WHAT IS CLAIMED IS:

1. A recombinant polypeptide comprising:
a protein of interest, wherein the protein of interest is a chimeric antigen receptor (CAR) or a T cell receptor (TCR);
a protein localization tag; and
a protease cleavage site disposed between the protein of interest and the protein localization tag.

2. The recombinant polypeptide of claim 1, comprising from N-terminus to C-terminus:
(a) the protein of interest; the protease cleavage site; and the protein localization tag; or
(b) the protein localization tag, the protease cleavage site; and the protein of interest.

3. The recombinant polypeptide of any one of claims 1 to 2, wherein the protein localization tag is selected from the group consisting of: an endoplasmic reticulum (ER) localization tag, a Golgi apparatus (Golgi) localization tag, a lysosome localization tag, a plasma membrane localization tag, a mitochondria localization tag, a peroxisome localization tag, a cytosolic localization tag, and a nuclear localization tag.

4. The recombinant polypeptide of any one of claims 1 to 3, wherein the protein localization tag is an ER localization tag.

5. The recombinant polypeptide of claim 4, wherein the ER localization tag comprises 85% or greater, 90% or greater, or 100% amino acid sequence identity to the amino acid sequence LYKYKSRRSFIDEKKMP (SEQ ID NO:1) or 100% amino acid sequence identity to the amino acid sequence KKMP (SEQ ID NO:2).

6. The recombinant polypeptide of any one of claims 1 to 3, wherein the protein localization tag is a Golgi localization tag, wherein the Golgi localization tag comprises the amino acid sequence YQRL (SEQ ID NO:24).

7. The recombinant polypeptide of any one of claims 1 to 3, wherein the protein localization tag is a lysosome localization tag, wherein the lysosome localization tag comprises the amino acid sequence KFERQ (SEQ ID NO:25).

8. The recombinant polypeptide of any one of claims 1 to 7, wherein the CAR comprises a first and a second intracellular signaling domain or fragments thereof independently selected from the

group consisting of: a CD3 intracellular signaling domain, a CD28 intracellular signaling domain, a 41 BB intracellular signaling domain, an OX40 intracellular signaling domain, an inducible co-stimulator (ICOS) intracellular signaling domain, an CD27 intracellular signaling domain, and a MyD88/CD40 intracellular signaling domain.

9. The recombinant polypeptide of claim 8, wherein the first intracellular signaling domain or fragment thereof is a CD3 intracellular signaling domain and the second intracellular signaling domain or fragment thereof is a 4-1BB intracellular signaling domain or a CD28 intracellular signaling domain.

10. The recombinant polypeptide of any one of claims 1 to 9, wherein the CAR comprises an extracellular binding domain comprising a single chain antibody or a single chain variable fragment (scFv).

11. The recombinant polypeptide of claim 10, wherein the extracellular binding domain of the CAR specifically binds an antigen expressed on the surface of a cancer cell, wherein the cancer cell-surface antigen is selected from the group consisting of: B7H3 (CD276), CD19, GD2, CD22, and HER2.

12. The recombinant polypeptide of any one of claims 1 to 11, wherein the protease cleavage site is a viral protease cleavage site.

13. The recombinant polypeptide of claim 12, wherein the viral protease cleavage site is for a viral protease derived from hepatitis C virus (HCV) nonstructural protein 3 (NS3).

14. The recombinant polypeptide of claim 13, wherein the viral protease cleavage site is for a viral protease that further comprises a cofactor polypeptide derived from HCV nonstructural protein 4A (NS4A).

15. The recombinant polypeptide of any one of claims 12 to 14, wherein the viral protease cleavage site is selected from the group consisting of: an NS4A/4B junction cleavage site, an NS3/NS4A junction cleavage site, an NS4A/NS4B junction cleavage site, an NS4B/NS5A junction cleavage site, an NS5A/NS5B junction cleavage site, and variants thereof cleavable by the viral protease.

16. The recombinant polypeptide of any one of claims 1 to 15, wherein the recombinant polypeptide further comprises a protease, and wherein the protease cleavage site is a cleavage site for the

protease, wherein the protease cleavage site is disposed between the protein of interest and the protease.

17. The recombinant polypeptide of claim 16, comprising from N-terminus to C-terminus:
the protein of interest; the protease cleavage site; the protease; and the protein localization tag;
or
the protein localization tag; the protease the protease cleavage site; and the protein of interest.

18. A nucleic acid or expression vector encoding the recombinant polypeptide of any one of claims 1 to 17.

19. A cell comprising the nucleic acid or the expression vector of claim 18.

20. The cell of claim 19, wherein the cell is a human T cell.

21. A cell comprising a nucleic acid encoding the recombinant polypeptide of any one of claims 1 to 17 or an expression vector encoding the recombinant polypeptide of any one of claims 1 to 17, wherein the recombinant polypeptide does not comprise a protease, and wherein the cell further comprises a nucleic acid encoding a protease, wherein the protease cleavage site is a cleavage site for the protease.

22. The cell of claim 21, wherein the protease is (a) a soluble cytosolic protease or (b) is expressed on the cytosolic side of the cellular compartment determined by the protein localization tag.

23. The cell of claim 21 , wherein the protease is expressed on the lumen side of the cellular compartment determined by the protein localization tag.

24. A method of regulating cellular localization of a protein of interest, comprising:
contacting the cell of any one of claims 19 to 23
with an inhibitor of the protease when retention of the protein of interest at the cellular compartment determined by the protein localization tag is desired.

25. The method according to claim 24, wherein the method comprises regulating cellular localization of the protein of interest between the cellular compartment determined by the protein localization tag and the cell surface.

26. The method of claim 24 or 25, wherein the protease is derived from HCV NS3, and wherein the inhibitor of the protease is selected from the group consisting of: asunaprevir (ASV), danoprevir (DPV), simeprevir (SPV), grazoprevir (GPV), and any combination thereof.

27. The method according to any one of claims 24 to 26 , further comprising ceasing the contacting when retention of the protein of interest at the cellular compartment determined by the protein localization tag is no longer desired.

28. A pharmaceutical composition comprising:
the cell of any one of claims 19 to 23 ; and
a pharmaceutically acceptable carrier.

29. A method of administering a regulatable cell-based therapy to an individual in need thereof, comprising administering to the individual the pharmaceutical composition of claim 28.

30. The method of claim 29 , further comprising administering to the individual an inhibitor of the protease when retention of the protein of interest at the cellular compartment determined by the protein localization tag is desired.

31. The method according to claim 30, wherein the inhibitor of the protease is administered concurrently with the pharmaceutical composition or subsequently to administration of the pharmaceutical composition.

32. The method according to any one of claims 29 to 31, further comprising ceasing administration of the protease inhibitor when retention of the protein of interest at the cellular compartment determined by the protein localization tag is no longer desired.