WHAT IS CLAIMED IS:

1. An isolated binding molecule which specifically binds to the same CD100 epitope as a reference monoclonal antibody selected from the group consisting of 2503 or 67.

2. An isolated binding molecule which specifically binds to CD100, wherein said binding molecule competitively inhibits a reference monoclonal antibody selected from the group consisting of 2503 or 67 from specifically binding to CD100.

3. The binding molecule of claim 1 or 2 which comprises an antibody or antigen-binding fragment thereof.

4. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein said antibody or fragment thereof is monoclonal antibody 2503 or 67.

5. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the heavy chain variable region (VH) of said antibody or fragment thereof comprises an amino acid sequence at least 90% identical to SEQ ID NO: 9 or SEQ ID NO: 10.

6. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the light chain variable region (VL) of said antibody or fragment thereof comprises an amino acid sequence at least 90% identical to SEQ ID NO: 17 or SEQ ID NO: 18.

7. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VH of said antibody or fragment thereof comprises an amino acid sequence identical,

except for 20 or fewer conservative amino acid substitutions, to SEQ ID NO: 9 or SEQ ID NO: 10.

8. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VL of said antibody or fragment thereof comprises an amino acid sequence identical, except for 20 or fewer conservative amino acid substitutions, to SEQ ID NO: 17 or SEQ ID NO: 18.

9. The antibody or antigen-binding fragment thereof according to claim 5, wherein the VH of said antibody or fragment thereof comprises the amino acid sequence of SEQ ID NO: 9 or SEQ ID NO: 10.

10. The antibody or antigen-binding fragment thereof according to claim 6, wherein the VL of said antibody or fragment thereof comprises the amino acid sequence of SEQ ID NO: 17 or SEQ ID NO: 18.

11. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VH and VL of said antibody or fragment thereof comprise amino acid sequences at least 90% identical to SEQ ID NO: 9 and SEQ ID NO: 10, respectively, or SEQ ID NO: 17 and SEQ ID NO: 18, respectively.

12. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VH and VL of said antibody or fragment thereof comprise amino acid sequences identical, except for 20 or fewer conservative amino acid substitutions each, to SEQ ID NO: 9 and SEQ ID NO: 10, respectively, or SEQ ID NO: 17 and SEQ ID NO: 18, respectively.

13. The isolated antibody or antigen-binding fragment thereof according to claim 11, wherein the VH and VL of said antibody or fragment thereof comprise amino acid sequences identical to SEQ ID NO: 9 and SEQ ID NO: 10, respectively, or SEQ ID NO: 17 and SEQ ID NO: 18, respectively.

14. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VH of said antibody or fragment thereof comprises a Chothia-Kabat heavy chain complementarity determining region-1 (VH-CDR1) amino acid sequence identical, except for two or fewer amino acid substitutions, to SEQ ID NO: 6.

15. The antibody or fragment thereof according to claim 14, wherein said VH-CDR1 amino acid sequence is SEQ ID NO: 6.

16. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VH of said antibody or fragment thereof comprises a Kabat heavy chain complementarity determining region-2 (VH-CDR2) amino acid sequence identical, except for four or fewer amino acid substitutions, to SEQ ID NO: 7.

17. The antibody or fragment thereof according to claim 16, wherein said VH-CDR2 amino acid sequence is SEQ ID NO: 7.

18. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VH of said antibody or fragment thereof comprises a Kabat heavy chain complementarity determining region-3 (VH-CDR3) amino acid sequence identical, except for two or fewer amino acid substitutions, to SEQ ID NO: 8.

19. The antibody or fragment thereof according to claim 18, wherein said VH-CDR3 amino acid sequence is SEQ ID NO: 8.

20. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VL of said antibody or fragment thereof comprises a Kabat light chain complementarity determining region-1 (VL-CDR1) amino acid sequence identical, except for four or fewer amino acid substitutions, to SEQ ID NO: 14.

21. The antibody or fragment thereof according to claim 20, wherein said VL-CDR1 amino acid sequence is SEQ ID NO: 14.

22. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VL of said antibody or fragment thereof comprises a Kabat light chain complementarity determining region-2 (VL-CDR2) amino acid sequence identical, except for two or fewer amino acid substitutions, to SEQ ID NO: 15.

