CLAIMS

~~1. A composition comprising a therapeutically effective amount of anti-B cell maturation antigen (BCMA) chimeric antigen receptor (CAR) T cells, wherein the therapeutically effective amount is greater than about 5.0 x 10^7 anti-BCMA CAR T cells, and the anti-BCMA CAR comprises the amino acid sequence set forth in SEQ ID NO: 9.~~

~~2. The composition of claim 1, further comprising a pharmaceutically acceptable carrier.~~

~~3. The composition of claim 1 or claim 2, formulated in a solution comprising 50:50 PlasmaLyte A to CryoStor CS10.~~

~~4. The composition of any one of claims 1 to 3, wherein the therapeutically effect amount is at least about 15.0 x 10^7 anti-BCMA CAR T cells.~~

~~5. The composition of any one of claims 1 to 4, wherein the therapeutically effect amount is at least about 45.0 x 10^7 anti-BCMA CAR T cells.~~

~~6. The composition of any one of claims 1 to 5, wherein the therapeutically effect amount is at least about 80.0 x 10^7 anti-BCMA CAR T cells.~~

~~7. The composition of any one of claims 1 to 6, wherein the therapeutically effect amount is at least about 12.0 x 10 anti-BCMA CAR T cells.~~

~~8. The composition of any one of claims 1 to 3, wherein the therapeutically effect amount is between about 5.0 x 10^7 anti-BCMA CAR T cells and about 15.0 x 10^7 anti-BCMA CAR T cells.~~

~~9. The composition of any one of claims 1 to 3, wherein the therapeutically effect amount is between about 5.0 x 10^7 anti-BCMA CAR T cells and about 45.0 x 10^7 anti-BCMA CAR T cells.~~

~~10. The composition of any one of claims 1 to 3, wherein the therapeutically effect amount is between about 5.0 x 10^7 anti-BCMA CAR T cells and about 80.0 x 10^7 anti-BCMA CAR T cells.~~

~~11. The composition of any one of claims 1 to 3, wherein the therapeutically effect amount is between about 5.0 x 10^7 anti-BCMA CAR T cells and about 12.0 x 10^8 anti-BCMA CAR T cells.~~

~~12. The composition of any one of claims 1 to 3, wherein the therapeutically effect amount is between about 15.0 x 10^7 anti-BCMA CAR T cells and about 45.0 x 10^7 anti-BCMA CAR T cells.~~

~~13. The composition of any one of claims 1 to 3, wherein the therapeutically effect amount is between about 15.0 x 10^7 anti-BCMA CAR T cells and about 80.0 x 10^7 anti-BCMA CAR T cells.~~

~~14. The composition of any one of claims 1 to 3, wherein the therapeutically effect amount is between about 15.0 x 10^7 anti-BCMA CAR T cells and about 12.0 x 10^8 anti-BCMA CAR T cells.~~

~~15. The composition of any one of claims 1-14, wherein the anti-BCMA CAR T cells are transduced with a lentiviral vector encoding the anti-BCMA CAR.~~

~~16. The composition of claim 15, wherein the lentiviral vector copy number (VCN) is about 2.0 copies per anti-BCMA CAR T cell.~~

~~17. The composition of claim 15 or claim 16, wherein the lentiviral vector is a human immunodeficiency virus 1 (HIV-1) vector.~~

~~18. A pharmaceutical composition comprising a population of T cells transduced with a lentivirus encoding an anti-BCMA CAR, wherein population of T cells comprises greater than about 5.0 x 10^7 anti-BCMA CAR T cells, and the anti-BCMA CAR comprises the amino acid sequence set forth in SEQ ID NO: 9.~~

~~19. The pharmaceutical composition of claim 18, further comprising a therapeutically acceptable carrier.~~

~~20. The pharmaceutical composition of claim 18 or claim 19, wherein the composition comprises at least about 15.0 x 10^7 anti-BCMA CAR T cells.~~

~~21. The pharmaceutical composition of any one of claims 18 to 20, wherein the composition comprises at least about 45.0 x 10^7 anti-BCMA CAR T cells.~~

~~22. The pharmaceutical composition of any one of claims 18 to 21, wherein the composition comprises at least about 80.0 x 10^7 anti-BCMA CAR T cells.~~

~~23. The pharmaceutical composition of any one of claims 18 to 22, wherein the composition comprises at least about 12.0 x 10 anti-BCMA CAR T cells.~~

~~24. The pharmaceutical composition of claim 18 or claim 19, wherein the composition comprises between about 5.0 x 10^7 anti-BCMA CAR T cells and about 15.0 x 10^7 anti-BCMA CAR T cells.~~

~~25. The pharmaceutical composition of claim 18 or claim 19, wherein the composition comprises between about 5.0 x 10^7 anti-BCMA CAR T cells and about 45.0 x 10^7 anti-BCMA CAR T cells.~~

~~26. The pharmaceutical composition of claim 18 or claim 19, wherein the composition comprises between about 5.0 x 10^7 anti-BCMA CAR T cells and about 80.0 x 10^7 anti-BCMA CAR T cells.~~

~~27. The pharmaceutical composition of claim 18 or claim 19, wherein the composition comprises between about 5.0 x 10^7 anti-BCMA CAR T cells and about 12.0 x 10^8 anti-BCMA CAR T cells.~~

~~28. The pharmaceutical composition of claim 18 or claim 19, wherein the composition comprises between about 15.0 x 10^7 anti-BCMA CAR T cells and about 45.0 x 10^7 anti-BCMA CAR T cells.~~

