CLAIMS

WHAT IS CLAIMED IS:

1. An engineered immune cell, comprising:
   (a) a first nucleic acid sequence encoding (i) a domain that binds to a subunit of a T cell receptor (TCR) complex linked to (ii) a synthetic localizing domain;
   (b) a second nucleic acid sequence encoding a chimeric antigen receptor (CAR);
   (c) a third nucleic acid sequence encoding a surface polypeptide binding domain linked to a synthetic surface polypeptide localizing domain; and
   wherein the engineered immune cell comprises at least twice as much of the first nucleic acid sequence as the second nucleic acid sequence or the third nucleic acid sequence.
2. The engineered immune cell of claim 1, wherein the subunit of the TCR complex is CD3ε.
3. The engineered immune cell of claim 1 or 2, wherein the first nucleic acid sequence comprises, in 5' to 3' direction, a sequence encoding the domain that binds to a subunit of the TCR complex, a sequence encoding a Myc tag, a sequence encoding a $(GGGGS)_4$ sequence, and a sequence encoding the ER retention signal comprising the amino acid sequence KDEL.
4. The engineered immune cell of any one of claims 1-3, wherein the second nucleic acid sequence and the third nucleic acid sequence are on the same nucleic acid molecule, and wherein the same nucleic acid molecule is a vector.
5. The engineered immune cell of any one of claims 1-3, wherein the first nucleic acid sequence is on a nucleic acid molecule separate from the second or the third nucleic acid sequence, and wherein the nucleic acid molecule having the first nucleic acid sequence is a first expression vector.
6. The engineered immune cell of any one of claims 1-5, further comprising a fourth nucleic acid sequence encoding a kill gene.
7. The engineered immune cell of claim 6, wherein the kill gene comprises CD20 or a derivative thereof.
8. The engineered immune cell of any one of claims 5-7, wherein the first expression vector further comprises a ribosome codon skipping site between the first nucleic acid sequence and the fourth nucleic acid sequence.

9. The engineered immune cell of any one of claims 1-8, wherein the CAR comprises a target binding domain that binds to the surface polypeptide.
10. The engineered immune cell of any one of claims 1-9, wherein the surface polypeptide is CD7.
11. The engineered immune cell of claim 9 or 10, wherein the surface polypeptide binding domain is a first antibody or antigen binding domain thereof, and the target binding domain is a second antibody or antigen binding domain thereof, and wherein the amino acid sequence of the first antibody and the amino acid sequence of the second antibody are at least 80% identical.
12. The engineered immune cell of any one of claims 1-11, wherein the domain that binds to the subunit of the TCR complex comprises an antibody or an antigen binding domain thereof.
13. The engineered immune cell of claim 12, wherein the antibody is an anti-CD3ε antibody.
14. The engineered immune cell of claim 12 or 13, wherein the antibody is a single chain Fv (scFv) or a single domain antibody (sdAb).
15. The engineered immune cell of claim 13 or 14, wherein the anti-CD3ε antibody comprises a heavy chain complementarity-determining region (HC CDR) 1 of SEQ ID NOs: 212 or 215, a HC CDR2 of SEQ ID NOs: 213 or 216, a HC CDR3 of SEQ ID NOs: 214 or 217, and a light chain (LC) CDR1 of SEQ ID NOs: 218 or 221, a LC CDR2 of SEQ ID NOs: 219 or 222, a LC CDR3 of SEQ ID NOs: 220 or 223.
16. The engineered immune cell of any one of claims 4-15, wherein the vector is a second expression vector, and wherein the second expression vector is a bicistronic lentiviral expression vector.
17. The engineered immune cell of any one of claims 1-16, wherein the second nucleic acid sequence and the third nucleic acid sequence are operably linked by an Internal Ribosome Entry Site (IRES) or a ribosomal codon skipping site.
18. The engineered immune cell of any one of claims 1-17, wherein the synthetic localizing domain or the synthetic surface polypeptide localizing domain comprises an endoplasmic reticulum (ER) retention sequence, a Golgi retention sequence, a proteasome localizing sequence, or a transmembrane domain.
19. The engineered immune cell of any one of claims 1-18, wherein surface expression of the TCR complex and the surface polypeptide are downregulated in the engineered

immune cell.

20. A cell population comprising the engineered immune cell of any one of claims 1-19, wherein less than 2% of cells of the cell population express the TCR complex on their surface.