23. The antibody or fragment thereof according to claim 22, wherein said VL-CDR2 amino acid sequence is SEQ ID NO: 15.

24. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VL of said antibody or fragment thereof comprises a Kabat light chain complementarity determining region-3 (VL-CDR3) amino acid sequence identical, except for two or fewer amino acid substitutions, to SEQ ID NO: 16.

25. The antibody or fragment thereof according to claim 24, wherein said VL-CDR3 amino acid sequence is SEQ ID NO: 16.

26. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VH of said antibody or fragment thereof comprises VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively, except for four or fewer amino acid substitutions in one or more of said VH-CDRs.

27. The isolated antibody of claim 26, wherein the VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences are SEQ ID NOs: 6, 7, and 8, respectively.

28. An isolated antibody or antigen-binding fragment thereof which specifically binds to CD100, wherein the VL of said antibody or fragment thereof comprises VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively, except for four or fewer amino acid substitutions in one or more of said VL-CDRs.

29. The isolated antibody of claim 28, wherein the VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences are SEQ ID NOs: 14, 15, and 16, respectively.

30. The antibody or fragment thereof according to any one of claims 4, 6, 8, 11 to 13, wherein the VH framework regions have five or fewer amino acid substitutions.

31. The antibody or fragment thereof according to any one of claims 5, 7, 9, and 10 to 13, wherein the VL framework regions have five or fewer amino acid substitutions.

32. The antibody or fragment thereof according to any one of claims 3 to 31, which binds to a linear epitope.

33. The antibody or fragment thereof according to any one of claims 3 to 31, which binds to a non-linear conformational epitope.

34. The antibody or fragment thereof according to any one of claims 3 to 33, which is multispecific.

35. The antibody or fragment thereof according to claim 34, which is bispecific.

36. The antibody or fragment thereof according to any one of claims 3 to 35, which is an Fab fragment.

37. The antibody or fragment thereof according to any one of claims 3 to 35, which is an $F(ab)_2$ fragment.

38. The antibody or fragment thereof according to any one of claims 3 to 35, which is an Fv fragment.

39. The antibody or fragment thereof according to any one of claims 3 to 35, which is a single chain antibody.

40. The antibody or fragment thereof according to any one of claims 3 to 35, which is multivalent and comprises at least two heavy chains and at least two light chains.

41. The antibody or fragment thereof according to any one of claims 3 to 35, 39 and 40, which comprises a light chain constant region selected from the group consisting of a human kappa constant region and a human lambda constant region.

42. The antibody or fragment thereof according to any one of claims 3 to 35 and 39 to 41, which comprises a heavy chain constant region or fragment thereof.

43. The antibody or fragment thereof according to claim 42, wherein said heavy chain constant region or fragment thereof is human IgG1, IgG2, IgG3, IgG4, IgM, IgA1, IgA2, IgE or IgD.

44. The antibody or fragment thereof according to any one of claims 3 to 43, which binds to human and murine CD100.

45. The antibody or fragment thereof according to any one of claims 3 to 44, which specifically binds to an CD100 polypeptide or fragment thereof, or a CD100 variant polypeptide with an affinity characterized by a dissociation constant (K_D) no greater than 5×10^{-2} M, 10^{-2} M, 5×10^{-3} M, 10^{-3} M, 5×10^{-4} M, 10^{-4} M, 5×10^{-5} M, 10^{-5} M, 5×10^{-6} M, 10^{-6} M, 5×10^{-7} M, 10^{-7} M, 5×10^{-8} M, 10^{-8} M, 5×10^{-9} M, 10^{-9} M, 5×10^{-10} M, 10^{-10} M, 5×10^{-11} M, 10^{-11} M, 5×10^{-12} M, 5.7×10^{-12} M, 8.4×10^{-12} M, 10^{-12} M, 5×10^{-13} M, 10^{-13} M, 5×10^{-14} M, 10^{-14} M, 5×10^{-15} M, or 10^{-15} M.

