CLAIMS

1. An *in vitro* or *ex vivo* method for producing a persistent allogeneic modified immune cell, the method comprising contacting a cell with a base editor comprising a polynucleotide programmable DNA binding polypeptide (napDNAbp), a deaminase, and one or more guide RNAs (gRNAs) that target the base editor to effect an alteration in a nucleic acid molecule, wherein the nucleic acid molecule encodes a polypeptide and/or comprises a regulatory element associated with expression thereof, and wherein the polypeptide is selected from the group consisting of HLA-A and HLA-B, thereby producing the persistent allogeneic modified immune cell, wherein the one or more gRNAs comprise:

i) a gRNA comprising a nucleotide sequence with at least 85% identity to GCACUCACCCGCCCAGGUCU (SEQ ID NO: 817; TSBTx4190) and a gRNA comprising a nucleotide sequence with at least 85% identity to GACCCGCAUCUCGGCGUCUG (SEQ ID NO: 827; TSBTx4200); or

ii) a gRNA comprising a nucleotide sequence with at least 85% identity to CCUUACCCCAUCUCAGGGUG (SEQ ID NO: 820; TSBTx4193) and a gRNA comprising a nucleotide sequence with at least 85% identity to CUUACCCCAUCUCAGGGUGA (SEQ ID NO: 821; TSBTx4194).

2. The method of claim 1, wherein the method further comprises contacting the cell with one or more guide RNAs that target the base editor to effect an alteration in a nucleic acid molecule, wherein the nucleic acid molecule encodes a polypeptide and/or comprises a regulatory element associated with expression thereof, and wherein the polypeptide is selected from the group consisting of beta-2 microglobulin, CD48, CD58, Protein Disulfide Isomerase Family A Member 3 (PDIA3/ERp57), and T Cell Receptor Alpha Constant polypeptides.

3. The method of any one of claims 1-2, wherein the method comprises effecting a nucleobase alteration that reduces expression on the cell of a polypeptide selected from the group consisting of HLA-A and HLA-B.

4. The method of any one of claims 1-2, further comprising overexpressing in the cell an inhibitory receptor, selected from the group consisting of Human Leukocyte Antigen-E

(HLA-E), Human Leukocyte Antigen-G (HLA-G), Programmed Death Ligand 1 (PD-L1), and Cluster of Differentiation 47 (CD47).

5. An *in vitro* or *ex vivo* method for producing a persistent allogeneic modified immune cell, the method comprising:

(a) contacting a cell with a base editor comprising a polynucleotide programmable DNA binding polypeptide (napDNAbp), a deaminase, and one or more guide RNAs (gRNAs) that target a nucleic acid molecule, wherein the nucleic acid molecule encodes a polypeptide or comprises a regulatory element associated with expression of the polypeptide, and wherein the polypeptide is selected from the group consisting of HLA-A and HLA-B, wherein the one or more gRNAs comprise:

i) a gRNA comprising a nucleotide sequence with at least 85% identity to GCACUCACCCGCCCAGGUCU (SEQ ID NO: 817; TSBTx4190) and a gRNA comprising a nucleotide sequence with at least 85% identity to GACCCGCAUCUCGGCGUCUG (SEQ ID NO: 827; TSBTx4200); or

ii) a gRNA comprising a nucleotide sequence with at least 85% identity to CCUUACCCCAUCUCAGGGUG (SEQ ID NO: 820; TSBTx4193) and a gRNA comprising a nucleotide sequence with at least 85% identity to CUUACCCCAUCUCAGGGUGA (SEQ ID NO: 821; TSBTx4194); and

(b) overexpressing in the cell an inhibitory receptor, selected from the group consisting of Human Leukocyte Antigen-E (HLA-E), Human Leukocyte Antigen-G (HLA-G), Programmed Death Ligand 1 (PD-L1), and Cluster of Differentiation 47 (CD47).

6. The method of claim 5, wherein the method reduces detectable expression of a polypeptide selected from the group consisting of HLA-A and HLA-B, by at least 25%.

7. The method of any one of claims 1-6, wherein the base editor is ABE8.20m.

8. An allogeneic modified immune cell produced according to the method of any one of claims 1-7, preferably wherein the allogeneic modified immune cell expresses a chimeric antigen receptor.

9. A pharmaceutical composition comprising an effective amount of an allogeneic modified immune cell of claim 8.

10. A composition comprising guide RNAs (gRNAs) and a polynucleotide encoding a base editor comprising a polynucleotide programmable DNA binding polypeptide (napDNAbp) domain and a deaminase domain, wherein the gRNAs comprise a nucleic acid sequence that is complementary to a polynucleotide, wherein the polynucleotide encodes a polypeptide or comprises a regulatory element associated with expression of the polypeptide, wherein the polypeptide is selected from the group consisting of HLA-A and HLA-B, and wherein the guide RNAs comprise:

a) a gRNA comprising a nucleotide sequence with at least 85% identity to GCACUCACCCGCCCAGGUCU (SEQ ID NO: 817; TSBTx4190) and a gRNA comprising a nucleotide sequence with at least 85% identity to GACCCGCAUCUCGGCGUCUG (SEQ ID NO: 827; TSBTx4200); or

b) a gRNA comprising a nucleotide sequence with at least 85% identity to CCUUACCCCAUCUCAGGGUG (SEQ ID NO: 820; TSBTx4193) and a gRNA comprising a nucleotide sequence with at least 85% identity to CUUACCCCAUCUCAGGGUGA (SEQ ID NO: 821; TSBTx4194).

