human IFN-alpha to the murine cells, the toxicity of the antibody-IFN-alpha conjugate relative to free INF-alpha was not assessed.

[014] Antibodies and IFN-alpha may also be connected together in the form of a fusion protein. For example, WO 01/97844 describes a direct fusion of human IFN-alpha to the C-terminus of the heavy chain of an IgG specific for the tumor antigen CD20.

[015] In general, IFN may be targeted to cancer cells. While this approach may result in an increase in activity of the IFN against cancer cells, it does not completely address the issue of undesired activity of the IFN on healthy cells. Fusing IFN-alpha to the C-terminus of the heavy chain of an IgG may prolong the half-life of the IFN alpha leading to undesirable adverse events. Accordingly, there exists a need to decrease off-target activity of ligand-based drugs, while retaining the "on-target" therapeutic effect of such ligands.

SUMMARY OF THE DISCLOSURE

[016] The disclosure features new anti-CD38 antibodies and constructs comprising an anti-CD38 antibody and attenuated IFN-alpha. The antibodies, which comprise one or a plurality of mutations in their heavy and/or light chain variable regions retain the ability to specifically bind to CD38, including CD38 expressed on the surface of cells. The antibodies may be fused, for example, to an attenuated form of interferon alpha to form an anti-CD38 antibody-attenuated interferon fusion construct.

[017] In one aspect, the present invention refers to an anti-CD38 antibody-attenuated interferon alpha-2b fusion construct, comprising an antibody that specifically binds to CD38 and comprises a heavy chain variable region amino acid sequence of SEQ ID NO: 156 and a light chain variable region amino acid sequence of SEQ ID NO: 185, the antibody being fused to an attenuated interferon alpha-2b. In some ~~aspects~~examples, an isolated antibody that binds specifically to CD38 comprises a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 559 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 664. In some ~~aspects~~examples, an isolated antibody that binds specifically to CD38 comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 665 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 666. In some ~~aspects~~examples, an isolated antibody that binds specifically to CD38 comprises a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 739 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 664. The heavy chain variable region amino acid sequence of SEQ

ID NO: 559 excludes the amino acid sequence of SEQ ID NO: 13. The light chain variable region amino acid sequence of SEQ ID NO: 664 excludes the amino acid sequence of SEQ ID NO: 14. In some ~~aspects~~examples, an isolated antibody that binds specifically to CD38 comprises a heavy chain CDR1 comprising the amino acid sequence of , SEQ ID NO: 200, SEQ ID NO: 514 or SEQ ID NO: 697, a heavy chain CDR2 comprising the

amino acid sequence of SEQ ID NO: 202, SEQ ID NO: 516, SEQ ID NO: 544, SEQ ID NO: 698 or SEQ ID NO: 737, and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO: 204, SEQ ID NO: 222, SEQ ID NO: 518, SEQ ID NO: 534, SEQ ID NO: 535, SEQ ID NO: 536, SEQ ID NO: 699 or SEQ ID NO: 738, and may further comprise a light chain CDR1 comprising the amino acid sequence of SEQ ID NO: 233, SEQ ID NO: 319, SEQ ID NO: 583, SEQ ID NO: 590 or SEQ ID NO: 696, a light chain CDR2 comprising the amino acid sequence of SEQ ID NO: 235, SEQ ID NO: 307, SEQ ID NO: 311, SEQ ID NO: 585, SEQ ID NO: 591 or SEQ ID NO: 605, a light chain CDR3 comprising the amino acid sequence of SEQ ID NO: 237, SEQ ID NO: 321, SEQ ID NO: 324, SEQ ID NO: 587 or SEQ ID NO: 594.

[018] In preferred ~~aspects~~examples, the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 34, SEQ ID NO: 18, SEQ ID NO: 665, SEQ ID NO: 165, SEQ ID NO: 166, SEQ ID NO: 167, SEQ ID NO: 179, SEQ ID NO: 180, SEQ ID NO: 156, SEQ ID NO: 197, SEQ ID NO: 152, SEQ ID NO: 720, SEQ ID NO: 721, SEQ ID NO: 722, SEQ ID NO: 723, SEQ ID NO: 739, SEQ ID NO: 740, SEQ ID NO: 741, SEQ ID NO: 742, SEQ ID NO: 728, SEQ ID NO: 730, SEQ ID NO: 731. In preferred ~~aspects~~examples, the light chain variable region comprises the amino acid sequence of SEQ ID NO: 65, SEQ ID NO: 68, SEQ ID NO: 86, SEQ ID NO: 88, SEQ ID NO: 92, SEQ ID NO: 93, SEQ ID NO: 660, SEQ ID NO: 661, SEQ ID NO: 662, SEQ ID NO: 663. SEQ ID NO: 161, SEQ ID NO: 184, SEQ ID NO: 185, SEQ ID NO: 188, SEQ ID NO: 198 or SEQ ID NO: 700, SEQ ID NO: 701, SEQ ID NO: 704, SEQ ID NO: 705, SEQ ID NO: 706, SEQ ID NO: 707, SEQ ID NO: 708, SEQ ID NO: 709, SEQ ID NO: 710, SEQ ID NO: 711.