46. The antibody or fragment thereof according to claim 45, wherein said CD100 polypeptide or fragment thereof, or a CD100 variant polypeptide is human or murine.

47. The antibody or fragment thereof according to claim 46, wherein said CD100 polypeptide or fragment thereof, or a CD100 variant polypeptide is human and said K_D is about 5×10^{-9} M to about 6×10^{-9} M.

48. The antibody or fragment thereof according to claim 46, wherein said CD100 polypeptide or fragment thereof, or a CD100 variant polypeptide is murine and said K_D is about 1×10^{-9} M to about 2×10^{-9} M.

49. The antibody or fragment thereof according to any one of claims 3 to 48, which inhibits CD100 from binding to a CD100 receptor.

50. The antibody or fragment thereof according to claim 49, wherein said CD100 receptor is Plexin-B1.

51. The antibody or fragment thereof according to any one of claims 3 to 50, wherein said antibody or fragment thereof is humanized, primatized or chimeric.

52. The antibody or fragment thereof according to claim 51, wherein said antibody or fragment thereof is humanized.

53. The antibody or fragment thereof according to any one of claims 3 to 52, further comprising a heterologous polypeptide fused thereto.

54. The antibody or fragment thereof according to any one of claims 3 to 53, wherein said antibody or fragment thereof is conjugated to an agent selected from the group consisting of a cytotoxic agent, a therapeutic agent, a cytostatic agent, a biological toxin, a prodrug, a peptide, a

protein, an enzyme, a virus, a lipid, a biological response modifier, a pharmaceutical agent, a lymphokine, a heterologous antibody or fragment thereof, a detectable label, polyethylene glycol (PEG), and a combination of two or more of any said agents.

55. The antibody or fragment thereof according to claim 54, wherein said cytotoxic agent is selected from the group consisting of a radionuclide, a biotoxin, an enzymatically active toxin, or a combination of two or more of any said cytotoxic agents.

56. The antibody or fragment thereof according to claim 54, wherein said detectable label is selected from the group consisting of an enzyme, a fluorescent label, a chemiluminescent label, a bioluminescent label, a radioactive label, or a combination of two or more of any said detectable labels.

57. A composition comprising the antibody or fragment thereof according to any one of claims 1 to 56, and a carrier.

58. A composition of claim 57, wherein said carrier is selected from the group consisting of saline, buffered saline, dextrose, water, glycerol, and combinations thereof.

59. An isolated polynucleotide comprising a nucleic acid which encodes an antibody VH polypeptide, wherein the amino acid sequence of said VH polypeptide is at least 90% identical to SEQ ID NO: 19 or SEQ ID NO: 20; and wherein an antibody or antigen binding fragment thereof comprising said VH polypeptide specifically binds to CD100.

60. The polynucleotide of claim 59, wherein the nucleotide sequence encoding said VH polypeptide is optimized for increased expression without changing the amino acid sequence of said VH polypeptide.

61. The polynucleotide of claim 60, wherein said optimization comprises identification and removal of splice donor and splice acceptor sites.

62. The polynucleotide claim 60, wherein said optimization comprises optimization of codon usage for the cells expressing said polynucleotide.

63. The polynucleotide of any one of claims 59 to 62, wherein said nucleic acid comprises a nucleotide sequence comprising SEQ ID NO: 19 or SEQ ID NO: 20.

64. The polynucleotide of any claim 63, wherein said nucleic acid comprises a nucleotide sequence consisting of SEQ ID NO: 19 or SEQ ID NO: 20.

65. An isolated polynucleotide comprising a nucleic acid which encodes an antibody VL polypeptide, wherein the amino acid sequence of said VL polypeptide is at least 90% identical to SEQ ID NO: 21 or SEQ ID NO: 22; and wherein an antibody or antigen binding fragment thereof comprising said VL polypeptide specifically binds to CD100.

66. The polynucleotide of claim 65, wherein the nucleotide sequence encoding said VL polypeptide is optimized for increased expression without changing the amino acid sequence of said VL polypeptide.

67. The polynucleotide of claim 66, wherein said optimization comprises identification and removal of splice donor and splice acceptor sites.

