

[0006] Cellular myristoylated proteins have diverse biological functions in signal transduction and oncogenesis. Modification of proteins by myristoylation is required for the subcellular targeting, protein conformation and biological activity of many important proteins in eukaryotic cells, including those required for signal
5 transduction and regulatory functions important in cell growth. Tyrosine kinases of the Src family (proto-oncogenes) are among the most extensively studied myristoylated proteins.

[0007] Myristoylation of proteins is catalyzed by *N*-myristoyltransferase (NMT). NMT is responsible for this activity in eukaryotic cells and works by
10 modifying its polypeptide substrate after the removal of the initiator methionine residue by methionyl aminopeptidase. This modification occurs primarily as a cotranslational process, although myristoylation can also occur post-translationally after proteolytic cleavage of proteins, typically during apoptosis. Two isozymes of the mammalian NMT enzymes have been cloned and are designated NMT1 and NMT2.
15 NMTs play a pro-survival role in cells. The two NMTs are present in all normal cells.

[0008] There remains a need for compounds, composition and method for the treatment of cancer.

[0009] This background information is provided for the purpose of making known information believed by the applicant to be of possible relevance to the present
20 invention. No admission is necessarily intended, nor should it be construed, that any of the preceding information constitutes prior art against the present invention.

SUMMARY OF THE DISCLOSURE

[0010] In accordance with one example of the present disclosure there is provided compounds and compositions for the treatment of a subject with cancer.
25 There are also provided methods for identifying subject with cancer that are suitable for treatment with the compounds, composition and methods are described herein.

[0011] In accordance with one example, there is provided a method of treating a subject having a cancer deficient in NMT2, comprising: administering to said subject an NMT inhibitor.

30 [0012] In a specific example, said NMT inhibitor comprises an NMT1 inhibitor.

- [0013] In a specific example, said NMT1 inhibitor comprises a small molecule, an antibody, a peptide fragment, a nucleic acid, or combinations thereof.
- [0014] In a specific example, said small molecule comprises Tris-DBA, HMA, or DDD85646, DDD86481, or a derivative thereof.
- 5 [0015] In a specific example, said antibody is a monoclonal antibody or a polyclonal antibody.
- [0016] In a specific example, said nucleic acid comprises a dsRNA molecule, a RNAi molecule, a miRNA molecule, a ribozyme, a shRNA molecule, or a siRNA molecule.
- 10 [0017] In a specific example, said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia,
- 15 Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter
- 20 and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.
- [0018] In a specific example, said subject is a human subject.
- 25 [0019] In accordance with another example, there is provided a method for treating a subject with a cancer or suspect of having a cancer, comprising: requesting a test providing the results of an analysis to determine whether a sample from the subject expresses NMT2, and administering an NMT1 inhibitor to the subject if the sample is deficient in NMT2.
- 30 [0020] In accordance with another example, there is provided a method, comprising: obtaining a sample from a subject with a cancer or suspected of having a cancer; processing said sample; performing a binding assay comprising contacting the

processed sample with an antibody to NMT2 to form a complex between the antibody and NMT2 protein present in the processed sample, said binding assay generating at least one assay result indicative of said complex; wherein administering an NMT1 inhibitor to said subject is indicated when the amount of NMT2 protein said sample is
5 low or absent, optionally as compared to a control.

[0021] In accordance with another example, there is provided a method, comprising: obtaining a sample from a subject having a cancer or suspect of having a cancer; processing said sample; performing a binding assay comprising contacting the processed sample with an antibody to NMT2 protein to form a complex between the
10 antibody and NMT2 protein present in the processed sample, said binding assay generating at least one assay result indicative of said complex; and administering an NMT1 inhibitor to said subject when the amount to NMT2 protein in said sample is low or absent, optionally as compared to a control.

[0021a] In one aspect, the present disclosure refers to use of a composition comprising an NMT1 inhibitor and doxorubicin in the manufacture of a medicament for treating a subject with a cancer or suspected of having a cancer identified by a method, comprising: processing a sample from the subject with a cancer or suspected
15 of having a cancer; and performing a binding assay comprising contacting the processed sample with an antibody to NMT2 protein to form a complex between the antibody and NMT2 protein present in the processed sample, said binding assay generating at least one assay result indicative of said complex; wherein the composition is to be administered to said subject when the amount of NMT2 protein in said sample has been determined as absent, or low, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.

