WHAT IS CLAIMED IS:

1. A method for increasing the efficacy of cancer therapy with an anti-CD37 antibody, or anti-CD37 immunoconjugate, said method comprising administering to a subject having cancer an anti-CD37 antibody, or anti-CD37 immunoconjugate, wherein increased expression of CD37 gene or protein in a cancerous sample from said subject has been detected using a detection method that distinguishes between staining intensity or staining uniformity in a CD37 expressing cancerous sample as compared to staining intensity or staining uniformity in one or more reference samples.

2. A method of identifying a cancer as sensitive to treatment with an anti-CD37 antibody, or anti-CD37 immunoconjugate, said method comprising:
   (a) measuring the level of CD37 expression in a cancerous sample obtained from said cancer, wherein said measuring comprises the use of a detection method that distinguishes between staining intensity or staining uniformity in a CD37 expressing cancerous sample as compared to staining intensity or staining uniformity in one or more reference samples;
   (b) determining a CD37 staining intensity or staining uniformity score for said cancerous sample; and
   (c) comparing the CD37 staining intensity or staining uniformity score determined in step (b) to a relative value determined by measuring CD37 protein expression in at least one reference sample, wherein said at least one reference sample is a tissue, cell, or cell pellet sample which is not sensitive to treatment with an anti-CD37 antibody, or anti-CD37 immunoconjugate, and wherein a CD37 staining intensity score for said sample determined in step (b) that is higher than said relative value identifies said cancer as being sensitive to treatment with an anti-CD37 antibody, or anti-CD37 immunoconjugate.

3. A method for identifying a cancer likely to respond to an anti-CD37 antibody, or anti-CD37 immunoconjugate, said method comprising:
   (a) contacting a biological sample comprising cells from said cancer with an agent that binds CD37 protein on the cell surface;
   (b) detecting binding of said agent that binds CD37 protein on the cell surface of said biological sample of (a);

(c) assigning a score to said binding of step (b), wherein said score is assigned based on comparison to one or more reference samples; and

(d) comparing said score in step (c) to the score of a reference tissue or cell, wherein a score for said cancer CD37 level that is greater than the score for a negative or low CD37 expressing reference sample or a score for said cancer CD37 level that is equal to or greater than the score for a high CD37 expressing reference sample identifies said cancer as likely to respond to an anti-CD37 antibody or anti-CD37 immunoconjugate.

4. A method of identifying a subject having a cancer as likely to respond to a low dose anti-CD37 antibody or anti-CD37 immunoconjugate treatment regimen, said method comprising:

(a) contacting a biological sample comprising cells from said cancer with an agent that binds cell surface CD37 protein;

(b) detecting binding of said agent to said biological sample of (a);

(c) assigning a score to said binding of step (b), wherein said score is assigned based on comparison to one or more reference samples; and

(d) comparing said score in step (c) to the score of a reference tissue or cell, wherein a score for said cancer CD37 level that is greater than the score for a negative or low CD37 expressing reference sample or a score for said cancer CD37 level that is equal to or greater than the score for a high CD37 expressing reference sample identifies said cancer as likely to respond to a low dose anti-CD37 antibody or anti-CD37 immunoconjugate.

5. A method of optimizing a therapeutic regimen with an anti-CD37 antibody or an anti-CD37 immunoconjugate for a subject having cancer, said method comprising:

(a) detecting the level of CD37 expression in a cancerous sample obtained from said subject;

(b) comparing the level of CD37 expression in the cancerous sample to the CD37 expression in a reference sample;

(c) determining a CD37 staining intensity score for said cancerous sample; and

(d) administering an increased dose of an anti-CD37 antibody or an anti-CD37 immunoconjugate to the subject if the score is low or administering a decreased dose of an anti-CD37 antibody or an anti-CD37 immunoconjugate to the subject if the score is high.