[019] The antibody preferably is capable of binding to CD38-positive cells. The antibody may bind to a CD38-positive cell with an EC50 value of less than about 100 nM. The antibody may bind to a CD38-positive cell with an EC_{50} value of less than about 75 nM. The antibody may bind to a CD38-positive cell with an EC_{50} value of less than about 50 nM. The antibody may bind to a CD38-positive cell with an EC_{50} value of less than about 30 nM. The antibody may bind to a CD38-positive cell with an EC_{50} value of less than about 25 nM. The antibody may bind to a CD38-positive cell with an EC_{50} value of less than about 20 nM. The antibody may bind to a CD38-positive ce - 4a - ı EC_{50} value of less than about 15 nM. The antibody may bind to a CD38-positive cell with an EC_{50} value of less than about 13 nM. The antibody may bind to a CD38-positive cell with an EC_{50} value of less than about 10 nM.

[020] The antibody may be a monoclonal antibody, and is preferably a fully human antibody. The antibody may comprise an FAb. The antibody may comprise a human IgG1

constant region or a human IgG4 constant region. The IgG1 or the IgG4 constant region may comprise a tyrosine at position 252, a threonine at position 254, and a glutamic acid at position 256 according to the EU numbering system. The IgG4 constant region may comprise a proline at position 228 according to the EU numbering system, and the proline at position 228 may be in addition to a tyrosine at position 252, a threonine at position 254, and a glutamic acid at position 256.

[021] In some ~~aspects~~examples, the antibody is fused to attenuated interferon alpha-2b. The interferon alpha-2b may comprise a substitution of the alanine at position 145 to glycine or aspartic acid, including an interferon alpha-2b having the amino acid sequence of SEQ ID NO: 649 or SEQ ID NO: 651. The attenuated interferon alpha-2b may be fused directly to the C-terminus of the IgG1 or IgG4 constant region, and the antibody may comprise the amino acid sequence of SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 652, SEQ ID NO: 653, SEQ ID NO: 654, SEQ ID NO: 655, SEQ ID NO: 656, SEQ ID NO: 657, SEQ ID NO: 658, or SEQ ID NO: 694. The antibody, including the antibody fused to an attenuated interferon alpha-2b may be comprised in a composition comprising a pharmaceutically acceptable carrier.

[022] Isolated polynucleotides encoding the antibody and the antibody fused to an attenuated interferon alpha-2b are provided. The polynucleotide may comprise the nucleic acid sequence of SEQ ID NO: 667, SEQ ID NO: 670, SEQ ID NO: 671, SEQ ID NO: 672, SEQ ID NO: 673, SEQ ID NO: 674, SEQ ID NO: 668, SEQ ID NO: 669, SEQ ID NO: 675, SEQ ID NO: 676, or SEQ ID NO: 677, SEQ ID NO: 678, SEQ ID NO: 679, SEQ ID NO: 680, SEQ ID NO: 681, SEQ ID NO: 682, SEQ ID NO: 683, SEQ ID NO: 684, SEQ ID NO: 685, SEQ ID NO: 686, SEQ ID NO: 687, SEQ ID NO: 688, SEQ ID NO: 689, SEQ ID NO: 690, SEQ ID NO: 691, SEQ ID NO: 692, SEQ ID NO: 693, SEQ ID NO: 695 SEQ ID NO: 702, SEQ ID NO: 703, SEQ ID NO: 712, SEQ ID NO: 713, SEQ ID NO: 714, SEQ ID NO: 715, SEQ ID NO: 716, SEQ ID NO: 717, SEQ ID NO: 718, SEQ ID NO: 719, SEQ ID NO: 724, SEQ ID NO: 725, SEQ ID NO: 726, SEQ ID NO: 727 SEQ ID NO: 732, SEQ ID NO: 733, SEQ ID NO: 734, SEQ ID NO: 735, SEQ ID NO: 743, SEQ ID NO: 744, SEQ ID NO: 745, SEQ ID NO: 746 . The polynucleotides may comprise a vector. The vector may be used, for example, to transform a cell. A transformed cell comprising such polynucleotides is also provided. The transformed cell may comprise a mammalian cell, a yeast cell, or an insect cell.

[023] Stable cells that express the antibodies are also provided. Antibody-expressing cells may be mammalian cells. Preferred cells are Chinese Hamster Ovary (CHO) cells.

[024] Kits comprising antibodies fused to attenuated interferon alpha-2b are provided. The kits comprise the anti-CD38-attenuated interferon alpha-2b fusion construct, and instructions for using the construct in a method for inhibiting the proliferation of a tumor cell expressing CD38 and a receptor for interferon alpha-2b on its surface, instructions for using the construct in a method for inducing apoptosis in a tumor cell expressing CD38 and a receptor for interferon alpha-2b on its surface, instructions for using the construct in a method for treating a tumor comprising cells expressing CD38 and a receptor for interferon alpha-2b on their surface in a subject in need thereof, and optionally, a pharmaceutically acceptable carrier. Kits comprising anti-CD38 antibodies are provided, and such kits comprise the anti-CD38 antibody and instructions for using the antibody in a method for detecting a CD38-positive tumor cell in a tissue sample isolated from a subject, the antibody may optionally be fused to an attenuated interferon alpha-2b protein.