[0022] In a specific example, said analysis to determine whether said sample from the subject expresses NMT2, comprises performing a binding assay comprising contacting the processed sample with an antibody to NMT2 to form a complex
25 between the antibody and NMT2 present in the processed sample, said binding assay generating at least one assay result indicative of said complex.

[0023] In a specific example, said binding assay comprises fluorescence activated cell sorting, enzyme linked immunosorbent assay, immunohistochemistry, quantitative immunohistochemistry, fluorescence resonance energy transfer, Forster
30 resonance energy transfer, biomolecular fluorescence complementation, mass spectrometry, immunoblot assay or coimmunoprecipitation assay.

[0024] In a specific example, instrumentation having a detector set to detect the complex formed between said antibody and said NMT2 in said sample is used to determine an amount of complex in said sample.

[0025] In a specific example, said instrumentation is a spectrophotometer, spectrofluorometer, optical device, or electrochemical device.

[0026] In a specific example, said wherein said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B
40 cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell

lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.

[0027] In a specific example, said subject is human.

[0028] In another example, there is provided a method, comprising: obtaining a sample from a subject having a cancer or suspected of having a cancer; processing said sample; performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present in the sample, said binding assay generating at least one assay result indicative of said complex; wherein administering an NMT1 inhibitor to said subject is indicated when the amount to NMT2 nucleic acid in said sample is low or absent, optionally as compared to a control.

[0028a] In one aspect, the present disclosure refers to use of a composition comprising an NMT1 inhibitor and doxorubicin in the manufacture of a medicament for treating a subject having a cancer or suspected of having a cancer identified by a method, comprising: processing a sample from the subject having a cancer or suspected of having a cancer; and performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present in the sample, said binding assay generating at least one assay result indicative of said complex; wherein the composition is to be administered to said subject when the amount to NMT2 nucleic acid in said sample has been determined as absent, or low, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.

[0029] In another example, there is provided a method, comprising: obtaining a sample from a subject having a cancer or suspected of having a cancer; processing said sample; performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present in the sample, said binding assay generating at least one assay result indicative of said complex; and administering an NMT1 inhibitor to said subject when the amount to NMT2 nucleic acid in said sample is low or absent, optionally as compared to a control.

[0030] In a specific example, said analysis to determine whether said sample from the subject expresses NMT2, comprises performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present

[0038] In another example, there is provided a method, comprising: obtaining a sample from a subject having a cancer or suspected of having a cancer; processing said sample; performing a binding assay comprising contacting the processed sample with a an antibody to which binds to myristoylated protein, or azido-biotin labeled myristoylated proteins, within the sample to form a complex between the detectable label and myristoylated protein present in the sample, said binding assay generating at least one myristoylation profile indicative of said complex; wherein administering an NMT1 inhibitor to said subject is indicated when said myristoylation profile indicates said cancer is deficient in NMT2, optionally as compared to a control

10 [0038a] In one aspect, the present disclosure refers to use of a composition comprising an NMT1 inhibitor and doxorubicin in the manufacture of a medicament for treating a subject having a cancer or suspected of having a cancer identified by a method, comprising: processing a sample from the subject having a cancer or suspected of having a cancer; and performing a binding assay comprising contacting
15 the processed sample with a an antibody to which binds to myristoylated protein, or azido-biotin labeled myristoylated proteins, within the sample to form a complex between the detectable label and myristoylated protein present in the sample, said binding assay generating at least one myristoylation profile indicative of said complex; wherein the composition is to be administered to said subject when said
20 myristoylation profile has been determined as deficient in NMT2 defined by inhibition, reduction or elimination of NMT2 synthesis, levels, activity, or function as well as inhibition of the induction or stimulation of synthesis, levels, activity or function of the protein NMT2, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.

25 [0039] In another example, there is provided a method, comprising: obtaining a sample from a subject having a cancer or suspected of having a cancer; processing said sample; performing a binding assay comprising contacting the processed sample with a an antibody to which binds to myristoylated protein, or azido-biotin labeled myristoylated proteins, within the sample to form a complex between the detectable
30 label and myristoylated protein present in the sample, said binding assay generating at least one myristoylation profile indicative of said

lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed

5 Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast

10 carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.