6. A method of detecting the expression of cell surface CD37 on cancer cells in a cancerous sample from a subject, said method comprising:
   (a) obtaining a cancerous sample, wherein said sample is formalin-fixed paraffin embedded;
   (b) contacting said sample with an antibody that specifically binds cell surface CD37;
   (c) measuring the binding of said antibody in (b) to said cell surface CD37 in said cancerous sample using a detection method that can distinguish between staining intensity or staining uniformity in a CD37 expressing sample as compared to staining intensity or staining uniformity in one or more reference samples; and
   (d) assigning a CD37 expression score to said CD37 after comparing the level of cell surface CD37 staining intensity or staining uniformity in said tumor cancerous sample to one or more reference samples.

7. The method of any one of claims 1-6, wherein the detection is by immunohistochemistry (IHC).

8. The method of claim 7, wherein said IHC is calibrated IHC that can distinguish different levels of CD37 expression.

9. The method of any one of claims 1-8, wherein said detection method produces a range of staining intensity for samples having low cell surface CD37 expression, intermediate CD37 cell surface expression, or high CD37 cell surface expression.

10. The method of any one of 1-9, wherein said detection method distinguishes between staining intensity and staining uniformity in a CD37 expressing cancerous sample as compared to a reference sample.

11. The method of any one of claims 1-10, wherein the cancerous sample or biological sample has a staining intensity score of 2, 3, or 3+ for CD37 expression by immunohistochemistry.

12. The method of claim 11, wherein the cancerous sample or biological sample has a staining intensity score of 2, 3, or 3+ for CD37 expression by immunohistochemistry on a formalin fixed paraffin embedded sample.

13. The method of any of claims 10-12, wherein the cancerous sample or biological sample has a staining uniformity for CD37 expression that is homogenous.

14. The method of any one of claims 7-12, wherein the cancerous sample or biological sample has a staining intensity score of 2, 3, or 3+ for CD37 and a staining uniformity that is heterogeneous or homogenous.

15. The method of any one of claims 7-14, wherein the immunohistochemistry is performed manually.

16. The method of any one of claims 7-14, wherein the immunohistochemistry is performed using an automated system.

17. The method of any one of claims 1-16, wherein said reference sample is a positive reference sample or a negative reference sample.

18. The method of any one of claims 1-17, wherein the reference sample comprises cells, cell pellets, or tissue.

19. The method of any one of claims 1-18, wherein the detection comprises detecting CD37 expression with an antibody that specifically binds cell surface CD37.

20. The method of claim 19, wherein said antibody is CT1.

21. The method of claim 19 or 20, wherein said antibody further comprises a detection reagent selected from the group consisting of: an enzyme, a fluorophore, a radioactive label, and a luminophore.

22. The method of claim 21, wherein said detection reagent is selected from the group consisting of: biotin, digoxigenin, fluorescein, tritium, rhodamine, and horseradish peroxidase.

23. The method of any one of claims 19-22, wherein the concentration of said antibody is about 1- 10 μg/mL.

24. The method of claim 23, wherein the concentration of said antibody is about 4-5 μg/mL.

25. The method of claim 24, wherein the concentration of said antibody is about 4.2 μg/mL

26. The method of any one of claims 1-25, wherein said cancer is selected from the group consisting of B cell lymphomas, NHL, precursor B cell lymphoblastic leukemia/lymphoma and mature B cell neoplasms, B cell chronic lymphocytic leukemia (CLL)/small lymphocytic lymphoma (SLL), B cell prolymphocytic leukemia, lymphoplasmacytic lymphoma, mantle cell lymphoma (MCL), follicular lymphoma (FL), low grade, intermediate-grade and high-grade (FL), cutaneous follicle center lymphoma, marginal zone B cell lymphoma, MALT type marginal zone B cell lymphoma, nodal marginal zone B cell lymphoma, splenic type marginal zone B cell lymphoma, hairy cell leukemia, diffuse large B cell lymphoma (DLBCL), Burkitt's lymphoma (BL), plasmacytoma, plasma cell myeloma, post-transplant lymphoproliferative disorder, Waldenstrom's macroglobulinemia, and anaplastic large-cell lymphoma (ALCL).

27. The method of any one of claims 1-26, wherein said cancerous sample or said biological sample is tissue, blood, plasma, bone marrow or lymph.

