CLAIMS

1. A composition comprising T cells and serum albumin and dimethyl sulfoxide (DMSO), wherein the composition comprises <2.5% (v/v) serum albumin, and wherein DMSO is present at a ≥5-fold excess (v/v) compared to the serum albumin.
2. The composition of claim 1, comprising <2.2% (v/v), <2% (v/v), <1% (v/v), or about 0.5% (v/v) serum albumin.
3. The composition of claim 1 or claim 2, wherein DMSO is present at a 5-fold to 30-fold excess (v/v) compared to the serum albumin.
4. The composition of claim 3, wherein the excess is from 5-fold to 15-fold, from 6-fold to 12-fold, from 8-fold to 11-fold, or about 10-fold.
5. A composition comprising T cells, serum albumin, and DMSO, wherein the concentration of serum albumin (v/v) is from 0.1-1% and the concentration of DMSO (v/v) is 3-fold to 30-fold higher than the concentration of serum albumin.
6. The composition of claim 5, wherein the serum albumin concentration is <1% (v/v), and the DMSO concentration is from 8-fold to 11-fold higher than the serum albumin concentration.
7. The composition of claim 5 or claim 6, wherein concentration of DMSO is <10% (v/v).
8. The composition of claim 7, wherein the concentration of DMSO is from 2-8% (v/v), from 4-7% (v/v), from 5-6% (v/v), or about 5% (v/v).
9. A composition comprising T cells, serum albumin, and DMSO, wherein the concentration of serum albumin (v/v) is 0.1-1% and the concentration of DMSO is 5-7% (v/v).
10. The composition of claim 9, wherein the concentration of serum albumin (v/v) is between 0.2-0.8%, between 0.3-0.7%, between 0.4-0.6%, or about 0.5%.
11. The composition of any one of claims 1 to 10, having between $1x10^6$ and $40x10^6$ T cells/mL.
12. The composition of any one of claims 1 to 11, in cryopreserved form.
13. A composition comprising T cells and serum albumin, wherein the composition comprises about 0.15% (v/v) serum albumin.
14. The composition of claim 13, also including dimethyl sulfoxide (DMSO).
15. The composition of claim 14, wherein DMSO is present at a 3-fold to 30-fold excess (v/v) compared to the serum albumin.
16. The composition of claim 15, wherein the excess is from 3-fold to 15-fold, from 6-fold to 12-fold, from 8-fold to 11-fold, or about 10-fold.

17. A composition comprising T cells, serum albumin, and DMSO, wherein the concentration of serum albumin (v/v) is from 0.03-0.6% and the concentration of DMSO (v/v) is 3-fold to 30-fold higher than the concentration of serum albumin.

18. The composition of claim 17, wherein the serum albumin concentration is <0.3% (v/v), and the DMSO concentration is from 8-fold to 11-fold higher than the serum albumin concentration.

19. The composition of claim 17 or claim 18, wherein concentration of DMSO is <3% (v/v).

20. The composition of claim 7, wherein the concentration of DMSO is from 0.6-2.4% (v/v), from 0.8-2.2% (v/v), from 1.5-2% (v/v), or about 1.8% (v/v).

21. A composition comprising T cells and DMSO, wherein the composition comprises <0.15% (v/v) DMSO.

22. A composition comprising T cells, serum albumin, and DMSO, wherein the concentration of serum albumin is 0.03-0.3% (v/v) and the DMSO concentration is 0.15-0.20% (v/v).

23. The composition of any one of claims 13 to 22, having between $0.3x10^6$ and $12x10^6$ T cells/mL.

24. The composition of any preceding claim, wherein the T cells are genetically modified T cells, such as CAR-T cells.

25. The composition of any preceding claim, wherein the T cells are human T cells and the serum albumin is human serum albumin.

26. A process for preparing the composition of any one of claims 13 to 25, comprising the step of diluting a composition of any one of claims 1 to 12.

27. The process of claim 26, wherein dilution is performed with an electrolyte solution.

28. The process of claim 27, wherein the electrolyte solution is normal saline.

29. The process of claim 27, wherein the electrolyte solution is a sterile, nonpyrogenic, isotonic solution with a pH of 6.5-8.0 that has about 5.26 g/L NaCl, about 5.02 g/L sodium gluconate, about 3.68 g/L sodium acetate trihydrate, about 0.37 g/L KCl, and about 0.3 g/L $MgCl_2.6H_2O$.

30. A method of treating a subject, comprising a step of administering a composition of any one of claims 1 to 25 to a patient in need thereof.

31. A container comprising a suspension of T cells, serum albumin and dimethyl sulfoxide (DMSO), wherein the composition comprises <2.5% (v/v) serum albumin, and wherein DMSO is present at a ≥5-fold excess (v/v) compared to the serum albumin, and wherein the suspension is to be administered to a patient.

32. The container of claim 31, wherein the suspension comprises <2.2% (v/v), <2% (v/v), <1% (v/v), or about 0.5% (v/v) serum albumin.

33. The container of claim 31 or claim 32, wherein DMSO is present at a 5-fold to 30-fold excess (v/v) compared to the serum albumin.

34. The container of claim 33, wherein the excess is from 5-fold to 15-fold, from 6-fold to 12-fold, from 8-fold to 11-fold, or about 10-fold.