[0045] In a specific example, said subject is human.

[0046] In another example there is provided a use of an NMT inhibitor for

15 treating a subject having a cancer deficient in NMT2.

[0047] In a specific example, said NMT inhibitor comprises an NMT1 inhibitor.

[0048] In a specific example, said NMT1 inhibitor comprises a small molecule, an antibody, a peptide fragment, a nucleic acid, or combinations thereof.

20 [0049] In a specific example, said small molecule comprises Tris-DBA, HMA, or DDD85646, DDD86481, or a derivative thereof.

[0050] In a specific example, said small molecule comprises DDD86481.

[0051] In a specific example, said antibody is a monoclonal antibody or a polyclonal antibody.

25 [0052] In a specific example, said nucleic acid comprises a dsRNA molecule, a RNAi molecule, a miRNA molecule, a ribozyme, a shRNA molecule, or a siRNA molecule.

[0053] In a specific example, said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-

30 CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed

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[0054] In a specific example, said subject is a human subject.

10 [0055] In another example, there is provided a use of an NMT1 inhibitor for treating a subject with a cancer, or suspected of having a cancer, wherein said an NMT1 inhibitor is indicated of use when the amount of NMT2 protein in a sample from said subject is low or absent, optionally as compared to a control, wherein a binding assay comprising contacting a processed sample from said subject with an antibody to NMT2 to form a complex between the antibody and NMT2 protein present in the processed sample generates at least one assay result indicative of said complex; wherein said assay result is indicative of said amount of NMT2 protein in said sample.

20 [0056] In a specific example, said analysis to determine whether said sample from the subject expresses NMT2, comprises performing a binding assay comprising contacting the processed sample with an antibody to NMT2 to form a complex between the antibody and NMT2 present in the processed sample, said binding assay generating at least one assay result indicative of said complex.

25 [0057] In a specific example, said binding assay comprises fluorescence activated cell sorting, enzyme linked immunosorbent assay, immunohistochemistry, quantitative immunohistochemistry, fluorescence resonance energy transfer, Forster resonance energy transfer, biomolecular fluorescence complementation, mass spectrometry, immunoblot assay or coimmunoprecipitation assay.

30 [0058] In a specific example, instrumentation having a detector set to detect the complex formed between said antibody and said NMT2 in said sample is used to determine an amount of complex in said sample.

[0059] In a specific example, said instrumentation is a spectrophotometer, spectrofluorometer, optical device, or electrochemical device.

[0060] In a specific example, said wherein said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.

[0061] In a specific example, said subject is human.

[0062] In another example, there is provided a use of an NMT1 inhibitor for treating a subject with a cancer, or suspected of having a cancer, wherein said an NMT1 inhibitor is indicated of use when the amount of NMT2 nucleic acid in a sample from said subject is low or absent, optionally as compared to a control, wherein a binding assay comprising contacting a processed sample from said subject with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid in said sample, said binding assay generating at least one assay result indicative of said complex.

[0063] In a specific example, said analysis to determine whether said sample from the subject expresses NMT2, comprises performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present in the sample, said binding assay generating at least one assay result indicative of said complex.

subject indicates said cancer is deficient in NMT2, optionally as compared to a control, wherein performing a binding assay comprising contacting a processed sample with an antibody which binds to myristoylated protein, or azido-biotin labeled myristoylated proteins, within the sample to form a complex between the detectable
5 label and myristoylated protein present in the sample, said binding assay generating at least one myristoylation profile indicative of said complex.

[0072] In a specific example, said processing comprises treating said sample with alyknyl-myristate and desthiobiotin azido-PEG biotin .

[0073] In a specific example, said binding assay comprises fluorescence
10 activated cell sorting, enzyme linked immunosorbent assay, immunohistochemistry, quantitative immunohistochemistry, fluorescence resonance energy transfer, Forster resonance energy transfer, biomolecular fluorescence complementation, mass spectrometry, immunoblot assay or coimmunoprecipitation assay.