28. An article of manufacture comprising an anti-CD37 antibody or an anti-CD37 immunoconjugate, a container, and a package insert or label indicating that the antibody or immunoconjugate can be used to treat a cancer characterized by the expression of CD37 at a level of 2, 3, or 3+ measured by IHC.

29. A combination diagnostic and pharmaceutical kit comprising a murine anti-CD37 antibody for use in diagnosis and an anti-CD37 antibody or an anti-CD37 immunoconjugate for use in therapy.

30. The combination diagnostic and pharmaceutical kit of claim 29, wherein the diagnostic antibody is a detection antibody that is able to detect CD37 expression by IHC.

31. A diagnostic kit comprising a detection antibody that specifically binds to cell surface CD37, a reagent for immunohistochemistry (IHC), and one or more standardized reference samples,

wherein said standardized reference samples comprise cells, cell pellets, or formalin fixed paraffin embedded tissue samples, and wherein said one or more standardized referenced samples are from non-CD37 expressing, low-CD37 expressing, or high CD37 expressing cells, cell pellets, or tissues.

32. The article of manufacture of claim 28 or the kit of claim 30 or 31, wherein said IHC is calibrated IHC that can distinguish different levels of CD37 expression.

33. The article of manufacture or kit of claim 32, wherein said calibrated IHC produces a range of staining intensity for samples having low cell surface CD37 expression, intermediate cell surface CD37 expression, or high cell surface CD37 expression.

34. The article of manufacture or the kit of any one of claims 28 or 30-33, wherein said IHC distinguishes between staining intensity and staining uniformity in a CD37 expressing sample as compared to a reference sample.

35. The article of manufacture or kit of any one of claims 28 or 30-33, wherein said IHC is performed on a formalin fixed paraffin embedded sample.

36. The article of manufacture or kit of any one of claims 28 or 30-33, wherein said IHC is performed manually.

37. The article of manufacture or kit of any one of claims 28 or 30-33, wherein said IHC is performed using an automated system.

38. The article of manufacture or kit of any one of claims 28-30 or 32-37, wherein the CD37 immunoconjugate comprises an anti-CD37 antibody, a linker, and a cytotoxin.

39. The article of manufacture or kit of claim 38, wherein the anti-CD37 antibody is chimeric, or humanized CD37-3, CD37-38, or CD37-50.

40. The article of manufacture or kit of claim 38 or 39, wherein said linker is selected from the group consisting of a cleavable linker, a non-cleavable linker, a hydrophilic linker, and a dicarboxylic acid based linker.

41. The article of manufacture or kit of claim 40, wherein said linker is selected from the group consisting: N-succinimidyl 4-(2-pyridyldithio)pentanoate (SPP) or N-succinimidyl 4-(2-pyridyldithio)-2-sulfopentanoate (sulfo-SPP); N-succinimidyl 4-(2-pyridyldithio)butanoate (SPDB) or N-succinimidyl 4-(2-pyridyldithio)-2-sulfobutanoate (sulfo-SPDB); N-succinimidyl 4-(maleimidomethyl) cyclohexanecarboxylate (SMCC); N-sulfosuccinimidyl 4-(maleimidomethyl) cyclohexanecarboxylate (sulfoSMCC); N-succinimidyl-4-(iodoacetyl)-aminobenzoate (SIAB); and N-succinimidyl-[(N-maleimidopropionamido)-tetraethyleneglycol] ester (NHS-PEG4-maleimide).

42. The article of manufacture or kit of claim 41, wherein said linker is N-succinimidyl 4-(maleimidomethyl) cyclohexanecarboxylate (SMCC).

43. The article of manufacture or kit of any one of claims 38-42, wherein said cytotoxin is selected from the group consisting of a maytansinoid, maytansinoid analog, benzodiazepine, taxoid, CC-1065, CC-1065 analog, duocarmycin, duocarmycin analog, calicheamicin, dolastatin, dolastatin analog, auristatin, tomaymycin derivative, and leptomycin derivative or a prodrug of the cytotoxin.