~~29. The pharmaceutical composition of claim 18 or claim 19, wherein the composition comprises between about 15.0 x 10^7 anti-BCMA CAR T cells and about 80.0 x 10^7 anti-BCMA CAR T cells.~~

~~30. The pharmaceutical composition of claim 18 or claim 19, wherein the composition comprises between about 15.0 x 10^7 anti-BCMA CAR T cells and about 12.0 x 10^8 anti-BCMA CAR T cells.~~

~~31. The pharmaceutical composition of any one of claims 18 to 30, wherein the T cells comprise $CD8^+$ T cells.~~

~~32. A method of treating a subject that has been diagnosed with relapsed/refractory multiple myeloma comprising administering the subject the composition of any one of claims 1 to 31.~~

~~33. A method of treating a subject that has relapsed/refractory multiple myeloma comprising administering the subject the composition of any one of claims 1 to 31.~~

~~34. The method of claim 32 or claim 33, wherein the composition is administered in a single dose.~~

~~35. The method of any one of claims 32 to 34, wherein the composition is intravenously administered.~~

~~36. The method of any one of claims 32 to 35, where the multiple myeloma was refractory to at least three treatment regimens, including a proteasome inhibitor and an immunomodulatory agent, prior to the administration of the composition.~~

~~37. The method of any one of claims 32 to 35, where the multiple myeloma was double-refractory to one or more treatment regimens, prior to the administration of the composition.~~

~~38. The method of any one of claims 32 to 35, wherein the subject was treated with daratumumab, lenalidomide, pomalidomide, bortezomib, and/or carfilzomib, prior to the administration of the composition.~~

~~39. The method of any one of claims 32 to 38, wherein the subject received an autologous hematopoietic stem cell transplant, prior to the administration of the composition.~~

~~40. The method of any one of claims 32 to 39, wherein the subject was lymphodepleted with cyclophosphamide 300 mg/m^2 and fludarabine 30 mg/m^2.~~

1. A composition for treating a subject with multiple myeloma, comprising a therapeutically effective amount of anti-B cell maturation antigen (BCMA) chimeric antigen receptor (CAR) T cells, wherein the therapeutically effective amount is from 15.0 x 10^7 to 80.0 x 10^7 anti-BCMA CAR T cells, and wherein the anti-BCMA CAR comprises amino acids 22-493 of the amino acid sequence set forth in SEQ ID NO: 9.

2. The composition of claim 1, wherein the anti-BCMA CAR comprises the amino acid sequence set forth in SEQ ID NO: 9.

3. The composition of claim 1 or 2, wherein the anti-BCMA CAR is encoded by the nucleotide sequence set forth in SEQ ID NO: 10.

4. The composition of any one of claims 1 to 3, further comprising a pharmaceutically acceptable carrier.

5. The composition of any one of claims 1 to 4, formulated in a solution comprising a cryopreservation medium.

6. The composition of any one of claims 1 to 5, wherein

the therapeutically effective amount is from 15.0×10^7 to 45.0×10^7 anti-BCMA CAR T cells

7. The composition of any one of claims 1-6, wherein the anti-BCMA CAR T cells are produced by transduction with a lentiviral vector encoding the anti-BCMA CAR.

8. The composition of claim 7, wherein the lentiviral vector copy number (VCN) is about 2.0 copies per anti-BCMA CAR T cell.

9. The composition of claim 7 or claim 8, wherein the lentiviral vector is a human immunodeficiency virus 1 (HIV-1) vector.

10. A pharmaceutical composition for treating a subject with multiple myeloma, comprising a population of T cells transduced with a lentivirus encoding an anti-BCMA CAR, wherein the population of T cells comprises from 15.0×10^7 to 80.0×10^7 anti-BCMA CAR T cells, and wherein the anti-BCMA CAR comprises amino acids 22-493 of the amino acid sequence set forth in SEQ ID NO: 9.

11. The pharmaceutical composition of claim 10, wherein the anti-BCMA CAR comprises the amino acid sequence set forth in SEQ ID NO: 9.

12. The pharmaceutical composition of claim 10 or 11, wherein the anti-BCMA CAR is encoded by the nucleotide sequence set forth in SEQ ID NO: 10.

13. The pharmaceutical composition of any one of claims 10-12, further comprising a pharmaceutically acceptable carrier.

14. The pharmaceutical composition of any one of claims 10-13, wherein the composition comprises from 15.0×10^7 to 45.0×10^7 anti-BCMA CAR T cells

15. The pharmaceutical composition of any one of claims 10-14, wherein the T cells comprise $CD8^+$ T cells.

16. The composition or pharmaceutical composition of any one of claims 1-15, wherein the cells are human cells.

17. The composition or pharmaceutical composition of any one of claims 1 to 16, for use in the treatment of a subject that has been diagnosed with relapsed/refractory multiple myeloma or a subject that has relapsed/refractory multiple myeloma.

18. The composition of claim 17, wherein:

(a) the multiple myeloma was refractory to at least three treatment regimens, including a proteasome inhibitor and an immunomodulatory agent;

(b) the multiple myeloma was double-refractory to one or more treatment regimens; or

(c) the multiple myeloma was refractory to daratumumab, lenalidomide, pomalidomide, bortezomib, and/or carfilzomib.

19. The composition of claim 17 or claim 18, wherein the subject was treated with an autologous hematopoietic stem cell transplant prior to administration of the composition or pharmaceutical composition.

20. The composition of any one of claims 17 to 19, wherein the subject was lymphodepleted with cyclophosphamide 300 mg/m^2 and fludarabine 30 mg/m^2 prior to administration of the composition or pharmaceutical composition.

21. The composition of any one of claims 17-20, wherein the cells were obtained from the subject.