[0074] In a specific example, instrumentation having a detector set to detect
15 the complex formed between said antibody and said NMT2 in said sample is used to determine an amount of complex in said sample.

[0075] In a specific example, said instrumentation is a spectrophotometer, spectrofluorometer, optical device, or electrochemical device.

[0076] In a specific example, said wherein said cancer is lymphoma, B cell
20 lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed
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30 carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.

[0077] In a specific example, said subject is human.

[0078] In another example there is provided a method for identifying a subject suitable for treatment with an NMT1 inhibitor, comprising: obtaining a sample from said subject with a cancer or suspected of having a cancer; processing said sample; performing a binding assay comprising contacting the processed sample with an antibody to NMT2 to form a complex between the antibody and NMT2 protein present in the processed sample, said binding assay generating at least one assay result indicative of said complex; wherein treatment with said NMT1 inhibitor is indicated when the amount of NMT2 protein said sample is low or absent, optionally as compared to a control.

[0078a] In one aspect, the present disclosure refers to a method for identifying a subject suitable for treatment with a composition comprising NMT1 inhibitor and doxorubicin, comprising: processing a sample from said subject with a cancer or suspected of having a cancer; and performing a binding assay comprising contacting the processed sample with an antibody to NMT2 to form a complex between the antibody and NMT2 protein present in the processed sample, said binding assay generating at least one assay result indicative of said complex; wherein the subject is identified as suitable for treatment with said composition when the amount of NMT2 protein in said sample is absent or low, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.

[0079] In a specific example said analysis to determine whether said sample from the subject expresses NMT2, comprises performing a binding assay comprising contacting the processed sample with an antibody to NMT2 to form a complex between the antibody and NMT2 present in the processed sample, said binding assay generating at least one assay result indicative of said complex.

[0080] In a specific example, said binding assay comprises fluorescence activated cell sorting, enzyme linked immunosorbent assay, immunohistochemistry, quantitative immunohistochemistry, fluorescence resonance energy transfer, Forster resonance energy transfer, biomolecular fluorescence complementation, mass spectrometry, immunoblot assay or coimmunoprecipitation assay.

[0081] In a specific example, instrumentation having a detector set to detect the complex formed between said antibody and said NMT2 in said sample is used to determine an amount of complex in said sample.

[0082] In a specific example, said instrumentation is a spectrophotometer, spectrofluorometer, optical device, or electrochemical device.

[0083] In a specific example, said wherein said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus

Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.

[0084] In a specific example, said subject is human.

[0085] In another example there is provided, a method for identifying a subject suitable for treatment with an NMT1 inhibitor, comprising: obtaining a sample from a subject having a cancer or suspected of having a cancer; processing said sample; performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present in the sample, said binding assay generating at least one assay result indicative of said complex; wherein administering an NMT1 inhibitor to said subject is indicated when the amount to NMT2 nucleic acid in said sample is low or absent, optionally as compared to a control.

[0085a] In one aspect, the present disclosure refers to a method for identifying a subject suitable for treatment with a composition comprising an NMT1 inhibitor and doxorubicin, comprising: processing a sample from a subject having a cancer or suspected of having a cancer; and performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present in the sample, said binding assay generating at least one assay result indicative of said complex; wherein the subject is identified as suitable for administration of the composition when the amount to NMT2 nucleic acid in said sample is low or absent, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.

[0086] In a specific example, said analysis to determine whether said sample from the subject expresses NMT2, comprises performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present in the sample, said binding assay generating at least one assay result indicative of said complex.

[0087] In a specific example, said binding assay comprises, a hybridization assay using detectably labeled DNA or RNA probes.

[0088] In a specific example, said hybridization assay is quantitative or semi-quantitative.

[0089] In a specific example, said hybridization assay is RT-PCR, in situ hybridization, RNA protection assay ("RPA"), cDNA and oligonucleotide microarray, representation difference analysis ("RDA"), differential display, EST sequence analysis, serial analysis of gene expression ("SAGE"), and multiplex ligation-mediated amplification with the Luminex FlexMAP ("LMF").

[0090] In a specific example, wherein instrumentation having a detector set to detect the complex between the detectable label and NMT2 nucleic acid present in the sample is used to determine an amount of complex in said sample.