44. The article of manufacture or kit of claim 43, wherein said cytotoxin is a maytansinoid.

45. The article of manufacture or kit of claim 44, wherein said maytansinoid is is N(2')-deacetyl-N(2')-(3-mercapto-1-oxopropyl)-maytansine or N(2')-deacetyl-N2-(4-mercapto-4-methyl-1-oxopentyl)-maytansine.

46. The article of manufacture or kit of claim 45, wherein said maytansinoid is is N(2')-deacetyl-N(2')-(3-mercapto-1-oxopropyl)-maytansine (DM1).

47. The article of manufacture or kit of any one of claims 38-46, wherein said immunoconjugate comprises the antibody huCD37-3, the linker SMCC, and the maytansinoid DM1.

48. The combination diagnostic and pharmaceutical kit of any one of claims 29-30 and 32-47, further comprising one or more reference samples.

49. The combination diagnostic and pharmaceutical kit of claim 48, wherein said reference sample is a positive reference sample or a negative reference sample.

50. The combination diagnostic and pharmaceutical kit of claim 48 or 49, wherein the reference sample comprises cells, cell pellets, or tissue.

51. The kit of any one of claims 30-37, wherein said detection antibody further comprises a detection reagent selected from the group consisting of: an enzyme, a fluorophore, a radioactive label, and a luminophore.

52. The kit of claim 51, wherein said detection reagent is selected from the group consisting of: biotin, digoxigenin, fluorescein, tritium, rhodamine, and horseradish peroxidase.

53. The kit of claim any one of claims 30-37 or 51-52, wherein the concentration of the detection antibody is about 1-10 μg/mL.

54. The kit of claim 53, wherein the concentration of the detection antibody is about 4-5 μg/mL.

55. The kit of claim 54, wherein the concentration of the detection antibody is about 4.2 μg/mL.

56. The kit of claim 31, wherein the low-CD37 expressing control is Namalwa or RL tumor cells.

57. The kit of claim 31, wherein the high-CD37 expressing control is selected from the group consisting of: Daudi and Ramos cell lines, and a cell line stably or transiently transfected with CD37.

58. The kit of claim 57, wherein said cell line stably or transiently transfected with CD37 is 300-19/CD37.

WHAT IS CLAIMED IS:

1. An anti-CD37 antibody or immunoconjugate thereof for use in the treatment of cancer in a subject, wherein increased expression of CD37 gene or protein has been detected in a cancerous sample from said subject using a detection method that distinguishes between staining intensity or staining uniformity in a CD37 expressing cancerous sample as compared to staining intensity or staining uniformity in one or more reference samples.

2. A method for identifying a cancer as sensitive to treatment with an anti-CD37 antibody or immunoconjugate thereof, said method comprising:

(a) measuring the level of CD37 expression in a cancerous sample obtained from said cancer, wherein said measuring comprises the use of a detection method that distinguishes between staining intensity or staining uniformity in a CD37 expressing cancerous sample as compared to staining intensity or staining uniformity in one or more reference samples;

(b) determining a CD37 staining intensity or staining uniformity score for said cancerous sample; and

(c) comparing the CD37 staining intensity or staining uniformity score determined in step (b) to a relative value determined by measuring CD37 protein expression in at least one reference sample, wherein said at least one reference sample is a tissue, cell, or cell pellet sample which is not sensitive to treatment with an anti-CD37 antibody or immunoconjugate thereof, and wherein a CD37 staining intensity score for said sample determined in step (b) that is higher than said relative value identifies said cancer as being sensitive to treatment with an anti-CD37 antibody or immunoconjugate thereof.

3. A method for identifying a cancer likely to respond to an anti-CD37 antibody or immunoconjugate thereof, said method comprising:

(a) contacting a biological sample comprising cells from said cancer with an agent that binds CD37 protein on the cell surface;

(b) detecting binding of said agent that binds CD37 protein on the cell surface of said biological sample of (a);

(c) assigning a score to said binding of step (b), wherein said score is assigned based on comparison to one or more reference samples; and

(d) comparing said score in step (c) to the score of a reference tissue or cell, wherein a score for said cancer CD37 level that is greater than the score for a negative or low CD37 expressing reference sample or a score for said cancer CD37 level that is equal to or greater than the score for a high CD37 expressing reference sample identifies said cancer as likely to respond to an anti-CD37 antibody or immunoconjugate thereof.

