

CLAIMS

What is claimed is:

1. A composition comprising a polynucleic acid, wherein the polynucleic acid comprises a sequence encoding a chimeric fusion protein (CFP), the CFP comprising:
 - (a) an extracellular domain;
 - (b) a transmembrane domain operatively linked to the extracellular domain; and
 - (c) an intracellular domain operatively linked to the transmembrane domain;wherein the CFP comprises a sequence having at least 95% sequence identity to SEQ ID NO: 36.
2. The composition of claim 1, wherein the extracellular domain comprises a GPC3 binding domain, wherein the GPC3 binding domain comprises:
 - (a) a heavy chain variable region (VH) comprising:
 - (i) a heavy chain CDR1 (HCDR1) sequence according to SEQ ID NO: 253,
 - (ii) a HCDR2 sequence according to SEQ ID NO: 254, and
 - (iii) a HCDR3 sequence according to SEQ ID NO: 154; and
 - (b) a light chain variable region (VL) comprising:
 - (i) a LCDR1 sequence according to SEQ ID NO: 255,
 - (ii) a LCDR2 sequence according to SEQ ID NO: 256, and
 - (iii) a LCDR3 sequence according to SEQ ID NO: 257.
3. The composition of claim 2, wherein the VH comprises a sequence with at least 98% sequence identity to SEQ ID NO: 409, and wherein the VL comprises a sequence according to SEQ ID NO: 5.
4. The composition of claim 2 or 3, wherein the GPC3 binding domain comprises a sequence having at least 95% sequence identity to SEQ ID NO: 6.
5. The composition of any one of claims 1-4, wherein the polynucleic acid comprises a sequence having at least 80% sequence identity to the coding sequence of SEQ ID NO: 142.
6. A composition comprising a polynucleic acid, wherein the polynucleic acid comprises a sequence encoding a chimeric fusion protein (CFP), the CFP comprising:
 - (a) an extracellular domain;
 - (b) a transmembrane domain operatively linked to the extracellular domain; and

- (c) an intracellular domain operatively linked to the transmembrane domain;
wherein the CFP comprises a sequence having at least 95% sequence identity to SEQ ID NO: 26.
7. The composition of claim 6, wherein the extracellular domain comprises a TROP2 binding domain, wherein the TROP2 binding domain comprises:
 - (a) a heavy chain variable region (VH) that comprises:
 - (i) a heavy chain CDR1 (HCDR1) sequence according to SEQ ID NO: 259,
 - (ii) a HCDR2 sequence according to SEQ ID NO: 260, and
 - (iii) a HCDR3 sequence according to SEQ ID NO: 153; and
 - (b) a light chain variable region (VL) that comprises:
 - (i) a LCDR1 according to SEQ ID NO: 279,
 - (ii) a LCDR2 according to SEQ ID NO: 280, and
 - (iii) a LCDR3 according to SEQ ID NO: 281.
 8. The composition of claim 7, wherein the wherein the VH comprises a sequence according to SEQ ID NO: 1, and wherein the VL comprises a sequence according to SEQ ID NO: 2.
 9. The composition of claim 7 or 8, wherein the TROP2 binding domain comprises a sequence according to SEQ ID NO: 3.
 10. The composition of any one of claims 6-9, wherein the sequence of the polynucleic acid that encodes the CFP has at least 80% sequence identity to the coding sequence of SEQ ID NO: 141.
 11. The composition of any one of claims 1-10, wherein the CFP further comprises a signal peptide and wherein the signal peptide comprises a sequence of MWLQSLLLGTVAC SIS (SEQ ID NO: 7).
 12. The composition of any one of claims 1-11, wherein the extracellular domain comprises a sequence according to SEQ ID NO: 10.
 13. The composition of any one of claims 1-12, wherein the transmembrane domain comprises a sequence according to SEQ ID NO: 11.
 14. The composition of any one of claims 1-13, wherein the intracellular domain comprises a sequence according to SEQ ID NO: 12.
 15. The composition of any one of claims 1-14, wherein the CFP comprises a sequence according to SEQ ID NO: 407.

16. The composition of any one of claims 1-15, wherein the polynucleic acid is an mRNA.
17. The composition of any one of claims 1-16, wherein the polynucleic acid is codon optimized.
18. The composition of any one of claims 1-17, wherein the polynucleic acid is associated with or is within a delivery vehicle, and wherein the delivery vehicle is a lipid nanoparticle.
19. A pharmaceutical composition comprising (a) the composition of any one of claims 1-18; and (b) a pharmaceutically acceptable excipient.
20. Use of the pharmaceutical composition of claim 19 in the manufacture of a medicament for treatment of cancer.
21. The pharmaceutical composition of claim 19 for use in therapy.