[0091] In a specific example, wherein said instrumentation is a spectrophotometer, spectrofluorometer, optical device, or electrochemical device.

[0092] In a specific example, said wherein said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.

[0093] In a specific example, said subject is a human.

[0094] In another example there is provided a method for identifying a subject suitable for treatment with an NMT1 inhibitor, comprising: obtaining a sample from a subject having a cancer or suspected of having a cancer; processing said sample; performing a binding assay comprising contacting the processed sample with a an antibody to which binds to myristoylated protein, or azido-biotin labeled myristoylated proteins, within the sample to form a complex between the detectable label and myristoylated protein present in the sample, said binding assay generating at least one myristoylation profile indicative of said complex; wherein administering an NMT1 inhibitor to said subject is indicated when said myristoylation profile indicates said cancer is deficient in NMT2, optionally as compared to a control

[0094a] In one aspect, the present disclosure refers to a method for identifying a subject suitable for treatment with a composition comprising an NMT1 inhibitor and doxorubicin, comprising: processing a sample from a subject having a cancer or suspected of having a cancer; and performing a binding assay comprising contacting the processed sample with a an antibody to which binds to myristoylated protein, or azido-biotin labeled myristoylated proteins, within the sample to form a complex between the detectable label and myristoylated protein present in the sample, said binding assay generating at least one myristoylation profile indicative of said complex; wherein the composition is to be administered to said subject when said myristoylation profile has been determined as deficient in NMT2 defined by inhibition, reduction or elimination of NMT2 synthesis, levels, activity, or function as well as inhibition of the induction or stimulation of synthesis, levels, activity or function of the protein NMT2, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.

[0095] In a specific example, said processing comprises treating said sample with alyknyl-myristate and desthiobiotin azido-PEG biotin.

[0096] In a specific example, said binding assay comprises fluorescence activated cell sorting, enzyme linked immunosorbent assay, immunohistochemistry, quantitative immunohistochemistry, fluorescence resonance energy transfer, Forster resonance energy transfer, biomolecular fluorescence complementation, mass spectrometry, immunoblot assay or coimmunoprecipitation assay.

[0097] In a specific example, instrumentation having a detector set to detect the complex formed between said antibody and said NMT2 in said sample is used to determine an amount of complex in said sample.

[0098] In a specific example, said instrumentation is a spectrophotometer, spectrofluorometer, optical device, or electrochemical device.

[0099] In a specific example, said wherein said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.

[00100] In a specific example, wherein said subject is human.

[00101] In another example there is provided a kit for identifying a subject suitable for treatment with an NMT1 inhibitor, comprising: an antibody to NMT2; instructions for identifying the subject according to the method of any one of claims 68-74.

[00102] In a specific example the kit further comprising a control.

[00103] In another example there is provided a kit for identifying a subject suitable for treatment with an NMT1 inhibitor, comprising: a nucleic acid for binding

to NMT2; instructions for identifying the subject according to the method of any one of claims 75-83.

[00104] In a specific example, the kit further comprising a control.

[00105] The kit of claim 93, wherein said nucleic acid is RNA or DNA.

5 [00106] In another example there is provided a kit for identifying a subject suitable for treatment with an NMT1 inhibitor, comprising: NeutrAvidinTM-HRP; and instructions for identifying said subject according to any one of claims 84-90.

[00107] In a specific example the kit further comprising a control.

10 [00108] In a specific example the kit further comprising alyknyl-myristate or desthiobiotin azido-PEG biotin.

BRIEF DESCRIPTION OF THE DRAWINGS

[00109] Embodiments of the present invention will now be described, by way of example only, with reference to the attached Figures, wherein:

15 [00110] Figure 1 depicts immunoblot analysis of NMT1 and NMT2 expression in one type of normal B cells (L0) and various B cell lymphomas and T cell leukemias;

[00111] Figure 2 is a graph illustrating sensitivity of various normal cells and various B cell lymphomas and T cell leukemias to the NMT inhibitors tris-dibenzylideneacetone-dipalladium (Tris-DBA);

20 [00112] Figure 3 is a bar graph illustrating inhibition of N-myristoyltransferase (NMT) by tris-dibenzylideneacetone-dipalladium (Tris-DBA); and

[00113] Figure 4 are immunoblots depicting lymphoma cell lines probed with antibodies against NMT1 and NMT2.