[025] In one aspect, the present invention refers to a composition comprising the construct according to the present disclosure and a pharmaceutically acceptable carrier. In another aspect, the present invention refers to use of the construct according to the present disclosure in the manufacture of a medicament for the treatment of B-cell lymphoma. In yet another aspect, the present invention refers to use of the construct according to the present disclosure in the manufacture of a medicament for the treatment of multiple myeloma. In a further aspect, the present invention refers to use of the construct according to the present disclosure in the manufacture of a medicament for the treatment of non-Hodgkin's lymphoma. In another aspect, the present invention refers to use of the construct according to the present disclosure in the manufacture of a medicament for the treatment of chronic myelogenous leukemia. In yet another aspect, the present invention refers to use of the construct according to the present disclosure in the manufacture of a medicament for the treatment of chronic lymphocytic leukemia. In a further example, the present invention refers to use of the construct according to the present disclosure in the treatment of or acute myelogenous leukemia. The anti-CD38 antibody-attenuated interferon alpha-2b fusion constructs may be used as a threrapy in the treatment of a tumor comprising cells expressing CD38 and a receptor for interferon alpha-2b on their surface. Generally, a treatment method comprises administering to a subject having the tumor an anti-CD38 antibody-attenuated interferon alpha-2b fusion construct in an amount effective to treat the tumor. The construct may comprise any construct described or exemplified

herein. The subject is preferably a mammal, more preferably a non-human primate, and most preferably a human being. The tumor may comprise a B-cell lymphoma, multiple myeloma, non-Hodgkin's lymphoma, chronic myelogenous leukemia, chronic lymphocytic leukemia or acute myelogenous leukemia.

[026] The anti-CD38 antibodies, optionally fused to an attenuated interferon alpha-2b protein, may be used in a method for detecting CD38 or a CD38-positive tumor cell in a tissue sample isolated from a subject. Generally, the method comprises contacting an antibody that binds specifically to CD38 with a tissue sample isolated from a subject and detecting a complex of the antibody and CD38 or a CD38-positive cell in the tissue sample. The tissue sample may be known to have or be suspected of having CD38-positive tumor cells. The tissue may comprise blood or bone marrow. The CD38-positive tumor cell may be a CD38-positive B-cell lymphoma cell, multiple myeloma cell, non-Hodgkin's lymphoma cell, chronic myelogenous leukemia cell, chronic lymphocytic leukemia cell, or acute myelogenous leukemia cell. The subject is preferably a mammal, more preferably a non-

We claim:

1. An anti-CD38 antibody-attenuated interferon alpha-2b fusion construct, comprising an antibody that specifically binds to CD38 and comprises a heavy chain variable region amino acid sequence of SEQ ID NO: 156 and a light chain variable region amino acid sequence of SEQ ID NO: 185, the antibody being fused to an attenuated interferon alpha-2b.
2. The construct according to claim 1, wherein the antibody comprises a human IgG1 heavy chain constant region.
3. The construct according to claim 1, wherein the antibody comprises a human IgG4 heavy chain constant region.
4. The construct according to claim 3, wherein the human IgG4 heavy chain constant region comprises a proline at position 228 according to the EU numbering system.
5. The construct according to any one of claims 3 or 4, wherein the human IgG4 heavy chain constant region comprises a tyrosine at position 252, a threonine at position 254, and a glutamic acid at position 256 of the constant region according to the EU numbering system.
6. The construct according to any one of claims 1 to 5, wherein the attenuated interferon alpha 2b comprises an alanine to aspartic acid substitution at position 145.
7. The construct according to any one of claims 1 to 5, wherein the attenuated interferon alpha 2b comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 647, SEQ ID NO: 648, SEQ ID NO: 649, SEQ ID NO: 650, and SEQ ID NO: 651.
8. The construct according to any one of claims 1 to 7, wherein the antibody is a human antibody.
9. The construct according to any one of claims 1 to 8 for use as a medicament
10. A composition, comprising the construct according to any one of claims 1 to 8 and a pharmaceutically acceptable carrier.

11. Use of the construct according to any one of claims 1 to 8 in the manufacture of a medicament for the treatment of B-cell lymphoma.

12. Use of the construct according to any one of claims 1 to 8 in the manufacture of a medicament for the treatment of multiple myeloma.

13. Use of the construct according to any one of claims 1 to 8 in the manufacture of a medicament for the treatment of non-Hodgkin's lymphoma.

14. Use of the construct according to any one of claims 1 to 8 in the manufacture of a medicament for the treatment of chronic myelogenous leukemia.

15. Use of the construct according to any one of claims 1 to 8 in the manufacture of a medicament for the treatment of chronic lymphocytic leukemia.

16. Use of the construct according to any one of claims 1 to 8 in the treatment of or acute myelogenous leukemia.

We claim:

1. An isolated antibody which binds specifically to CD38, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 659 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 664, provided that the heavy chain variable region amino acid sequence excludes the amino acid sequence of SEQ ID NO: 13 and the light chain variable region amino acid sequence excludes the amino acid sequence of SEQ ID NO: 14.

