CLAIMS

What is claimed is:

1. A pharmaceutical composition comprising:
    (a) a recombinant nucleic acid, wherein the recombinant nucleic acid comprises a sequence encoding a chimeric fusion protein (CFP), the CFP comprising:
        (i) an extracellular domain comprising an anti-GPC3 binding domain,
        (ii) a transmembrane domain of FcRα or FcRβ operatively linked to the extracellular domain;
        (iii) an intracellular domain comprising one or more intracellular signaling domains; and
    (b) a pharmaceutically acceptable carrier;
    wherein the CFP forms a functional complex with FcRγ in myeloid cells.
2. The pharmaceutical composition of claim 1, wherein the anti-GPC3 binding domain comprises a functional antibody fragment, a single chain variable fragment (scFv), an Fab, a single domain antibody (sdAb), a nanobody, a VH domain, a VL domain, a VNAR domain, a VHH domain, a bispecific antibody, a diabody, or a functional fragment or a combination thereof.
3. The pharmaceutical composition of claim 2, wherein the anti-GPC3 binding domain comprises a scFv.
4. The pharmaceutical composition of any one of claims 1-3, wherein the transmembrane domain comprises an FcRα transmembrane domain.
5. The pharmaceutical composition of any one of claims 1-4, wherein the one or more intracellular signaling domains comprise an intracellular domain derived from FcRα, FcRγ, or FcRε.
6. The pharmaceutical composition of claim 5, wherein the one or more intracellular signaling domains comprise an intracellular signaling domain derived from FcRα.
7. The pharmaceutical composition of any one of claims 1-6, wherein the anti-GPC3 binding domain binds to GPC3 with an affinity of <250nM.
8. The pharmaceutical composition of any one of claims 1-7, wherein the one or more intracellular signaling domains comprise a proinflammatory signaling domain.
9. The pharmaceutical composition of any one of claims 1-8, wherein the extracellular domain comprises an FcRα, FcRβ, FcRε or FcRγ extracellular domain.
10. The pharmaceutical composition of claim 9, wherein the extracellular domain comprises an FcRα extracellular domain.

11. The pharmaceutical composition of claim 0, wherein the extracellular domain comprises an FcRα extracellular domain, wherein the transmembrane domain comprises an FcRα transmembrane domain, and wherein the one or more intracellular signaling domains comprise an intracellular signaling domain derived from FcRα.
12. The pharmaceutical composition of any one of claims 1-11, wherein the CFP further comprises a signal peptide.
13. The pharmaceutical composition of claim 12, wherein the signal peptide is a GMCSF signal peptide.
14. The pharmaceutical composition of any one of claims 1-13, wherein the transmembrane domain and the extracellular domain are operatively linked through a linker.
15. The pharmaceutical composition of any one of claims 1-14, wherein the pharmaceutical composition further comprises a pro-inflammatory polypeptide; optionally wherein the pro-inflammatory polypeptide is a chemokine or a cytokine.
16. The pharmaceutical composition of any one of claims 1-15, wherein the recombinant nucleic acid is an mRNA or circRNA.
17. The pharmaceutical composition of any one of claims 1-16, wherein the recombinant nucleic acid is mRNA and is encapsulated by a lipid nanoparticle (LNP).
18. The pharmaceutical composition of claim 17, wherein the LNP comprises a polar lipid and a non-polar lipid.
19. The pharmaceutical composition of any one of claims 1-18, wherein the pharmaceutical composition is formulated for systemic delivery, optionally wherein the pharmaceutical composition is formulated for delivery by intravenous route.