25 [00114] Figure 5 is a line graph showing the sensitivity of NMT inhibitors on a Burkitt's Lymphoma cell line in comparison to an immortalized normal B lymphocytic cell line;

[00115] Figure 6 depicts the results of transfection of Ramos B lymphoma cells with pcDNA3.1-V5-NMT2 showing increased survival to TrisDBA (5 ug/ml) 2.5 fold vs control cells transfected with empty plasmid vector (Panel A) showing cell viability, and (Panel B) an immunoblot;

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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. Use of a composition comprising an NMT1 inhibitor and doxorubicin in the manufacture of a medicament for treating a subject with a cancer or suspected of having a cancer identified by a method, comprising: processing a sample from the subject with a cancer or suspected of having a cancer; and performing a binding assay comprising contacting the processed sample with an antibody to NMT2 protein to form a complex between the antibody and NMT2 protein present in the processed sample, said binding assay generating at least one assay result indicative of said complex; wherein the composition is to be administered to said subject when the amount of NMT2 protein in said sample has been determined as absent, or low, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.
2. The use of claim 1, wherein said analysis to determine whether said sample from the subject expresses NMT2, comprises performing a binding assay comprising contacting the processed sample with an antibody to NMT2 to form a complex between the antibody and NMT2 present in the processed sample, said binding assay generating at least one assay result indicative of said complex.
3. The use of claim 1 or 2, wherein said binding assay comprises fluorescence activated cell sorting, enzyme linked immunosorbent assay, immunohistochemistry, quantitative immunohistochemistry, fluorescence resonance energy transfer, Forster resonance energy transfer, biomolecular fluorescence complementation, mass spectrometry, immunoblot assay or coimmunoprecipitation assay.
4. The use of any one of claims 1 to 3, wherein instrumentation having a detector set to detect the complex formed between said antibody and said NMT2 in said sample is used to determine an amount of complex in said sample.
5. The use of claim 4, wherein said instrumentation is a spectrophotometer, spectrofluorometer, optical device, or electrochemical device.
6. The use of anyone of claims 1 to 5, wherein said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's

lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, 5 Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial 10 adenocarcinoma, esophageal squamous carcinoma.

7. The use of any one of claims 1 - 6, wherein said subject is human.

8. Use of a composition comprising an NMT1 inhibitor and doxorubicin in the manufacture of a medicament for treating a subject having a cancer or suspected of having a cancer identified by a method, comprising: processing a sample from the subject having a 15 cancer or suspected of having a cancer; and performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present in the sample, said binding assay generating at least one assay result indicative of said complex; wherein the composition is to be administered to said subject when the amount to NMT2 nucleic acid in 20 said sample has been determined as absent, or low, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.

9. The use of claim 8, wherein said analysis to determine whether said sample from the subject expresses NMT2, comprises performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex 25 between the detectable label and NMT2 nucleic acid present in the sample, said binding assay generating at least one assay result indicative of said complex.

10. The use of claim 8 or 9, wherein said binding assay comprises, a hybridization assay using detectably labeled DNA or RNA probes.

11. The use of claim 10, wherein said hybridization assay is quantitative or semi- 30 quantitative.

12. The use of claim 11, wherein said hybridization assay is RT-PCR, in situ hybridization, RNA protection assay ("RPA"), cDNA and oligonucleotide microarray, representation difference analysis ("RDA"), differential display, EST sequence analysis, serial analysis of gene expression ("SAGE"), and multiplex ligation-mediated amplification with the Luminex
5 FlexMAP ("LMF").
13. The use of claim 12, wherein instrumentation having a detector set to detect the complex between the detectable label and NMT2 nucleic acid present in the sample is used to determine an amount of complex in said sample.
14. The use of claim 13, wherein said instrumentation is a spectrophotometer,
10 spectrofluorometer, optical device, or electrochemical device.
15. The use of anyone of claims 8 – 14, wherein said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia,
15 Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and
20 bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.
16. The use of any one of claims 8 to 15, wherein said subject is a human.
- 25 17. Use of a composition comprising an NMT1 inhibitor and doxorubicin in the manufacture of a medicament for treating a subject having a cancer or suspected of having a cancer identified by a method, comprising: processing a sample from the subject having a cancer or suspected of having a cancer; and performing a binding assay comprising contacting the processed sample with a an antibody to which binds to myristoylated protein, or azido-
30 biotin labeled myristoylated proteins, within the sample to form a complex between the detectable label and myristoylated protein present in the sample, said binding assay generating