68. The polynucleotide of claim 66, wherein said optimization comprises optimization of codon usage for the cells expressing said polynucleotide.

69. The polynucleotide of any one of claims 65 to 68, wherein said nucleic acid comprises a nucleotide sequence comprising SEQ ID NO: 21 or SEQ ID NO: 22.

70. The polynucleotide of any claim 69, wherein said nucleic acid comprises a nucleotide sequence consisting of SEQ ID NO: 21 or SEQ ID NO: 22.

71. An isolated polynucleotide comprising a nucleic acid which encodes an antibody VH polypeptide, wherein the amino acid sequence of said VH polypeptide is identical, except for 20 or fewer conservative amino acid substitutions, to SEQ ID NO: 9 or SEQ ID NO: 10; and wherein an antibody or antigen binding fragment thereof comprising said VH polypeptide specifically binds to CD100.

72. An isolated polynucleotide comprising a nucleic acid which encodes an antibody VL polypeptide, wherein the amino acid sequence of said VL polypeptide is identical, except for 20 or fewer conservative amino acid substitutions, to SEQ ID NO: 17 or SEQ ID NO: 18; and wherein an antibody or antigen binding fragment thereof comprising said VL polypeptide specifically binds to CD100.

73. An isolated polynucleotide comprising a nucleic acid which encodes a VH-CDR1 amino acid sequence identical, except for two or fewer amino acid substitutions, to SEQ ID NO: 6; and

wherein an antibody or antigen binding fragment thereof comprising said VH-CDR1 specifically binds to CD100.

74. The polynucleotide or fragment thereof of claim 73, wherein said VH-CDR1 amino acid sequence is SEQ ID NO: 6.

75. An isolated polynucleotide comprising a nucleic acid which encodes a VH-CDR2 amino acid sequence identical, except for four or fewer amino acid substitutions, to SEQ ID NO: 7; and wherein an antibody or antigen binding fragment thereof comprising said VH-CDR2 specifically binds to CD100.

76. The polynucleotide or fragment thereof of claim 75, wherein said VH-CDR2 amino acid sequence is SEQ ID NO: 7.

77. An isolated polynucleotide comprising a nucleic acid which encodes a VH-CDR3 amino acid sequence identical, except for two or fewer amino acid substitutions, to SEQ ID NO: 8; and wherein an antibody or antigen binding fragment thereof comprising said VH-CDR3 specifically binds to CD100.

78. The polynucleotide or fragment thereof of claim 77, wherein said VH-CDR3 amino acid sequence is SEQ ID NO: 8.

79. An isolated polynucleotide comprising a nucleic acid which encodes a VL-CDR1 amino acid sequence identical, except for four or fewer amino acid substitutions, to SEQ ID NO: 14; and wherein an antibody or antigen binding fragment thereof comprising said VL-CDR1 specifically binds to CD100.

80. The polynucleotide or fragment thereof of claim 79, wherein said VL-CDR1 amino acid sequence SEQ ID NO: 14.

81. An isolated polynucleotide comprising a nucleic acid which encodes a VL-CDR2 amino acid sequence identical, except for two or fewer amino acid substitutions, to SEQ ID NO: 15; and wherein an antibody or antigen binding fragment thereof comprising said VL-CDR2 specifically binds to CD100.

82. The polynucleotide or fragment thereof of claim 81, wherein said VL-CDR2 amino acid sequence is SEQ ID NO: 15.

83. An isolated polynucleotide comprising a nucleic acid which encodes a VL-CDR3 amino acid sequence identical, except for two or fewer amino acid substitutions, to SEQ ID NO: 16; and wherein an antibody or antigen binding fragment thereof comprising said VL-CDR3 specifically binds to CD100.

84. The polynucleotide or fragment thereof of claim 83, wherein said VL-CDR3 amino acid sequence is SEQ ID NO: 16.

85. An isolated polynucleotide comprising a nucleic acid which encodes an antibody VH polypeptide, wherein said VH polypeptide comprises VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively; and wherein an antibody or antigen binding fragment thereof specifically binds to CD100.

