WHAT IS CLAIMED IS:

1. A constitutively active chimeric cytokine receptor (CACCR) composed of two monomers, each monomer comprising:

a. a transmembrane domain;

b. a Janus Kinase (JAK)-binding domain; and

c. an intracellular recruiting domain comprising a STAT-activation domain,

wherein the CACCR does not comprise an extracellular ligand binding domain, wherein the monomers are constitutively dimerized and wherein the transmembrane domain and JAK-binding domain comprise amino acids 478-582 of SEQ ID NO: 6 comprising amino acid substitutions at S505N and W515K.

2. The CACCR of claim 1, wherein the JAK-binding domain comprises a JAK1-binding domain.

3. The CACCR of claim 1, wherein the JAK-binding domain comprises a JAK2-binding domain.

4. The CACCR of claim 1, wherein the JAK-binding domain comprises a JAK3-binding domain.

5. The CACCR of claim 1, wherein the JAK-binding domain comprises a TYK2-binding domain.

6. The CACCR of any one of claims 1 to 5, wherein the recruiting domain comprises a STAT-recruiting domain selected from the group consisting of a STAT-1-, a STAT-3-, a STAT-4-, and a STAT-5-recruiting domain.

7. The CACCR of any one of claims 1-6, wherein amino acids 478-582 of SEQ ID NO: 6 further comprise an amino acid substitution at H499.

8. The CACCR of any one of claims 1-6, wherein amino acids 478-582 of SEQ ID NO: 6 further comprise an amino acid substitution at G509.

9. The CACCR of any one of claims 1-6, wherein amino acids 478-582 of SEQ ID NO: 6 further comprise an amino acid substitution at H499 and G509.

10. The CACCR of claims 7 or 9, wherein the amino acid substitution at H499 is H499L.

11. The CACCR of claims 8 or 9, wherein the amino acid substitution at G509 is G509N.

12. The CACCR of any one of claims 1 to 11, wherein the monomers are identical.

13. The CACCR of any one of claims 1 to 11, wherein the monomers are different.

14. The CACCR of any one of claims 1 to 13, wherein the recruiting domain comprises a STAT-recruiting domain from a cytokine receptor.

15. The CACCR of any one of claims 1 to 13, wherein the recruiting domain comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 46, SEQ ID NO: 47, SEQ ID NO: 67, SEQ ID NO: 73, SEQ ID NO: 74, SEQ ID NO: 75, SEQ ID NO: 76, SEQ ID NO: 77, SEQ ID NO: 78, and SEQ ID NO: 86.

16. The CACCR of any one of claims 1 to 15, wherein the recruiting domain comprises the STAT-recruiting domain from IL7Ra.

17. The CACCR of claim 16, wherein the IL7Ra is IL7Ra(316-459) (SEQ ID NO: 46).

18. The CACCR of any one of claims 1-16, wherein the recruiting domain comprises the STAT-recruiting domain from IL2Rb.

19. The CACCR of claim 18, wherein the IL2Rb comprises the recruiting domain comprises the STAT-recruiting domain from IL7Ra.

20. The CACCR of any one of claims 1-15, wherein the recruiting domain comprises the STAT-recruiting domain from IL12Rb2.

21. The CACCR of claim 20, wherein the IL12Rb2 comprises IL12Rb2(714-862) (SEQ ID NO: 86) or IL12Rb2(775-825) (SEQ ID NO: 67).

22. The CACCR of any one of claims 1 to 21, wherein the recruiting domain comprises the STAT-recruiting domains from two cytokine receptors.

23. The CACCR of claim 22, wherein the two cytokine receptors are selected from the group consisting of IL7Ra, IL2Rb, and IL12Rb2.

24. A polynucleotide encoding any one of the CACCRs of any one of claims 1 to 23.

25. An expression vector comprising the polynucleotide of claim 24.

26. The expression vector of claim 25 comprising the polynucleotide of claim 24 and a polynucleotide expressing a chimeric antigen receptor (CAR).

27. The expression vector of claim 26, wherein the CAR binds to BCMA, EGFRvIII, Flt-3, WT-1, CD20, CD23, CD30, CD38, CD70, CD33, CD133, LeY, NKG2D, CS1, CD44v6, ROR1, CD19, Claudin-18.2 (Claudin-18A2, or Claudin18 isoform 2), DLL3 (Delta-like protein 3, Drosophila Delta homolog 3, Delta3), Muc17 (Mucin17, Muc3, Muc3), FAP alpha (Fibroblast Activation Protein alpha), Ly6G6D (Lymphocyte antigen 6 complex locus protein G6d, c6orf23, G6D, MEGT1, NG25), or RNF43 (E3 ubiquitin-protein ligase RNF43, RING finger protein 43).

28. The expression vector of any one of claims 25-27, wherein the vector is a lentiviral vector.

29. An engineered immune cell comprising the expression vector of any one of claims 25-28.

30. The engineered immune cell of claim 29, wherein the immune cell is a T-cell.

31. An engineered immune cell comprising a chimeric antigen receptor (CAR) and at least one CACCR of any one of claims 1 to 23.

32. The engineered immune cell of claim 31, wherein the CAR and the CACCR are expressed in stoichiometrically equal amounts.

33. The engineered immune cell of any one of claims 29-32, wherein the immune cell is a T-cell.

34. The engineered immune cell of any one of claims 31-33, wherein the CAR binds to BCMA, EGFRvIII, Flt-3, WT-1, CD20, CD23, CD30, CD38, CD70, CD33, CD133, LeY, NKG2D, CS1, CD44v6, ROR1, CD19, Claudin-18.2 (Claudin-18A2, or Claudin18 isoform 2), DLL3 (Delta-like protein 3, Drosophila Delta homolog 3, Delta3), Muc17 (Mucin17, Muc3, Muc3), FAP alpha (Fibroblast Activation Protein alpha), Ly6G6D (Lymphocyte antigen 6 complex locus protein G6d, c6orf23, G6D, MEGT1, NG25), or RNF43 (E3 ubiquitin-protein ligase RNF43, RING finger protein 43).

35. The engineered immune cell of any one of claims 31-34, wherein the cell is an allogeneic immune cell.

36. The engineered immune cell of any one of claims 31-34, wherein the cell is an autologous immune cell.

37. The engineered immune cell of any one of claims 31-36, wherein the immune cell is selected from the group consisting of: T-cell, dendritic cell, killer dendritic cell, mast cell, NK-cell, macrophage, monocyte, B-cell and an immune cell derived from a stem cell.

38. A method of preparing an engineered immune cell, the method comprising introducing the polynucleotide of claim 24 or an expression vector of any one of claims 25-28 into an immune cell.

39. The method of claim 38, wherein the immune cell is selected from the group consisting of: T-cell, dendritic cell, killer dendritic cell, mast cell, NK-cell, macrophage, monocyte, B-cell and an immune cell derived from a stem cell.

40. A pharmaceutical composition comprising the engineered immune cells of any one of claims 32-37.

41. A kit comprising the engineered immune cell of any one of claims 29-37 or the pharmaceutical composition of claim 40.

42. Use of the engineered immune cells of any one of claims 29-37 or the pharmaceutical composition of claim 40 in the manufacture of a medicament for treating a cancer in a subject.

43. The use of claim 42, wherein the cancer comprises a solid tumor.

44. The use of claim 42, wherein the cancer comprises a liquid tumor.