at least one myristoylation profile indicative of said complex; wherein the composition is to be administered to said subject when said myristoylation profile has been determined as deficient in NMT2 defined by inhibition, reduction or elimination of NMT2 synthesis, levels, activity, or function as well as inhibition of the induction or stimulation of synthesis, levels, activity or
5 function of the protein NMT2, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.

18. The use of claim 17, wherein said processing comprises treating said sample with ω -alkynyl-myristate and desthiobiotin azido-PEG biotin .

19. The use of claim 17 or 18, wherein said binding assay comprises fluorescence activated
10 cell sorting, enzyme linked immunosorbent assay, immunohistochemistry, quantitative immunohistochemistry, fluorescence resonance energy transfer, Forster resonance energy transfer, biomolecular fluorescence complementation, mass spectrometry, immunoblot assay or coimmunoprecipitation assay.

20. The use of claim 19, wherein instrumentation having a detector set to detect the
15 complex formed between said antibody and said NMT2 in said sample is used to determine an amount of complex in said sample.

21. The use of claim 20, wherein said instrumentation is a spectrophotometer, spectrofluorometer, optical device, or electrochemical device.

22. The use of anyone of claims 17 to 21, wherein said cancer is lymphoma, B cell
20 lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small
25 Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-
30 small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.

23. The use of any one of claims 19 - 22, wherein said subject is human.
24. A method for identifying a subject suitable for treatment with a composition comprising NMT1 inhibitor and doxorubicin, comprising: processing a sample from said subject with a cancer or suspected of having a cancer; and performing a binding assay comprising contacting
5 the processed sample with an antibody to NMT2 to form a complex between the antibody and NMT2 protein present in the processed sample, said binding assay generating at least one assay result indicative of said complex; wherein the subject is identified as suitable for treatment with said composition when the amount of NMT2 protein in said sample is absent or low, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and
10 DDD86481.
25. The method of claim 24, wherein said analysis to determine whether said sample from the subject expresses NMT2, comprises performing a binding assay comprising contacting the processed sample with an antibody to NMT2 to form a complex between the antibody and NMT2 present in the processed sample, said binding assay generating at least one assay result
15 indicative of said complex.
26. The method of claims 24 or 25, wherein said binding assay comprises fluorescence activated cell sorting, enzyme linked immunosorbent assay, immunohistochemistry, quantitative immunohistochemistry, fluorescence resonance energy transfer, Forster resonance energy transfer, biomolecular fluorescence complementation, mass spectrometry, immunoblot
20 assay or coimmunoprecipitation assay.
27. The method of any one of claim 24 - 26, wherein instrumentation having a detector set to detect the complex formed between said antibody and said NMT2 in said sample is used to determine an amount of complex in said sample.
28. The method of claim 27, wherein said instrumentation is a spectrophotometer,
25 spectrofluorometer, optical device, or electrochemical device.
29. The method of anyone of claims 24 to 28, wherein said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid
30 leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell

Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma
5 (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.

30. The method of any one of claims 24 - 29, wherein said subject is human.

10 31. A method for identifying a subject suitable for treatment with a composition comprising an NMT1 inhibitor and doxorubicin, comprising: processing a sample from a subject having a cancer or suspected of having a cancer; and performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present in the sample, said
15 binding assay generating at least one assay result indicative of said complex; wherein the subject is identified as suitable for administration of the composition when the amount to NMT2 nucleic acid in said sample is low or absent, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.

20 32. The method of claim 31, wherein said analysis to determine whether said sample from the subject expresses NMT2, comprises performing a binding assay comprising contacting the processed sample with a detectable label which binds to NMT2 nucleic acid to form a complex between the detectable label and NMT2 nucleic acid present in the sample, said binding assay generating at least one assay result indicative of said complex.