4. A method for identifying a subject having a cancer as likely to respond to a low dose anti-CD37 antibody or immunoconjugate thereof treatment regimen, said method comprising:

(a) contacting a biological sample comprising cells from said cancer with an agent that binds cell surface CD37 protein;

(b) detecting binding of said agent to said biological sample of (a);

(c) assigning a score to said binding of step (b), wherein said score is assigned based on comparison to one or more reference samples; and

(d) comparing said score in step (c) to the score of a reference tissue or cell, wherein a score for said cancer CD37 level that is greater than the score for a negative or low CD37 expressing reference sample or a score for said cancer CD37 level that is equal to or greater than the score for a high CD37 expressing reference sample identifies said cancer as likely to respond to a low dose anti-CD37 antibody or immunoconjugate thereof.

5. An anti-CD37 antibody or immunoconjugate thereof for use in the treatment of cancer in a subject, said treatment comprising:

(a) the detection of the level of CD37 expression in a cancerous sample obtained from said subject;

(b) the comparison of the level of CD37 expression in the cancerous sample to the CD37 expression in a reference sample;

(c) the determination of a CD37 staining intensity score for said cancerous sample; and

(d) the provision of the anti-CD37 antibody or an immunoconjugate thereof to be administered to the subject as an increased dose if the score is low or as a decreased dose if the score is high.

6. A method for detecting the expression of cell surface CD37 on cancer cells in a cancerous sample from a subject, said method comprising:

(a) obtaining a cancerous sample, wherein said sample is formalin-fixed paraffin embedded;

(b) contacting said sample with an antibody that specifically binds cell surface CD37;

(c) measuring the binding of said antibody in (b) to said cell surface CD37 in said cancerous sample using a detection method that can distinguish between staining intensity or staining uniformity in a CD37 expressing sample as compared to staining intensity or staining uniformity in one or more reference samples; and

(d) assigning a CD37 expression score to said CD37 after comparing the level of cell surface CD37 staining intensity or staining uniformity in said tumor cancerous sample to one or more reference samples.

7. The anti-CD37 antibody or immunoconjugate thereof of claim 1 or 5 or the method for any one of claims 2-4 or 6, wherein the detection is by immunohistochemistry (IHC).

8. The anti-CD37 antibody or immunoconjugate thereof or method according to claim 7, wherein said IHC is calibrated IHC that can distinguish different levels of CD37 expression.

9. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 1-8, wherein said detection method produces a range of staining intensity for samples having low cell surface CD37 expression, intermediate CD37 cell surface expression, or high CD37 cell surface expression.

10. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 1-9, wherein said detection method distinguishes between staining intensity and staining uniformity in a CD37 expressing cancerous sample as compared to a reference sample.

11. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 1-10, wherein the cancerous sample or biological sample has a staining intensity score of 2, 3, or 3+ for CD37 expression by IHC.

12. The anti-CD37 antibody or immunoconjugate thereof or method according to claim 11, wherein the cancerous sample or biological sample has a staining intensity score of 2, 3, or 3+ for CD37 expression by IHC on a formalin fixed paraffin embedded sample.

13. The anti-CD37 antibody or immunoconjugate thereof or method according to any of claims 10-12, wherein the cancerous sample or biological sample has a staining uniformity for CD37 expression that is homogenous.

14. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 7-12, wherein the cancerous sample or biological sample has a staining intensity score of 2, 3, or 3+ for CD37 and a staining uniformity that is heterogeneous or homogenous.

15. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 7-14, wherein the IHC is performed manually.

16. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 7-14, wherein the IHC is performed using an automated system.

17. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 1-16, wherein said reference sample is a positive reference sample or a negative reference sample.

18. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 1-17, wherein the reference sample comprises cells, cell pellets, or tissue.

19. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 1-18, wherein the detection comprises detecting CD37 expression with an antibody that specifically binds cell surface CD37.