86. An isolated polynucleotide comprising a nucleic acid which encodes an antibody VL polypeptide, wherein said VL polypeptide comprises VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively; and wherein an antibody or antigen binding fragment thereof specifically binds to CD100.

87. The polynucleotide of any one of claims 59 to 64, 71, 73 to 78 and 85, further comprising a nucleic acid encoding a signal peptide fused to the antibody VH polypeptide.

88. The polynucleotide of any one of claims 65 to 69, 72, 79 to 84 and 86, further comprising a nucleic acid encoding a signal peptide fused to the antibody VL polypeptide.

89. The polynucleotide of any one of claims 59 to 64, 71 to 78, 85 and 87, further comprising a nucleic acid encoding a heavy chain constant region CH1 domain fused to the antibody VH polypeptide.

90. The polynucleotide of any one of claims 59 to 64, 71 to 78, 85, 87 and 89, further comprising a nucleic acid encoding a heavy chain constant region CH2 domain fused to the antibody VH polypeptide.

91. The polynucleotide of any one of claims 59 to 64, 71 to 78, 85, 87, 89 and 90, further comprising a nucleic acid encoding a heavy chain constant region CH3 domain fused to said VH polypeptide.

92. The polynucleotide of any one of claims 59 to 64, 71 to 78, 85, 87, and 89 to 91, further comprising a nucleic acid encoding a heavy chain hinge region fused to said VH polypeptide.

93. The polynucleotide of any one of claims 91 to 92, wherein said heavy chain constant region is human IgG1, IgG2, IgG3, IgG4, IgM, IgA1, IgA2, IgE or IgD.

94. The polynucleotide of any one of claims 65 to 70, 72, 79-84, 86 and 88, further comprising a nucleic acid encoding a light chain constant region domain fused to said VL polypeptide.

95. The polynucleotide of claim 94, wherein said light chain constant region is human kappa.

96. The polynucleotide of any one of claims 59 to 95, wherein said antibody or antigen binding fragment thereof specifically binds to human and murine CD100.

97. A vector comprising the polynucleotide of any one of claims 59 to 96.

98. The vector of claim 97, wherein said polynucleotide is operably associated with a promoter.

99. A host cell comprising the vector of claim 97 or 98.

100. A method of producing an antibody or fragment thereof which specifically binds CD100, comprising culturing the host cell of claim 99, and recovering said antibody, or fragment thereof.

101. An isolated polypeptide produced by the method of claim 100.

102. An isolated polypeptide encoded by the polynucleotide of any one of claims 59 to 96.

103. An isolated antibody or fragment thereof comprising the polypeptide of claim 101 or 102.

104. A composition comprising an isolated VH encoding polynucleotide and an isolated VL encoding polynucleotide, wherein said VH encoding polynucleotide and said VL encoding polynucleotide comprise nucleic acids encoding amino acid sequences at least 90% identical to SEQ ID NO: 9 and SEQ ID NO: 17, respectively, or SEQ ID NO: 10 and SEQ ID NO: 18, respectively; and wherein an antibody or fragment thereof encoded by said VH and VL encoding polynucleotides specifically binds CD100.

105. The composition of claim 104, wherein said VH encoding polynucleotide and said VL encoding polynucleotide comprise nucleic acids encoding amino acid sequences consisting of SEQ ID NO: 9 and SEQ ID NO: 17, respectively, or SEQ ID NO: 10 and SEQ ID NO: 18, respectively.

106. A composition comprising an isolated VH encoding polynucleotide and an isolated VL encoding polynucleotide, wherein said VH encoding polynucleotide and said VL encoding polynucleotide comprise nucleic acids encoding amino acid sequences identical, except for less than 20 conservative amino acid substitutions, to SEQ ID NO: 9 and SEQ ID NO: 17, respectively, or SEQ ID NO: 10 and SEQ ID NO: 18, respectively; and wherein an antibody or fragment thereof encoded by said VH and VL encoding polynucleotides specifically binds CD100.

107. The composition of claim 106, wherein said VH and VL amino acid sequences are SEQ ID NO: 9 and SEQ ID NO: 17, respectively, or SEQ ID NO: 10 and SEQ ID NO: 18, respectively.

