosine.

7. A method as defined in claim 5 or claim 6 wherein the binding agent is an antibody.

8. A method according to any one of claims 5 to 7 wherein the body fluid sample is blood or serum or plasma.

9. An *in vitro* method for detecting or diagnosing a disease status in an animal or a human subject which comprises the steps of:

(i) detecting or measuring a DNA base associated with a cell free nucleosome in a body fluid obtained from a subject; and

(ii) using the nucleosome associated DNA base level detected to identify the disease status of the subject,

wherein the DNA base is selected from: 5-methylcytosine or 5-hydroxymethylcytosine,

wherein the disease is selected from: cancer, cardiomyopathy, systemic lupus erythematosus, colitis, chronic obstructive pulmonary disorder, Crohn’s disease and rheumatoid arthritis.