2. The isolated antibody of claim 1, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 34.

3. The isolated antibody of claim 1, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 18.

4. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 65.

5. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 68.

6. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 86.

7. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 88.

8. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 92.

9. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 93.

10. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 660.

11. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 661.

12. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 662.

13. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 663.

14. The isolated antibody of claim 1, wherein the heavy chain variable region comprises a CDR3 having an amino acid sequence selected from the group consisting of SEQ ID NO: 204 and SEQ ID NO: 222.

15. The isolated antibody of claim 1, wherein the light chain variable region comprises a CDR1 having an amino acid sequence selected from the group consisting of SEQ ID NO: 233 and SEQ ID NO: 319.

16. The isolated antibody of claim 1, wherein the light chain variable region comprises a CDR2 having an amino acid sequence selected from the group consisting of SEQ ID NO: 235, SEQ ID NO: 307, and SEQ ID NO: 311.

17. The isolated antibody of claim 1, wherein the light chain variable region comprises a CDR3 having an amino acid sequence selected from the group consisting of SEQ ID NO: 237, SEQ ID NO: 321, and SEQ ID NO: 324.

18. The isolated antibody of any of claims 1-17, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 150 nM.

19. The isolated antibody of any of claims 1-17, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 100 nM.

20. The isolated antibody of any of claims 1-17, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 50 nM.

21. The isolated antibody of any of claims 1-17, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 13 nM.

22. The isolated antibody of any of claims 1-21, wherein the antibody is a monoclonal antibody.

23. The isolated antibody of any of claims 1-22, wherein the antibody is a fully human antibody.

24. The isolated antibody of any of claims 1-21, wherein the antibody is a FAb.

25. The isolated antibody of any of claims 1-23, wherein the antibody comprises a human IgG1 constant region.

26. The isolated antibody of claim 25, wherein the human IgG1 constant region comprises a tyrosine at position 252, a threonine at position 254, and a glutamic acid at position 256 of the constant region according to the EU numbering system.

27. The isolated antibody of any of claims 1-23, wherein the antibody comprises a human IgG4 constant region.

28. The isolated antibody of claim 27, wherein the human IgG4 constant region comprises a proline at position 228 according to the EU numbering system, and optionally further comprises a tyrosine at position 252, a threonine at position 254, and a glutamic acid at position 256 of the constant region according to the EU numbering system.

29. The isolated antibody of any of claims 1-28, fused to attenuated interferon alpha-2b having the amino acid sequence of SEQ ID NO: 649 or SEQ ID NO: 651.

30. The isolated antibody of claim 29, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 9.

31. The isolated antibody of claim 29, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 10.

32. The isolated antibody of claim 29, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 652.

33. The isolated antibody of claim 29, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 653.

34. The isolated antibody of claim 29, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 654.

35. The isolated antibody of claim 29, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 655.

36. The isolated antibody of claim 29, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 656.

37. The isolated antibody of claim 29, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 657.

38. The isolated antibody of claim 29, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 658.

39. The isolated antibody of claim 29, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 694.

40. The isolated antibody of any of claims 1-39, wherein the light chain variable region comprises a kappa light chain variable region.

41. The isolated antibody of any of claims 1-39, wherein the light chain variable region comprises a lambda light chain variable region.

42. A composition, comprising the antibody of any of claims 1-41 and a pharmaceutically acceptable carrier.

43. An isolated polynucleotide encoding the antibody of any of claims 1-41.

44. The isolated polynucleotide of claim 43, comprising the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprising the nucleic acid sequence of SEQ ID NO: 669.

45. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 670.

46. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667 and optionally further comprises the nucleic acid sequence of SEQ ID NO: 671.

47. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 672.

48. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 673.

49. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 674.

50. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 668, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 669.

51. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 675.

52. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 676.

53. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 677.

54. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 678.

55. A vector, comprising the polynucleotide of any of claims 43-54.

56. A transformed cell, comprising the vector of claim 55.

57. A transformed cell that expresses the antibody of any of claims 1-41.

58. The transformed cell of claim 57, wherein the cell is a mammalian cell.

59. The transformed cell of claim 58, wherein the mammalian cell is a Chinese Hamster Ovary cell.

60. The transformed cell of claim 57, wherein the cell is a yeast cell.

61. The transformed cell of claim 57, wherein the cell is an insect cell.

62. A kit, comprising the antibody of any of claims 29-39 and instructions for using the antibody in a method for inhibiting the proliferation of a tumor cell expressing CD38 and a receptor for interferon alpha-2b on its surface.

63. A kit, comprising the antibody of any of claims 29-39 and instructions for using the antibody in a method for inducing apoptosis in a tumor cell expressing CD38 and a receptor for interferon alpha-2b on its surface.

64. A kit, comprising the antibody of any of claims 29-39 and instructions for using the antibody in a method for treating a tumor comprising tumor cells which express CD38 and a receptor for interferon alpha-2b on their surface in a subject in need thereof, and optionally comprising a pharmaceutically acceptable carrier.