108. A composition comprising an isolated VH encoding polynucleotide and an isolated VL encoding polynucleotide, wherein said VH encoding polynucleotide encodes a VH polypeptide

comprising VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences consisting of SEQ ID NOs: 6, 7, and 8, respectively; wherein said VL encoding polynucleotide encodes a VL polypeptide comprising VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences consisting of SEQ ID NOs: 14, 15, and 16, respectively; and wherein an antibody or fragment thereof encoded by said VH and VL encoding polynucleotides specifically binds CD100.

109. The composition of any one of claims 104 to 108, wherein said VH encoding polynucleotide further comprises a nucleic acid encoding a signal peptide fused to said antibody VH polypeptide.

110. The composition of any one of claims 104 to 108, wherein said VL encoding polynucleotide further comprises a nucleic acid encoding a signal peptide fused to said antibody VL polypeptide.

111. The composition of any one of claims 104 to 110, wherein said VH encoding polynucleotide further comprises a nucleic acid encoding a heavy chain constant region CH1 domain fused to said VH polypeptide.

112. The composition of any one of claims 104 to 111, wherein said VH encoding polynucleotide further comprises a nucleic acid encoding a heavy chain constant region CH2 domain fused to said VH polypeptide.

113. The composition of any one of claims 104 to 112, wherein said VH encoding polynucleotide further comprises a nucleic acid encoding a heavy chain constant region CH3 domain fused to said VH polypeptide.

114. The composition of any one of claims 104 to 113, wherein said VH encoding polynucleotide further comprises a nucleic acid encoding a heavy chain hinge region fused to said VH polypeptide.

115. The composition of claim 113 or 114, wherein said heavy chain constant region is human IgG1, IgG2, IgG3, IgG4, IgM, IgA1, IgA2, IgE or IgD.

116. The composition of any one of claims 104 to 115, wherein said VL encoding polynucleotide further comprises a nucleic acid encoding a light chain constant region domain fused to said VL polypeptide.

117. The composition of claim 116, wherein said light chain constant region is human kappa.

118. The composition of any one of claims 104 to 117 wherein said VH encoding polynucleotide and said VL encoding polynucleotide are contained on a single vector.

119. The composition of any one of claims 104 to 117, wherein said VH encoding polynucleotide is contained on a first vector and said VL encoding polynucleotide is contained on a second vector which is non-identical to said first vector.

120. The composition of claim 118 or 119, wherein said VH encoding polynucleotide is operably associated with a first promoter and said VL encoding polynucleotide is operably associated with a second promoter.

121. The composition of claim 120, wherein said first and second promoters are copies of the same promoter.

122. The composition of claim 120, wherein said first and second promoters non-identical.

123. The composition of any one of claims 118 to 122, wherein said first vector and said second vector are contained in a single host cell.

124. The composition of any one of claims 118 to 122, wherein said first vector and said second vector are contained in separate host cells.

125. The composition of any one of claims 104 to 124, wherein said antibody or antigen binding fragment thereof specifically binds to human and murine CD100.

126. A vector according to claim 118.

127. A first vector according to claim 119.

128. A second vector according to claim 119.

129. The vector of claim 126, wherein said VH encoding polynucleotide and said VL encoding polynucleotide are fused in frame, are co-transcribed from a single promoter operably associated therewith, and are cotranslated into a single chain antibody or antigen-binding fragment thereof.

130. The vector of claim 126, wherein said VH encoding polynucleotide and said VL encoding polynucleotide are co-transcribed from a single promoter operably associated therewith, but are separately translated.

131. The vector of claim 126, further comprising an IRES sequence disposed between said VH encoding polynucleotide and said VL encoding polynucleotide.

132. The vector of claim 126, wherein said polynucleotide encoding a VH and said polynucleotide encoding a VL are separately transcribed, each being operably associated with a separate promoter.

133. A method of producing an antibody or fragment thereof which specifically binds CD100, comprising culturing the host cell of claim 121, and recovering said antibody, or fragment thereof.

134. A method of producing an antibody or fragment thereof which specifically binds CD100, comprising co-culturing the separate host cells of claim 123, and recovering said antibody, or fragment thereof.