11. The composition of claim 10, wherein the composition further comprises a polynucleotide encoding a secreted or membrane-bound HLA-E and/or HLA-G single-chain trimer and/or single-chain dimer; preferably wherein the composition further comprises a polynucleotide encoding a polypeptide(s) with at least 85% sequence identity to an amino acid sequence listed in Table 19 and/or to the following amino acid sequence:
MSRSVALAVLALLSLSGLEAVMAPRTLFLGGGGSGGGGSGGGGSIQRTPKIQVYSRHPAENG
KSNFLNCYVSGFHPSDIEVDLLKNGERIEKVEHSDLSFSKDWSFYLLYYTEFTPTEKDEYAC
RVNHVTLSQPKIVKWDRDMGGGGSGGGGSGGGGSGGGGSGSHSLKYFHTSVSRPGRGEPRFI
SVGYVDDTQFVRFDNDAASPRMVPRAPWMEQEGSEYWDRETRSARDTAQIFRVNLRTLRGYY
NQSEAGSHTLQWMHGCELGPDGRFLRGYEQFAYDGKDYLTLNEDLRSWTAVDTAAQISEQKS
NDASEAEHQRAYLEDTCVEWLHKYLEKGKETLLHLEPPKTHVTHHPISDHEATLRCWALGFY
PAEITLTWQQDGEGHTQDTELVETRPAGDGTFQKWAAVVVPSGEEQRYTCHVQHEGLPEPVT
LRWKPASQPTIPIMALIVLGGVAGLLLFIGLGIFFCVRC (SEQ ID NO: 1019).

12. A kit comprising an allogeneic modified immune cell of claim 8, the pharmaceutical composition of claim 9, or the composition of any one of claims 10-11 and written instructions for using the allogeneic modified immune cell or the composition.

13. Use of the allogenic modified immune cell of claim 8 in the preparation of a medicament for treating cancer in a subject.

14. An *in vitro* or *ex vivo* method for producing a persistent allogeneic modified immune cell, the method comprising contacting a cell with a polynucleotide programmable DNA binding polypeptide (napDNAbp) and one or more guide RNAs (gRNAs) that target the napDNAbp to cleave a target nucleic acid molecule and introduce an alteration in the target nucleic acid molecule, wherein the target nucleic acid molecule encodes a polypeptide and/or comprises a regulatory element associated with expression thereof, and wherein the polypeptide is selected from the group consisting of HLA-A and HLA-B, thereby producing the persistent allogeneic modified immune cell, wherein the one or more gRNAs comprise:

a) a gRNA comprising a nucleotide sequence with at least 85% identity to GCACUCACCCGCCCAGGUCU (SEQ ID NO: 817; TSBTx4190) and a gRNA comprising a nucleotide sequence with at least 85% identity to GACCCGCAUCUCGGCGUCUG (SEQ ID NO: 827; TSBTx4200); or

b) a gRNA comprising a nucleotide sequence with at least 85% identity to CCUUACCCCAUCUCAGGGUG (SEQ ID NO: 820; TSBTx4193) and a gRNA comprising a nucleotide sequence with at least 85% identity to CUUACCCCAUCUCAGGGUGA (SEQ ID NO: 821; TSBTx4194).

15. An *in vitro* or *ex vivo* method for producing a persistent allogeneic modified immune cell, the method comprising contacting a cell with a base editor comprising a polynucleotide programmable DNA binding polypeptide (napDNAbp), a deaminase, and guide RNAs (gRNAs) that target the base editor to effect an alteration in one or more nucleic acid molecules, wherein the one or more nucleic acid molecules encode the following polypeptides and/or comprise regulatory elements associated with expression thereof: HLA-A, HLA-B, and CIITA, thereby producing the persistent allogeneic modified immune cell, wherein the persistent allogeneic modified immune cell surface-expresses HLA-C, wherein the gRNAs comprise:

a) a gRNA comprising a nucleotide sequence with at least 85% identity to GCACUCACCCGCCCAGGUCU (SEQ ID NO: 817; TSBTx4190) and a gRNA comprising a nucleotide sequence with at least 85% identity to GACCCGCAUCUCGGCGUCUG (SEQ ID NO: 827; TSBTx4200); or

b) a gRNA comprising a nucleotide sequence with at least 85% identity to CCUUACCCCAUCUCAGGGUG (SEQ ID NO: 820; TSBTx4193) and a gRNA comprising a nucleotide sequence with at least 85% identity to CUUACCCCAUCUCAGGGUGA (SEQ ID NO: 821; TSBTx4194).

16. An allogeneic modified immune cell produced by the method of claim 15.

17. Use of the allogenic modified immune cell of claim 16 in the preparation of a medicament for treating cancer in a subject.