65. A kit, comprising the antibody of any of claims 1-28 and instructions for using the antibody in a method for detecting CD38 in a tissue sample isolated from a subject.

66. The kit of claim 65, wherein the tissue sample comprises blood or bone marrow.

67. A method for treating a tumor comprising tumor cells which express CD38 and a receptor for interferon alpha-2b on their surface, the method comprising administering to a subject having the tumor the antibody of any of claims 29-39.

68. The method of claim 67 wherein the antibody is comprised in a composition comprising a pharmaceutically acceptable carrier.

69. The method of claim 68, wherein the composition further comprises one or more pharmaceutically acceptable excipients.

70. The method of claim 67, wherein administering comprises intravenously administering.

71. The method of claim 67, wherein the subject is a non-human primate.

72. The method of claim 71, wherein the non-human primate is a Cynomolgus monkey.

73. The method of claim 67, wherein the subject is a human being.

74. The method of claim 67, wherein the tumor is a B-cell lymphoma, multiple myeloma, non-Hodgkin's lymphoma, chronic myelogenous leukemia, chronic lymphocytic leukemia or acute myelogenous leukemia.

75. A method for detecting CD38 in a tissue sample isolated from a subject, comprising contacting the antibody of any of claims 1-28 with a tissue sample isolated from a subject to form an antibody-CD38 complex, and detecting the complex in the tissue sample.

76. The method of claim 75, wherein the tissue sample comprises blood, and the blood is suspected of having CD38-positive tumor cells.

77. The method of claim 76, wherein the tumor cells comprise a B-cell lymphoma cell, a multiple myeloma cell, a non-Hodgkin's lymphoma cell, a chronic myelogenous leukemia cell, a chronic lymphocytic leukemia cell, or an acute myelogenous leukemia cell.

78. The method of claim 75, further comprising isolating the tissue sample from the subject.

79. The method of any of claims 75-78, wherein the subject is a non-human primate.

80. The method of claim 79, wherein the non-human primate is a Cynomolgus monkey.

81. The method of any of claims 75-78, wherein the subject is a human being.

82. An isolated antibody which binds specifically to CD38, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 665 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 666.

83. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 165.

84. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 166.

85. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 167.

86. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 179.

87. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 180.

88. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 156.

89. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 197.

90. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 152.

91. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 161.

92. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 182.

93. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 184.

94. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 185.

95. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 188.

96. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 198.

97. The antibody of claim 82, wherein the heavy chain variable region comprises a CDR2 having an amino acid sequence selected from the group consisting of SEQ ID NO: 516 and SEQ ID NO: 544.

98. The antibody of claim 82, wherein the heavy chain variable region comprises a CDR3 having an amino acid sequence selected from the group consisting of SEQ ID NO: 518, SEQ ID NO: 534, SEQ ID NO: 535, and SEQ ID NO: 536.

99. The antibody of claim 82, wherein the light chain variable region comprises a CDR1 having an amino acid sequence selected from the group consisting of SEQ ID NO: 583, SEQ ID NO: 590, and SEQ ID NO: 696.

100. The antibody of claim 82, wherein the light chain variable region comprises a CDR2 having an amino acid sequence selected from the group consisting of SEQ ID NO: 585, SEQ ID NO: 591, and SEQ ID NO: 605.

101. The antibody of claim 82, wherein the light chain variable region comprises a CDR3 having an amino acid sequence selected from the group consisting of SEQ ID NO: 587 and SEQ ID NO: 594.

102. The isolated antibody of any of claims 82-101, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 100 nM.

103. The isolated antibody of any of claims 82-101, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 50 nM.

104. The isolated antibody of any of claims 82-101, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 30 nM.

105. The isolated antibody of any of claims 82-101, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 15 nM.

106. The isolated antibody of any of claims 82-105, wherein the antibody is a monoclonal antibody.

107. The isolated antibody of any of claims 82-106, wherein the antibody is a humanized antibody.

108. The isolated antibody of any of claims 82-105, wherein the antibody is a FAb.

109. The isolated antibody of any of claims 82-107, wherein the antibody comprises a human IgG1 constant region.

110. The isolated antibody of claim 109, wherein the human IgG1 constant region comprises a tyrosine at position 252, a threonine at position 254, and a glutamic acid at position 256 of the constant region according to the EU numbering system.

111. The isolated antibody of any of claims 82-107, wherein the antibody comprises a human IgG4 constant region.

112. The isolated antibody of claim 111, wherein the human IgG4 constant region comprises a proline at position 228 according to the EU numbering system, and optionally further comprises a tyrosine at position 252, a threonine at position 254, and a glutamic acid at position 256 of the constant region according to the EU numbering system.

113. The isolated antibody of any of claims 82-112, fused to attenuated interferon alpha-2b having the amino acid sequence of SEQ ID NO: 649 or SEQ ID NO: 651.

114. The isolated antibody of claim 113, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 9.

115. The isolated antibody of claim 113, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 10.

116. The isolated antibody of claim 113, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 652.

117. The isolated antibody of claim 113, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 653.

118. The isolated antibody of claim 113, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 654.

119. The isolated antibody of claim 113, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 655.

120. The isolated antibody of claim 113, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 656.

121. The isolated antibody of claim 113, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 657.

122. The isolated antibody of claim 113, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 658.

123. The isolated antibody of claim 113, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 694.

124. The isolated antibody of any of claims 82-123, wherein the light chain variable region comprises a kappa light chain variable region.