35. A container comprising a suspension of T cells, serum albumin, and DMSO, wherein the concentration of serum albumin (v/v) is from 0.1-1% and the concentration of DMSO (v/v) is 3-fold to 30-fold higher than the concentration of serum albumin, and wherein the suspension is to be administered to a patient.

36. The container of claim 35, wherein the serum albumin concentration is <1% (v/v), and the DMSO concentration is from 8-fold to 11-fold higher than the serum albumin concentration.

37. The container of claim 35 or claim 36, wherein concentration of DMSO is <10% (v/v).

38. The container of claim 37, wherein the concentration of DMSO is from 2-8% (v/v), from 4-7% (v/v), from 5-6% (v/v), or about 5% (v/v).

39. A container comprising a suspension of T cells, serum albumin, and DMSO, wherein the concentration of serum albumin (v/v) is 0.1-1% and the concentration of DMSO is 5-7% (v/v), and wherein the suspension is to be administered to a patient.

40. The container of claim 39, wherein the concentration of serum albumin (v/v) is between 0.2-0.8%, between 0.3-0.7%, between 0.4-0.6%, or about 0.5%.

41. The container of any one of claims 31 to 40, having between $1x10^6$ and $40x10^6$ T cells/mL.

42. The composition of any one of claims 31 to 41, in cryopreserved form.

43. A method of treating a subject, comprising a step of administering to a patient in need thereof the composition of any one of claims 13 to 25 by intravenous infusion.

44. The method of claim 43, wherein the intravenous infusion time is between 15 and 120 minutes.

45. The method of claim 43, wherein the intravenous infusion time is up to 30 minutes.

46. The method of any one of claims 41-43, wherein the infusion volume is between 50 and 100 mL.

47. The method of any one of claims 1-4, wherein the infusion volume is about 50 mL.

48. The composition, method, process, or container of any preceding claim, wherein the T cells comprise a polynucleotide that encodes a chimeric signaling polypeptide, wherein the chimeric signaling polypeptide comprises:

(i) a costimulatory polypeptide cytoplasmic signaling region;

(ii) a truncated MyD88 polypeptide region lacking the TIR domain;

(iii) a truncated MyD88 polypeptide region lacking the TIR domain and a costimulatory polypeptide cytoplasmic signaling region; or

(iv) a truncated MyD88 polypeptide region lacking the TIR domain and a CD40 cytoplasmic polypeptide region lacking the CD40 extracellular domain.

49. The composition, method, process, or container of claim 48, wherein costimulatory polypeptide cytoplasmic signaling region is a signaling region that activates the signaling pathways activated by MyD88, CD40 and/or MyD88-CD40 fusion chimeric polypeptide.

50. The composition, method, process, or container of any of the preceding claim, wherein the T cells comprises a polynucleotide encoding an inducible chimeric pro-apoptotic polypeptide.

51. A kit comprising:

(a) a container comprising an interior space; and

(b) a composition contained within the interior space, wherein the composition comprises:

(i) T cells in an amount between about 1 x 10^6 and 40 x 10^6 (e.g., about 5 x 10^6) cells/ml;

(ii) serum albumin in a concentration of about 0.1%–0.6% v:v;

(iii) DMSO in a concentration of about 5%-7% v:v; and

(iv) a pharmaceutically acceptable carrier for human injection.

52. The kit of claim 51, wherein the container comprises a bag, e.g., a cryopreservation bag.

53. The kit of claim 52, wherein the container further comprises a bag spike in fluidic communication with the interior space.

54. The kit of claim 51, wherein the T cells are genetically engineered.

55. The kit of claim 51, wherein the serum albumin is human serum albumin.

56. The kit of claim 51, wherein the serum albumin is present in concentration of about 0.5% v:v.

57. The kit of claim 51, wherein DMSO is present in a concentration of about 5% v:v.

58. The kit of claim 51, wherein the pharmaceutically acceptable carrier comprises sodium chloride, sodium gluconate sodium, acetate trihydrate, potassium chloride, and magnesium chloride

59. The kit of claim 51, wherein the pharmaceutically acceptable carrier comprises Pharma Lyte or Plasma Lyte.

60. The kit of claim 51, wherein the composition has a volume of about 15 ml.

61. A kit comprising:

(a) a container comprising an interior space; and

(b) a composition contained within the interior space, wherein the composition comprises:

(i) T cells in an amount between about 15 x 10^6 cells and about 600 x 10^6 (e.g., about 75 x 10^6) cells;

(ii) serum albumin in an amount between about 0.03% and about 1.8% serum albumin, e.g., about 1.5% v:v;

(iii) DMSO in a concentration of about 1.5%-2.1 v:v (e.g., about 1.5% v:v); and

(iv) a pharmaceutically acceptable carrier for human injection.

62. The kit of claim 61, wherein the container comprises a bag, optionally including a tube comprising a bag spike, wherein the tube is in fluidic communication with the interior space.

63. The kit of claim 61, wherein the composition has a volume of about 50 ml.

64. A composition as described herein for use in treating a disease, e.g., cancer.

65. A use of a composition as described herein for treating a disease, e.g., cancer.

66. A use of a composition as described herein in the preparation of a medicament for treating a disease, e.g., cancer.