

CLAIMS

1. An anti-ceramide antibody or antigen-binding fragment thereof comprising an immunoglobulin heavy chain variable region (VH) comprising a heavy chain complementarity determining region (CDR) 1 (HCDR1), a heavy chain CDR2 (HCDR2), and a heavy chain CDR3 (HCDR3), and an immunoglobulin light chain variable region (VL) comprising a light chain complementarity determining region (CDR) 1 (LCDR1), a light chain CDR2 (LCDR2), and a light chain CDR3 (LCDR3), wherein:
 - (a) the HCDR1 comprises an amino acid sequence selected from SEQ ID NO: 1 and 2;
 - (b) the HCDR2 comprises an amino acid sequence selected from SEQ ID NO: 3, 4, 5, and 6;
 - (c) the HCDR3 comprises the amino acid sequence of SEQ ID NO: 7;
 - (d) the LCDR1 comprises the amino acid sequence of SEQ ID NO: 8;
 - (e) the LCDR2 comprises the amino acid sequence of SEQ ID NO: 9; and
 - (f) the LCDR3 comprises the amino acid sequence of SEQ ID NO: 10.
2. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the HCDR1 comprises SEQ ID NO: 1 and the HCDR2 comprises SEQ ID NO: 3.
3. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the HCDR1 comprises SEQ ID NO: 1 and the HCDR2 comprises SEQ ID NO: 4.
4. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the HCDR1 comprises SEQ ID NO: 1 and the HCDR2 comprises SEQ ID NO: 5.
5. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the HCDR1 comprises SEQ ID NO: 1 and the HCDR2 comprises SEQ ID NO: 6.
6. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the HCDR1 comprises SEQ ID NO: 2 and the HCDR2 comprises SEQ ID NO: 3.
7. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the HCDR1 comprises SEQ ID NO: 2 and the HCDR2 comprises SEQ ID NO: 4.

8. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the HCDR1 comprises SEQ ID NO: 2 and the HCDR2 comprises SEQ ID NO: 5.
9. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the HCDR1 comprises SEQ ID NO: 2 and the HCDR2 comprises SEQ ID NO: 6.
10. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 22.
11. The anti-ceramide antibody or antigen-binding fragment thereof of claim 10, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 22.
12. The anti-ceramide antibody or antigen-binding fragment thereof of claim 10, wherein the VH amino acid sequence consists of SEQ ID NO: 17 and the VL amino acid sequence consists of SEQ ID NO: 22.
13. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 23.
14. The anti-ceramide antibody or antigen-binding fragment thereof of claim 13, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 23.
15. The anti-ceramide antibody or antigen-binding fragment thereof of claim 13, wherein the VH amino acid sequence consists of SEQ ID NO: 17 and the VL amino acid sequence consists of SEQ ID NO: 23.
16. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97%

identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 24.

17. The anti-ceramide antibody or antigen-binding fragment thereof of claim 16, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 24.

18. The anti-ceramide antibody or antigen-binding fragment thereof of claim 16, wherein the VH amino acid sequence consists of SEQ ID NO: 17 and the VL amino acid sequence consists of SEQ ID NO: 24.

19. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 22.

20. The anti-ceramide antibody or antigen-binding fragment thereof of claim 19, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 22.

21. The anti-ceramide antibody or antigen-binding fragment thereof of claim 19, wherein the VH amino acid sequence consists of SEQ ID NO: 18 and the VL amino acid sequence consists of SEQ ID NO: 22.

22. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 23.

23. The anti-ceramide antibody or antigen-binding fragment thereof of claim 22, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 23.

24. The anti-ceramide antibody or antigen-binding fragment thereof of claim 22, wherein the VH amino acid sequence consists of SEQ ID NO: 18 and the VL amino acid sequence consists of SEQ ID NO: 23.

25. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 24.

26. The anti-ceramide antibody or antigen-binding fragment thereof of claim 25, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 24.

27. The anti-ceramide antibody or antigen-binding fragment thereof of claim 25, wherein the VH amino acid sequence consists of SEQ ID NO: 18 and the VL amino acid sequence consists of SEQ ID NO: 24.

28. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 22.

29. The anti-ceramide antibody or antigen-binding fragment thereof of claim 28, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 22.

30. The anti-ceramide antibody or antigen-binding fragment thereof of claim 28, wherein the VH amino acid sequence consists of SEQ ID NO: 19 and the VL amino acid sequence consists of SEQ ID NO: 22.

31. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 23.

32. The anti-ceramide antibody or antigen-binding fragment thereof of claim 31, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 23.

33. The anti-ceramide antibody or antigen-binding fragment thereof of claim 31, wherein the VH amino acid sequence consists of SEQ ID NO: 19 and the VL amino acid sequence consists of SEQ ID NO: 23.

34. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 24.

35. The anti-ceramide antibody or antigen-binding fragment thereof of claim 34, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 24.