125. The isolated antibody of any of claims 82-123, wherein the light chain variable region comprises a lambda light chain variable region.

126. A composition, comprising the antibody of any of claims 82-125 and a pharmaceutically acceptable carrier.

127. An isolated polynucleotide encoding the antibody of any of claims 82-125.

128. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 680, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

129. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 679, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

130. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 681 and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

131. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 683, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

132. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 684, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

133. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 689.

134. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 690.

135. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 691.

136. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 686, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

137. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 712.

138. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 693.

139. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 689.

140. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 690.

141. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 691.

142. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 692.

143. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 693.

144. A vector, comprising the polynucleotide of any of claims 127-143.

145. A transformed cell, comprising the vector of claim 144.

146. A transformed cell that expresses the antibody of any of claims 82-125.

147. The transformed cell of claim 146, wherein the cell is a mammalian cell.

148. The transformed cell of claim 147, wherein the mammalian cell is a Chinese Hamster Ovary cell.

149. The transformed cell of claim 146, wherein the cell is a yeast cell.

150. The transformed cell of claim 146, wherein the cell is an insect cell.

151. A kit, comprising the antibody of any of claims 113-123 and instructions for using the antibody in a method for inhibiting the proliferation of a tumor cell expressing CD38 and a receptor for interferon alpha-2b on its surface.

152. A kit, comprising the antibody of any of claims 113-123 and instructions for using the antibody in a method for inducing apoptosis in a tumor cell expressing CD38 and a receptor for interferon alpha-2b on its surface.

153. A kit, comprising the antibody of any of claims 113-123 and instructions for using the antibody in a method for treating a tumor comprising tumor cells which express CD38 and a receptor for interferon alpha-2b on their surface in a subject in need thereof, and optionally comprising a pharmaceutically acceptable carrier.

154. A kit, comprising the antibody of any of claims 82-112 and instructions for using the antibody in a method for detecting CD38 in a tissue sample isolated from a subject.

155. The kit of claim 154, wherein the tissue sample comprises blood or bone marrow.

156. A method for treating a tumor comprising tumor cells which express CD38 and a receptor for interferon alpha-2b on their surface, the method comprising administering to a subject having the tumor the antibody of any of claims 113-123.

157. The method of claim 156, wherein the antibody is comprised in a composition comprising a pharmaceutically acceptable carrier.

158. The method of claim 157, wherein the composition further comprises one or more pharmaceutically acceptable excipients.

159. The method of claim 156, wherein administering comprises intravenously administering.

160. The method of claim 156, wherein the subject is a non-human primate.

161. The method of claim 160, wherein the non-human primate is a Cynomolgus monkey.

162. The method of claim 156, wherein the subject is a human being.

163. The method of claim 156, wherein the tumor is a B-cell lymphoma, multiple myeloma, non-Hodgkin's lymphoma, chronic myelogenous leukemia, chronic lymphocytic leukemia or acute myelogenous leukemia.

164. A method for detecting CD38 in a tissue sample isolated from a subject, comprising contacting the antibody of any of claims 82-112 with a tissue sample isolated from a subject to form an antibody-CD38 complex, and detecting the complex in the tissue sample.

165. The method of claim 164, wherein the tissue sample comprises blood, and the blood is suspected of having CD38-positive tumor cells.

166. The method of claim 165, wherein the tumor cells comprise a B-cell lymphoma cell, a multiple myeloma cell, a non-Hodgkin's lymphoma cell, a chronic myelogenous leukemia cell, a chronic lymphocytic leukemia cell, or an acute myelogenous leukemia cell.

167. The method of claim 164, further comprising isolating the tissue sample from the subject.

168. The method of any of claims 164-167, wherein the subject is a non-human primate.

169. The method of claim 168, wherein the non-human primate is a Cynomolgus monkey.

170. The method of any of claims 164-167, wherein the subject is a human being.

171. An isolated antibody which binds specifically to CD38, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 736 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 664.

172. The isolated antibody of claim 171, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 110.

173. The isolated antibody of claim 171, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 728.

174. The isolated antibody of claim 171, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 730.

175. The isolated antibody of claim 171, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 731.

176. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 68.

177. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 86.

178. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 88.

179. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 92.

180. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 93.

181. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 660.

182. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 661.

183. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 662.

184. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 663.

185. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 700.

186. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 701.

187. The isolated antibody of claim 171, wherein the heavy chain variable region comprises a CDR1 having the amino acid sequence of SEQ ID NO: 697.

188. The isolated antibody of claim 171, wherein the heavy chain variable region comprises a CDR2 having an amino acid sequence selected from the group consisting of SEQ ID NO: 698 and SEQ ID NO: 737.

189. The isolated antibody of claim 171, wherein the heavy chain variable region comprises a CDR3 having an amino acid sequence selected from the group consisting of SEQ ID NO: 699 and SEQ ID NO: 738.