20. The anti-CD37 antibody or immunoconjugate thereof or method according to claim 19, wherein said antibody is CT1.

21. The anti-CD37 antibody or immunoconjugate thereof or method according to claim 19 or 20, wherein said antibody further comprises a detection reagent selected from the group consisting of: an enzyme, a fluorophore, a radioactive label, and a luminophore.

22. The anti-CD37 antibody or immunoconjugate thereof or method according to claim 21, wherein said detection reagent is selected from the group consisting of: biotin, digoxigenin, fluorescein, tritium, rhodamine, and horseradish peroxidase.

23. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 19-22, wherein the concentration of said antibody is about 1- 10 μg/mL.

24. The anti-CD37 antibody or immunoconjugate thereof or method according to claim 23, wherein the concentration of said antibody is about 4-5 μg/mL.

25. The anti-CD37 antibody or immunoconjugate thereof or method according to claim 24, wherein the concentration of said antibody is about 4.2 μg/mL

26. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 1-25, wherein said cancer is selected from the group consisting of B cell lymphomas, NHL, precursor B cell lymphoblastic leukemia/lymphoma and mature B cell neoplasms, B cell chronic lymphocytic leukemia (CLL)/small lymphocytic lymphoma (SLL), B cell prolymphocytic leukemia, lymphoplasmacytic lymphoma, mantle cell lymphoma (MCL), follicular lymphoma (FL), low grade, intermediate-grade and high-grade (FL), cutaneous follicle center lymphoma, marginal zone B cell lymphoma, MALT type marginal zone B cell lymphoma, nodal marginal zone B cell lymphoma, splenic type marginal zone B cell lymphoma, hairy cell leukemia, diffuse large B cell lymphoma (DLBCL), Burkitt's lymphoma (BL), plasmacytoma, plasma cell myeloma, post-transplant lymphoproliferative disorder, Waldenstrom's macroglobulinemia, and anaplastic large-cell lymphoma (ALCL).

27. The anti-CD37 antibody or immunoconjugate thereof or method according to any one of claims 1-26, wherein said cancerous sample or said biological sample is tissue, blood, plasma, bone marrow or lymph.

28. An article of manufacture comprising an anti-CD37 antibody or immunoconjugate thereof, a container, and a package insert or label indicating that the antibody or immunoconjugate can be used to treat a cancer characterized by the expression of CD37 at a level of 2, 3, or 3+ measured by IHC.

29. A combination diagnostic and pharmaceutical kit comprising a murine anti-CD37 antibody for use in diagnosis and an anti-CD37 antibody or immunoconjugate thereof for use in therapy.

30. The combination diagnostic and pharmaceutical kit of claim 29, wherein the diagnostic antibody is a detection antibody that is able to detect CD37 expression by IHC.

31. A diagnostic kit comprising a detection antibody that specifically binds to cell surface CD37, a reagent for IHC, and one or more standardized reference samples, wherein said standardized reference samples comprise cells, cell pellets, or formalin fixed paraffin embedded tissue samples, and wherein said one or more standardized referenced samples are from non-CD37 expressing, low-CD37 expressing, or high CD37 expressing cells, cell pellets, or tissues.

32. The article of manufacture of claim 28 or the kit of claim 30 or 31, wherein said IHC is calibrated IHC that can distinguish different levels of CD37 expression.

33. The article of manufacture or kit of claim 32, wherein said calibrated IHC produces a range of staining intensity for samples having low cell surface CD37 expression, intermediate cell surface CD37 expression, or high cell surface CD37 expression.

34. The article of manufacture or the kit of any one of claims 28 or 30-33, wherein said IHC distinguishes between staining intensity and staining uniformity in a CD37 expressing sample as compared to a reference sample.

35. The article of manufacture or kit of any one of claims 28 or 30-33, wherein said IHC is performed on a formalin fixed paraffin embedded sample.

36. The article of manufacture or kit of any one of claims 28 or 30-33, wherein said IHC is performed manually.

37. The article of manufacture or kit of any one of claims 28 or 30-33, wherein said IHC is performed using an automated system.

38. The article of manufacture or kit of any one of claims 28-30 or 32-37, wherein the CD37 immunoconjugate comprises an anti-CD37 antibody, a linker, and a cytotoxin.