135. A method of producing an antibody or fragment thereof which specifically binds CD100, comprising separately culturing the separate host cells of claim 124, combining said VH and VL encoding polypeptides, and recovering said antibody, or fragment thereof.

136. A host cell comprising the vector of any one of claims 126 or 129 to 132, the first vector of claim 127 or the second vector of claim 128.

137. A method of producing an antibody or fragment thereof which specifically binds CD100, comprising culturing the host cell of claim 136 and recovering said antibody, or fragment thereof.

138. An antibody or fragment thereof which specifically binds CD100, produced by the method of claim 137.

139. Use of a composition comprising the isolated antibody or fragment thereof of any one of claims 3 to 56, 103, and 138 and a pharmaceutically acceptable carrier in the manufacture of a medicament for neutralizing CD100 in an animal.

140. Use of a composition comprising the isolated antibody or fragment thereof of any one of claims 3 to 56, 103, and 138 and a pharmaceutically acceptable carrier in the manufacture of a medicament for treating an autoimmune disease or an inflammatory disease in an animal in need of treatment.

141. The use of claim 140, wherein said autoimmune disease or said inflammatory disease is multiple sclerosis.

142. The use of claim 140, wherein said autoimmune disease or said inflammatory disease is arthritis.

143. The use of claim 142, wherein said autoimmune disease or said inflammatory disease is rheumatoid arthritis.

144. Use of a composition comprising the isolated antibody or fragment thereof of any one of claims 3 to 56, 103, and 138 and a pharmaceutically acceptable carrier in the manufacture of a medicament for treating a cancer in an animal in need of treatment.

145. Use of a composition comprising the isolated antibody or fragment thereof of any one of claims 3 to 56, 103, and 138 and a pharmaceutically acceptable carrier in the manufacture of a medicament for inhibiting angiogenesis in an animal in need of treatment for cancer.

146. The use of any one of claims 139 to 145, wherein said isolated antibody or fragment thereof inhibits CD100 binding to a CD100 receptor.

147. The use of claim 146, wherein said CD100 receptor is Plexin-B1.

148. The use of any one of claims 139 to 147, wherein said animal is a mammal.

149. The use of claim 148, wherein said mammal is a human.

150. The isolated antibody or fragment thereof of any one of claims 3 to 56, 103, and 138 for use in neutralizing CD100 in an animal.

151. The isolated antibody or fragment thereof of any one of claims 3 to 56, 103, and 138 for use in treating an autoimmune disease or an inflammatory disease in an animal in need of treatment.

152. The isolated antibody or fragment thereof of claim 151, wherein said autoimmune disease or said inflammatory disease is multiple sclerosis.

153. The isolated antibody or fragment thereof of claim 151, wherein said autoimmune disease or said inflammatory disease is arthritis.

154. The isolated antibody or fragment thereof of claim 153, wherein said autoimmune disease or said inflammatory disease is rheumatoid arthritis.

155. The isolated antibody or fragment thereof of any one of claims 3 to 56, 103, and 138 for use in treating a cancer in an animal in need of treatment.

156. The isolated antibody or fragment thereof of any one of claims 3 to 56, 103, and 138 for use in inhibiting angiogenesis in an animal in need of treatment for cancer.

157. The isolated antibody or fragment thereof of any one of claims 150 to 156, wherein said isolated antibody or fragment thereof inhibits CD100 binding to a CD100 receptor.

158. The isolated antibody or fragment thereof of claim 157, wherein said CD100 receptor is Plexin-B1.

159. The isolated antibody or fragment thereof of any one of claims 150 to 158, wherein said animal is a mammal.

160. The isolated antibody or fragment thereof of claim 159, wherein said mammal is a human.

CLAIMS

1. An isolated antibody or antigen-binding fragment thereof that can specifically bind to CD100, comprising a heavy chain variable region polypeptide (VH) and a light chain variable region polypeptide (VL), wherein

(a) the VH comprises VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively and the VL comprises VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively;

(b) the VH comprises an amino acid sequence at least 90% identical to SEQ ID NO: 9 or SEQ ID NO: 10;

(c) the VL comprises an amino acid sequence at least 90% identical to SEQ ID NO: 17 or SEQ ID NO: 18;

(d) the VH comprises an amino acid sequence at least 90% identical to SEQ ID NO: 9 or SEQ ID NO: 10 and the VL comprises an amino acid sequence at least 90% identical to SEQ ID NO: 17 or SEQ ID NO: 18; or

(e) the antibody or fragment thereof is a monoclonal antibody that comprises a VH encoded by the polynucleotide deposited as ATCC PTA-10004 and a VL encoded by the polynucleotide deposited as ATCC PTA-10005.