190. The isolated antibody of claim 171, wherein the light chain variable region comprises a CDR1 having an amino acid sequence selected from the group consisting of SEQ ID NO: 233 and SEQ ID NO: 319.

191. The isolated antibody of claim 171, wherein the light chain variable region comprises a CDR2 having an amino acid sequence selected from the group consisting of SEQ ID NO: 235, SEQ ID NO: 307, and SEQ ID NO: 311.

192. The isolated antibody of claim 171, wherein the light chain variable region comprises a CDR3 having an amino acid sequence selected from the group consisting of SEQ ID NO: 237, SEQ ID NO: 321, and SEQ ID NO: 324.

193. The isolated antibody of any of claims 171-192, 363, or 364, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 100 nM.

194. The isolated antibody of any of claims 171-192, 363, or 364, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 50 nM.

195. The isolated antibody of any of claims 171-192, 363, or 364, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 20 nM.

196. The isolated antibody of any of claims 171-192, 363, or 364, wherein the antibody binds to a CD38-positive cell with an EC_{50} value of less than about 10 nM.

197. The isolated antibody of any of claims 171-196, 363, or 364, wherein the antibody is a monoclonal antibody.

198. The isolated antibody of any of claims 171-197, 363, or 364, wherein the antibody is a fully human antibody.

199. The isolated antibody of any of claims 171-196, 363, or 364, wherein the antibody is a FAb.

200. The isolated antibody of any of claims 171-198, 363, or 364, wherein the antibody comprises a human IgG1 constant region.

201. The isolated antibody of claim 200, wherein the human IgG1 constant region comprises a tyrosine at position 252, a threonine at position 254, and a glutamic acid at position 256 of the constant region according to the EU numbering system.

202. The isolated antibody of any of claims 171-198, 363, or 364, wherein the antibody comprises a human IgG4 constant region.

203. The isolated antibody of claim 202, wherein the human IgG4 constant region comprises a proline at position 228 according to the EU numbering system, and optionally further comprises a tyrosine at position 252, a threonine at position 254, and a glutamic acid at position 256 of the constant region according to the EU numbering system.

204. The isolated antibody of any of claims 171-203, 363, or 364, fused to attenuated interferon alpha-2b having the amino acid sequence of SEQ ID NO: 649 or SEQ ID NO: 651.

205. The isolated antibody of claim 204, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 9.

206. The isolated antibody of claim 204, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 10.

207. The isolated antibody of claim 204, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 652.

208. The isolated antibody of claim 204, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 653.

209. The isolated antibody of claim 204, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 654.

210. The isolated antibody of claim 204, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 655.

211. The isolated antibody of claim 204, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 656.

212. The isolated antibody of claim 204, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 657.

213. The isolated antibody of claim 204, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 658.

214. The isolated antibody of claim 204, wherein the antibody comprises the amino acid sequence of SEQ ID NO: 694.

215. The isolated antibody of any of claims 171-214, 363, or 364, wherein the light chain variable region comprises a kappa light chain variable region.

216. The isolated antibody of any of claims 171-214, 363, or 364, wherein the light chain variable region comprises a lambda light chain variable region.

217. A composition, comprising the antibody of any of claims 171-216, 363, or 364, and a pharmaceutically acceptable carrier.

218. An isolated polynucleotide encoding the antibody of any of claims 171-216, 363, or 364.

219. The isolated polynucleotide of claim 218, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 695, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 669.

220. The isolated polynucleotide of claim 218, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 695 and the nucleic acid sequence of SEQ ID NO: 669.

221. The isolated polynucleotide of claim 218, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 732, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 702.

222. The isolated polynucleotide of claim 218, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 733, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 702.

223. The isolated polynucleotide of claim 218, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 734, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 702.

224. The isolated polynucleotide of claim 218, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 735, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 702.

225. The isolated polynucleotide of claim 218, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 732, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 703.

226. The isolated polynucleotide of claim 218, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 733, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 703.

227. The isolated polynucleotide of claim 218, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 734, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 703.

228. The isolated polynucleotide of claim 218, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 735, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 703.

229. A vector, comprising the polynucleotide of claim 218-228.

230. A transformed cell, comprising the vector of claim 229.

231. A transformed cell that expresses the antibody of any of claims 171-216, 363, or 364.

232. The transformed cell of claim 231, wherein the cell is a mammalian cell.

233. The transformed cell of claim 232, wherein the mammalian cell is a Chinese Hamster Ovary cell.

234. The transformed cell of claim 231, wherein the cell is a yeast cell.

235. The transformed cell of claim 231, wherein the cell is an insect cell.

236. A kit, comprising the antibody of any of claims 204-214 and instructions for using the antibody in a method for inhibiting the proliferation of a tumor cell expressing CD38 and a receptor for interferon alpha-2b on its surface.

237. A kit, comprising the antibody of any of claims 204-214 and instructions for using the antibody in a method for inducing apoptosis in a tumor cell expressing CD38 and a receptor for interferon alpha-2b on its surface.

238. A kit, comprising the antibody of any of claims 204-214 and instructions for using the antibody in a method for treating a tumor comprising tumor cells which express CD38 and a receptor for interferon alpha-2b on their surface in a subject in need thereof, and optionally comprising a pharmaceutically acceptable carrier.