39. The article of manufacture or kit of claim 38, wherein the anti-CD37 antibody is chimeric, or humanized CD37-3, CD37-38, or CD37-50.

40. The article of manufacture or kit of claim 38 or 39, wherein said linker is selected from the group consisting of a cleavable linker, a non-cleavable linker, a hydrophilic linker, and a dicarboxylic acid based linker.

41. The article of manufacture or kit of claim 40, wherein said linker is selected from the group consisting: N-succinimidyl 4-(2-pyridyldithio)pentanoate (SPP) or N-succinimidyl 4-(2-pyridyldithio)-2-sulfopentanoate (sulfo-SPP); N-succinimidyl 4-(2-pyridyldithio)butanoate (SPDB) or N-succinimidyl 4-(2-pyridyldithio)-2-sulfobutanoate (sulfo-SPDB); N-succinimidyl 4-(maleimidomethyl) cyclohexanecarboxylate (SMCC); N-sulfosuccinimidyl 4-(maleimidomethyl) cyclohexanecarboxylate (sulfoSMCC); N-succinimidyl-4-(iodoacetyl)-aminobenzoate (SIAB); and N-succinimidyl-[(N-maleimidopropionamido)-tetraethyleneglycol] ester (NHS-PEG4-maleimide).

42. The article of manufacture or kit of claim 41, wherein said linker is N-succinimidyl 4-(maleimidomethyl) cyclohexanecarboxylate (SMCC).

43. The article of manufacture or kit of any one of claims 38-42, wherein said cytotoxin is selected from the group consisting of a maytansinoid, maytansinoid analog, benzodiazepine, taxoid, CC-1065, CC-1065 analog, duocarmycin, duocarmycin analog, calicheamicin, dolastatin, dolastatin analog, auristatin, tomaymycin derivative, and leptomycin derivative or a prodrug of the cytotoxin.

44. The article of manufacture or kit of claim 43, wherein said cytotoxin is a maytansinoid.

45. The article of manufacture or kit of claim 44, wherein said maytansinoid is N(2')-deacetyl-N(2')-(3-mercapto-1-oxopropyl)-maytansine or N(2')-deacetyl-N(2')-(4-mercapto-4-methyl-1-oxopentyl)-maytansine.

46. The article of manufacture or kit of claim 45, wherein said maytansinoid is N(2')-deacetyl-N(2')-(3-mercapto-1-oxopropyl)-maytansine (DM1).

47. The article of manufacture or kit of any one of claims 38-46, wherein said immunoconjugate comprises the antibody huCD37-3, the linker SMCC, and the maytansinoid DM1.

48. The combination diagnostic and pharmaceutical kit of any one of claims 29-30 and 32-47, further comprising one or more reference samples.

49. The combination diagnostic and pharmaceutical kit of claim 48, wherein said reference sample is a positive reference sample or a negative reference sample.

50. The combination diagnostic and pharmaceutical kit of claim 48 or 49, wherein the reference sample comprises cells, cell pellets, or tissue.

51. The kit of any one of claims 30-37, wherein said detection antibody further comprises a detection reagent selected from the group consisting of: an enzyme, a fluorophore, a radioactive label, and a luminophore.

52. The kit of claim 51, wherein said detection reagent is selected from the group consisting of: biotin, digoxigenin, fluorescein, tritium, rhodamine, and horseradish peroxidase.

53. The kit of claim any one of claims 30-37 or 51-52, wherein the concentration of the detection antibody is about 1-10 μg/mL.

54. The kit of claim 53, wherein the concentration of the detection antibody is about 4-5 μg/mL.

55. The kit of claim 54, wherein the concentration of the detection antibody is about 4.2 μg/mL.

56. The kit of claim 31, wherein the low-CD37 expressing control is Namalwa or RL tumor cells.

57. The kit of claim 31, wherein the high-CD37 expressing control is selected from the group consisting of: Daudi and Ramos cell lines, and a cell line stably or transiently transfected with CD37.

58. The kit of claim 57, wherein said cell line stably or transiently transfected with CD37 is 300-19/CD37.