36. The anti-ceramide antibody or antigen-binding fragment thereof of claim 34, wherein the VH amino acid sequence consists of SEQ ID NO: 19 and the VL amino acid sequence consists of SEQ ID NO: 24.

37. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 20 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 22.

38. The anti-ceramide antibody or antigen-binding fragment thereof of claim 37, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 20 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 22.

39. The anti-ceramide antibody or antigen-binding fragment thereof of claim 37, wherein the VH amino acid sequence consists of SEQ ID NO: 20 and the VL amino acid sequence consists of SEQ ID NO: 22.

40. The anti-ceramide antibody or antigen-binding fragment thereof of claim 1, wherein the VH comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 21 and the VL comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 22.

41. The anti-ceramide antibody or antigen-binding fragment thereof of claim 40, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 21 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 22.

42. The anti-ceramide antibody or antigen-binding fragment thereof of claim 40, wherein the VH amino acid sequence consists of SEQ ID NO: 21 and the VL amino acid sequence consists of SEQ ID NO: 22.

43. An anti-ceramide antibody or antigen-binding fragment thereof comprising an immunoglobulin heavy chain variable region (VH) and an immunoglobulin light chain variable region (VL),

wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to a sequence selected from SEQ ID NO: 17, 18, 19, 20, and 21; and

wherein the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to a sequence selected from SEQ ID NO: 22, 23 and 24.

44. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 22.

45. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 44, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 22.

46. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43-45, wherein the VH amino acid sequence consists of SEQ ID NO: 17 and the VL amino acid sequence consists of SEQ ID NO: 22.

47. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 23.

48. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 47, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 23.

49. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43, 47 or 48, wherein the VH amino acid sequence consists of SEQ ID NO: 17 and the VL amino acid sequence consists of SEQ ID NO: 23.

50. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 24.

51. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 50, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 17 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 24.

52. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43, 50 or 51, wherein the VH amino acid sequence consists of SEQ ID NO: 17 and the VL amino acid sequence consists of SEQ ID NO: 24.

53. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 22.

54. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 53, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 22.

55. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43, 53 or 54, wherein the VH amino acid sequence consists of SEQ ID NO: 18 and the VL amino acid sequence consists of SEQ ID NO: 22.

56. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 23.

57. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 56, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 23.

58. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43, 56 or 57, wherein the VH amino acid sequence consists of SEQ ID NO: 18 and the VL amino acid sequence consists of SEQ ID NO: 23.

59. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 24.

60. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 59, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 18 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 24.

61. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43, 59 or 60, wherein the VH amino acid sequence consists of SEQ ID NO: 18 and the VL amino acid sequence consists of SEQ ID NO: 24.

62. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 22.

63. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 62, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 22.

64. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43, 62 or 63, wherein the VH amino acid sequence consists of SEQ ID NO: 19 and the VL amino acid sequence consists of SEQ ID NO: 22.

65. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 23.

66. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 65, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 23.

67. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43, 65 or 66, wherein the VH amino acid sequence consists of SEQ ID NO: 19 and the VL amino acid sequence consists of SEQ ID NO: 23.

68. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 24.

69. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 68, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 19 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 24.

70. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43, 68 or 69, wherein the VH amino acid sequence consists of SEQ ID NO: 19 and the VL amino acid sequence consists of SEQ ID NO: 24.

71. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 20 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 22.

72. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 71, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 20 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 22.

73. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43, 71 or 72, wherein the VH amino acid sequence consists of SEQ ID NO: 20 and the VL amino acid sequence consists of SEQ ID NO: 22.

74. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43, wherein the VH comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 21 and the VL comprises an amino acid sequence that is at least 90%, 95%, or 97% identical to SEQ ID NO: 22.

75. The anti-ceramide antibody or antigen-binding fragment thereof of claim 43 or 74, wherein the VH comprises an amino acid sequence that is 100% identical to SEQ ID NO: 21 and the VL comprises an amino acid sequence that is 100% identical to SEQ ID NO: 22.

76. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 43, 74 or 75, wherein the VH amino acid sequence consists of SEQ ID NO: 21 and the VL amino acid sequence consists of SEQ ID NO: 22.

77. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 1-76, wherein the antibody or antigen-binding fragment is humanized.
78. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 1-76, wherein the antibody or antigen-binding fragment is fully human.
79. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 1-78, wherein the anti-ceramide antibody comprises one or more point mutations in the Fc domain of the antibody.
80. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 1-79, wherein the antigen-binding fragment is a single chain variable fragment (scFv).
81. The anti-ceramide antibody or antigen-binding fragment thereof of claim 80, wherein the scFv comprises an amino acid sequence that is at least 90%, at least 95%, or at least 97% identical to a sequence selected from the group consisting of SEQ ID NOs: 48-61.
82. The anti-ceramide antibody or antigen-binding fragment thereof of claim 80, wherein the scFv comprises an amino acid sequence that is 100% identical to a sequence selected from the group consisting of SEQ ID NOs: 48-61.
83. The anti-ceramide antibody or antigen-binding fragment thereof of claim 80, wherein the scFv consists of a sequence selected from the group consisting of SEQ ID NOs: 48-61.
84. The anti-ceramide antibody or antigen-binding fragment thereof of claim 80, wherein the light chain variable region of said scFv is carboxy-terminal to the heavy chain variable region of said scFv.
85. The anti-ceramide antibody or antigen-binding fragment thereof of claim 80, wherein the light chain variable region of said scFv is amino-terminal to the heavy chain variable region of said scFv.
86. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 80-85, wherein the scFv comprises a linker polypeptide.

87. The anti-ceramide antibody or antigen-binding fragment thereof of claim 86, wherein the linker polypeptide is between the light chain variable region and the heavy chain variable region of the said scFv.
88. The anti-ceramide antibody or antigen-binding fragment thereof of claim 86 or 87, wherein the linker polypeptide comprises a Gly₄Ser linker.
89. The anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 86-88, wherein the linker polypeptide comprises the formula (Gly₄Ser)_n, wherein n = 1-5.
90. An anti-ceramide single chain variable fragment (scFv) comprising an amino acid sequence that is at least 80%, at least 85%, at least 90%, at least 95%, or at least 97% identical to a sequence selected from the group consisting of SEQ ID NOs: 48-61.
91. The anti-ceramide scFv of claim 90, wherein the scFv comprises an amino acid sequence that is 100% identical to a sequence selected from the group consisting of SEQ ID NOs: 48-61.
92. The anti-ceramide scFv of claim 90, consisting of an amino acid sequence selected from the group consisting of SEQ ID NOs: 48-61.
93. A polynucleotide encoding the anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 1-92.
94. An anti-ceramide single chain variable fragment (scFv) comprising an amino acid sequence that is at least 80%, at least 85%, at least 90%, at least 95%, or at least 97% identical to SEQ ID NO: 48 or 51.
95. The anti-ceramide scFv of claim 94, wherein the scFv comprises an amino acid sequence that is 100% identical to SEQ ID NO: 48 or 51.
96. The anti-ceramide scFv of claim 94, consisting of the amino acid sequence of SEQ ID NO: 48 or 51.

97. A polynucleotide encoding the anti-ceramide single chain variable fragment (scFv) of any one of claims 94-96.
98. An expression vector comprising the polynucleotide of any one of claims 93 or 97.
99. A host cell comprising the polynucleotide of any one of claims 93 or 97 or the expression vector of claim 97.
100. A method of manufacturing the anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 1-89 or the anti-ceramide single chain variable fragment (scFv) of any one of claims 94-96, comprising introducing the expression vector of claim 98 into a host cell.
101. A method of inhibiting apoptosis in a subject in need thereof, comprising administering to the subject a therapeutically effective amount of the anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 1-88 or the anti-ceramide scFv of any one of claims 94-96.
102. The method of claim 101, wherein the apoptosis is associated with a disease selected from the group consisting of graft versus host disease, radiation disease, GI syndrome, and autoimmune disease.
103. The method of claim 102, wherein the disease is radiation disease or GI syndrome and the anti-ceramide antibody or antigen-binding fragment thereof is administered before the subject is exposed to radiation.
104. The method of claim 102, wherein the disease is graft versus host disease and the anti-ceramide antibody or antigen-binding fragment thereof is administered before the subject receives a transplant.
105. The method of claim 104, wherein the transplant is a bone marrow transplant.

106. The method of claim 101, wherein the anti-ceramide antibody or antigen-binding fragment thereof is administered intravenously, intramuscularly, intraperitoneally, intracerebrospinally, subcutaneously, intrasynovially, intrathecally, orally, topically, or via inhalation.

107. A method for mitigating apoptosis in a subject with GI syndrome comprising administering to the subject an effective amount of the anti-ceramide antibody or antigen-binding fragment thereof of any one of claims 1-89 or the anti-ceramide scFv of any one of claims 94-96, after the subject is exposed to penetrating radiation.

108. The method of claim 107, wherein the anti-ceramide antibody or antigen-binding fragment thereof is administered immediately after the subject is exposed to penetrating radiation.

109. The method of claim 107, wherein the anti-ceramide antibody or antigen-binding fragment thereof is administered within 24 hours after the subject is exposed to penetrating radiation.

110. A method for inhibiting apoptosis in a subject with GvHD comprising administering to the subject an effective amount of anti-ceramide antibody or antigen binding fragment thereof of any one of claims 1-89 or the anti-ceramide scFv of any one of claims 94-96, either before the subject receives a transplant or after the subject receives a transplant prior to the onset of GvHD.

111. The method of claim 110, wherein the transplant is a bone marrow transplant.