CLAIMS

What is claimed is:

1. A drug-molecule conjugate comprising a drug and a molecule which binds to a CAR expressed on the surface of a cell.

2. The conjugate of claim 1, wherein binding of the conjugate to the CAR results in internalization of the conjugate into the cell.

3. The conjugate of claim 1, wherein binding of the conjugate to the CAR results in the drug-mediated death of the cell.

4. The conjugate of claim 1, wherein the cell is a T cell and wherein binding of the conjugate to the CAR results in the drug-mediated inhibition of the activation of the T cell.

5. The conjugate of claim 1, wherein the molecule is selected from the group consisting of an antibody, a protein, a peptide, a nucleotide, a small molecule, and fragments thereof.

6. A drug-molecule conjugate for use as a medicament for inhibiting the depletion of healthy tissue during CAR T cell therapy comprising a drug and a molecule to a subject receiving CAR T cell therapy, wherein the molecule binds to a CAR expressed on the surface of a T cell.

7. The conjugate of claim 6, wherein binding of the conjugate to the CAR results in internalization of the conjugate into the cell.

8. The conjugate of claim 6, wherein the binding of the conjugate to the CAR results in the drug-mediated death of the cell.

9. The conjugate of claim 6, wherein the binding of the conjugate to the CAR results in the drug-mediated inhibition of the activation of the T cell.

10. The conjugate of claim 6, wherein the molecule is selected from the group consisting of an antibody, a protein, a peptide, a nucleotide, a small molecule, and fragments thereof.

CLAIMS

1. A drug-molecule conjugate comprising a drug and a molecule which binds to a chimeric antigen receptor (CAR) expressed on the surface of a cell, wherein binding of the conjugate to the CAR results in drug-mediated death of the CAR cell.

2. The conjugate of claim 1, wherein binding of the conjugate to the CAR results in internalization of the conjugate into the cell.

3. The conjugate of claim 1, wherein the cell is a T cell and wherein binding of the conjugate to the CAR results in the drug-mediated inhibition of the activation of the T cell.

4. The conjugate of claim 1, wherein the molecule is selected from the group consisting of an antibody, a protein, a peptide, a nucleotide, a small molecule, and fragments thereof.

5. Use of a drug-molecule conjugate as a medicament for inhibiting the depletion of healthy tissue during chimeric antigen receptor (CAR) T cell therapy, wherein the molecule binds to a CAR expressed on the surface of a T cell and binding of the conjugate to the CAR results in drug-mediated death of the CAR cell.

6. The use of claim 5, wherein binding of the conjugate to the CAR results in internalization of the conjugate into the cell.

7. The use of claim 5, wherein the binding of the conjugate to the CAR results in the drug-mediated inhibition of the activation of the T cell.

8. The use of claim 5, wherein the molecule is selected from the group consisting of an antibody, a protein, a peptide, a nucleotide, a small molecule, and fragments thereof.

9. An inhibitory chimeric antigen receptor (CAR) comprising an extracellular domain and an intracellular domain, wherein the extracellular domain comprises an antigen binding domain that specifically binds to an antigen on a non-cancerous cell, and wherein the intracellular domain comprises an inhibitory ITAM sequence or a death domain (DD).

10. The inhibitory CAR of claim 9, wherein the antigen binding domain comprises an antibody selected from the group consisting of a monoclonal antibody, a polyclonal antibody, a synthetic antibody, a human antibody, a humanized antibody, and a fragment thereof.

11. The inhibitory CAR of claim 9, wherein the DD is selected from the group consisting of TNFR1, Fas, DR3, DR4/TrailR1, DR5/TrailR2, DR6, FADD, MyD88, Raidd, IRAK, IRAK-2, IRAK-M, p75NTR, Tradd, DAP kinase, RIP, NMP84, and ankyrin.

12. A modified T cell comprising the inhibitory CAR of claim 9, and one or more therapeutic, tumor-targeted CARs.