25 33. The method of claim 32, wherein said binding assay comprises, a hybridization assay using detectably labeled DNA or RNA probes.

34. The method of claim 33, wherein said hybridization assay is quantitative or semi-quantitative.

30 35. The method of claim 34, wherein said hybridization assay is RT-PCR, in situ hybridization, RNA protection assay ("RPA"), cDNA and oligonucleotide microarray, representation difference analysis ("RDA"), differential display, EST sequence analysis, serial

analysis of gene expression ("SAGE"), and multiplex ligation-mediated amplification with the Luminex FlexMAP ("LMF").

36. The method of claim 35, wherein instrumentation having a detector set to detect the complex between the detectable label and NMT2 nucleic acid present in the sample is used to
5 determine an amount of complex in said sample.

37. The method of claim 36, wherein said instrumentation is a spectrophotometer, spectrofluorometer, optical device, or electrochemical device.

38. The method of anyone of claims 31 –37, wherein said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-
10 CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal
15 Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial
20 adenocarcinoma, esophageal squamous carcinoma.

39. The method of any one of claims 31 to 38, wherein said subject is a human.

40. A method for identifying a subject suitable for treatment with a composition comprising an NMT1 inhibitor and doxorubicin, comprising: processing a sample from a subject having a cancer or suspected of having a cancer; and performing a binding assay comprising contacting
25 the processed sample with a an antibody to which binds to myristoylated protein, or azido-biotin labeled myristoylated proteins, within the sample to form a complex between the detectable label and myristoylated protein present in the sample, said binding assay generating at least one myristoylation profile indicative of said complex; wherein the composition is to be administered to said subject when said myristoylation profile has been determined as deficient
30 in NMT2 defined by inhibition, reduction or elimination of NMT2 synthesis, levels, activity, or function as well as inhibition of the induction or stimulation of synthesis, levels, activity or

function of the protein NMT2, as compared to a control; and wherein the NMT1 inhibitor is selected from DDD85646, and DDD86481.

41. The method of claim 40, wherein said processing comprises treating said sample with alyknyl-myristate and desthiobiotin azido-PEG biotin.

5 42. The method of claims 40 or 41, wherein said binding assay comprises fluorescence activated cell sorting, enzyme linked immunosorbent assay, immunohistochemistry, quantitative immunohistochemistry, fluorescence resonance energy transfer, Forster resonance energy transfer, biomolecular fluorescence complementation, mass spectrometry, immunoblot assay or coimmunoprecipitation assay.

10 43. The method of claim 42, wherein instrumentation having a detector set to detect the complex formed between said antibody and said NMT2 in said sample is used to determine an amount of complex in said sample.

44. The method of claim 43, wherein said instrumentation is a spectrophotometer, spectrofluorometer, optical device, or electrochemical device.

15 45. The method of anyone of claims 40 to 44, wherein said cancer is lymphoma, B cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, mantle cell lymphoma, B-CLL/SLL, immunocytoma/Waldenstrom's, MALT-type/monocytoid B cell lymphoma, Burkitt's lymphoma, a pediatric lymphoma, anaplastic large cell lymphoma, acute myeloid leukemia, Blast Phase Chronic Myeloid Leukaemia, Burkitt's Lymphoma, Plasma Cell
20 Myeloma, Intestinal Adenocarcinoma, Lung mixed Adenosquamous Carcinoma, Lung Small Cell Carcinoma, Lung, Oesophagus Squamous Cell Carcinoma, Bone, Breast Ductal Carcinoma, Stomach Diffuse Adenocarcinoma, Thyroid Medullary Carcinoma, urinary Tract Transitional Cell Carcinoma, myeloma, ovarian clear cell carcinoma, transition cell carcinoma (ureter and bladder cancer), chronic myelogenous leukemia (CML), lymphoma-CLL, breast
25 carcinoma, colorectal adenocarcinoma, pancreas adenocarcinoma, ovarian carcinoma, non-small cell lung carcinoma, osteosarcoma, melanoma, gastric adenocarcinoma, endometrial adenocarcinoma, esophageal squamous carcinoma.

46. The method of any one of claims 40 - 45, wherein said subject is human.