2. The antibody or fragment thereof according to claim 1, further comprising a human constant region.

3. The antibody or fragment thereof according to claim 1 or claim 2, which is selected from the group consisting of a single chain antibody, an Fab fragment, an $F(ab)_2$ fragment, and an Fv fragment.

4. The antibody or fragment thereof according to any one of claims 1 to 3, which inhibits CD100 from binding to a CD100 receptor.

5. The antibody or fragment thereof according to any one of claims 1 to 4, which is humanized, primatized or chimeric.

6. The antibody or fragment thereof according to any one of claims 1 to 5, further comprising a heterologous polypeptide fused thereto.

7. A composition comprising the antibody or fragment thereof according to any one of claims 1 to 6, and a carrier.

8. An isolated polynucleotide comprising

(a) a nucleic acid that encodes an antibody VH, wherein the VH comprises VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively; and wherein an antibody or antigen-binding fragment thereof comprising the VH specifically binds to CD100,

(b) a nucleic acid which encodes an antibody VH, wherein the amino acid sequence of the VH is at least 90% identical to SEQ ID NO: 9; and wherein an antibody or antigen-binding fragment thereof comprising the VH specifically binds to CD100,

(c) a nucleic acid sequence comprising SEQ ID NO: 19,

(d) a nucleic acid that encodes an antibody VL, wherein the VL comprises VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively; and wherein an antibody or antigen-binding fragment thereof comprising the VL specifically binds to CD100,

(e) a nucleic acid which encodes an antibody VL, wherein the amino acid sequence of the VL is at least 90% identical to SEQ ID

NO: 17; and wherein an antibody or antigen-binding fragment thereof comprising the VL specifically binds to CD100, or

(f) a nucleic acid sequence comprising SEQ ID NO: 21.

9. A composition comprising an isolated VH-encoding polynucleotide and an isolated VL-encoding polynucleotide, wherein the VH-encoding polynucleotide encodes a VH comprising VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively; wherein the VL-encoding polynucleotide encodes a VL comprising VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively; and wherein an antibody or antigen-binding fragment thereof comprising the VH and VL specifically binds CD100.

10. The composition according to claim 9, wherein the VH-encoding polynucleotide and the VL-encoding polynucleotide are contained on a single vector or on separate vectors.

11. A host cell comprising the polynucleotide of claim 8 or the composition of claim 9 or claim 10.

12. A method of producing an antibody or antigen-binding fragment thereof that specifically binds CD100, comprising culturing a host cell comprising the polynucleotide of claim 8 or the composition of claim 10, and recovering the antibody, or fragment thereof.

13. The antibody or antigen-binding fragment thereof of any one of claims 1 to 6, or the composition of claim 7 for use in

(a) neutralizing CD100 in an animal,

(b) the treatment of an autoimmune disease or an inflammatory disease in an animal in need thereof,

(c) the treatment of a cancer in an animal in need thereof, or

(d) inhibiting angiogenesis in an animal in need of cancer treatment.

14. The antibody or antigen-binding fragment, or composition for the use according to claim 13, wherein the autoimmune disease or the inflammatory disease is multiple sclerosis or arthritis.

15. The use of an antibody or antigen-binding fragment thereof of any one of claims 1 to 6, or the use of a composition of claim 7, in the manufacture/preparation of a composition/medicament for the treatment of an autoimmune disease, an inflammatory disease, or cancer.

16. The use according to claim 15, wherein the autoimmune disease or the inflammatory disease is multiple sclerosis or arthritis.