239. A kit, comprising the antibody of any of claims 171-203, 363, or 364, and instructions for using the antibody in a method for detecting CD38 in a tissue sample isolated from a subject.

240. The kit of claim 239, wherein the tissue sample comprises blood or bone marrow.

241. A method for treating a tumor comprising tumor cells which express CD38 and a receptor for interferon alpha-2b on their surface, the method comprising administering to a subject having the tumor the antibody of any of claims 204-214.

242. The method of claim 241, wherein the antibody is comprised in a composition comprising a pharmaceutically acceptable carrier.

243. The method of claim 242, wherein the composition further comprises one or more pharmaceutically acceptable excipients.

244. The method of claim 241, wherein administering comprises intravenously administering.

245. The method of claim 241, wherein the subject is a non-human primate.

246. The method of claim 245, wherein the non-human primate is a Cynomolgus monkey.

247. The method of claim 241, wherein the subject is a human being.

248. The method of claim 241, wherein the tumor is a B-cell lymphoma, multiple myeloma, non-Hodgkin's lymphoma, chronic myelogenous leukemia, chronic lymphocytic leukemia or acute myelogenous leukemia.

249. A method for detecting CD38 in a tissue sample isolated from a subject, comprising contacting the antibody of any of claims 171-203, 363, or 364, with a tissue sample isolated from a subject to form an antibody-CD38 complex, and detecting the complex in the tissue sample.

250. The method of claim 249, wherein the tissue sample comprises blood, and the blood is suspected of having CD38-positive tumor cells.

251. The method of claim 250, wherein the tumor cells comprise a B-cell lymphoma cell, a multiple myeloma cell, a non-Hodgkin's lymphoma cell, a chronic myelogenous leukemia cell, a chronic lymphocytic leukemia cell, or an acute myelogenous leukemia cell.

252. The method of claim 249, further comprising isolating the tissue sample from the subject.

253. The method of any of claims 249-252, wherein the subject is a non-human primate.

254. The method of claim 253, wherein the non-human primate is a Cynomolgus monkey.

255. The method of any of claims 249-252, wherein the subject is a human being.

256. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 700.

257. The isolated antibody of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 701.

258. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 702.

259. The isolated polynucleotide of claim 43, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 667, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 703.

260. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 720.

261. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 721.

262. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 722.

263. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 723.

264. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 739.

265. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 740.

266. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 741.

267. The isolated antibody of claim 82, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 742.

268. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 704.

269. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 705.

270. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 706.

271. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 707.

272. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 708.

273. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 709.

274. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 710.

275. The isolated antibody of claim 82, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 711.

276. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

277. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 714.

278. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 715.

279. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 716.

280. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 717.

281. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 718.

282. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 685, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 719.

283. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 724, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

284. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 725, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

285. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 726, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

286. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 727, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

287. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 743, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

288. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 744, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

289. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 745, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

290. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 746, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 688.

291. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 712.

292. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

293. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 714.

294. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 715.

295. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 716.

296. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 717.

297. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 718.

298. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 687, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 719.

299. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 724, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 712.

300. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 725, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 712.

301. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 726, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 712.

302. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 727, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 712.

303. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 743, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 712.

304. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 744, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

305. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 745, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 712.

306. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 746, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 712.

307. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 724, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

308. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 725, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

309. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 726, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

310. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 727, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

311. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 743, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

312. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 744, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

313. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 745, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

314. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 746, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 713.

315. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 724, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 714.

316. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 725, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 714.

317. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 726, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 714.

318. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 727, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 714.

319. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 743, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 714.

320. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 744, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 714.

321. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 745, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 714.

322. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 746, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 714.

323. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 724, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 715.

324. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 725, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 715.

325. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 726, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 715.

326. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 727, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 715.

327. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 743, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 715.

328. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 744, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 715.

329. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 745, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 715.

330. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 746, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 715.

331. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 724, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 716.

332. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 725, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 716.

333. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 726, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 716.

334. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 727, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 716.

335. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 743, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 716.

336. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 744, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 716.

337. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 745, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 716.

338. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 746, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 716.

339. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 724, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 717.

340. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 725, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 717.

341. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 726, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 717.

342. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 727, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 717.

343. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 743, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 717.

344. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 744, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 717.

345. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 745, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 717.

346. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 746, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 717.

347. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 724, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 718.

348. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 725, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 718.

349. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 726, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 718.

350. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 727, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 718.

351. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 743, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 718.

352. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 744, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 718.

353. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 745, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 718.

354. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 746, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 718.

355. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 724, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 719.

356. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 725, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 719.

357. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 726, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 719.

358. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 727, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 719.

359. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 743, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 719.

360. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 744, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 719.

361. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 745, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 719.

362. The isolated polynucleotide of claim 127, wherein the polynucleotide comprises the nucleic acid sequence of SEQ ID NO: 746, and optionally further comprises the nucleic acid sequence of SEQ ID NO: 719.

363. The isolated antibody of claim 171, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 65.

364. The isolated antibody of claim 171, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 729.