We claim:

1. A pharmaceutical combination for use in reducing tumor size and/or increasing survival in a cancer patient, the combination comprising:

(a) a recombinant modified vaccinia virus Ankara (MVA) for use in intravenous administration to said patient and comprising:

(i) a first nucleic acid encoding a first heterologous tumor-associated antigen (TAA); and

(ii) a second nucleic acid encoding CD40L; and

(b) an antibody, wherein the antibody comprises an Fc domain and is specific to an antigen that is expressed on the cell membrane of a tumor cell;

wherein administration of (a) and (b) to the cancer patient reduces tumor size and/or increases the survival rate of the cancer patient as compared to a non-[[~~IV~~]] intravenous administration of (a) or an administration of (b) alone.

2. The pharmaceutical combination for use of claim 1, wherein the recombinant MVA further comprises a second nucleic acid encoding a third heterologous TAA.

3. The pharmaceutical combination for use of any one of claims 1- 2, wherein the first and/or second TAA is selected from the group consisting of: 5-α-reductase, α-fetoprotein ("AFP"), AM-1, APC, April, B melanoma antigen gene ("BAGE"), β-catenin, Bcl12, bcr-abl, Brachyury, CA-125, caspase-8 ("CASP-8", also known as "FLICE"), Cathepsins, CD19, CD20, CD21/complement receptor 2 ("CR2"), CD22/BL-CAM, CD23/FcεRII, CD33, CD35/complement receptor 1 ("CR1"), CD44/PGP-1, CD45/leucocyte common antigen ("LCA"), CD46/membrane cofactor protein ("MCP"), CD52/CAMPATH-1, CD55/decay accelerating factor ("DAF"), CD59/protectin, CDC27, CDK4, carcinoembryonic antigen ("CEA"), c-myc, cyclooxygenase-2 ("cox-2"), deleted in colorectal cancer gene ("DCC"), DcR3, E6/E7, CGFR, EMBP, Dna78, farnesyl transferase, fibroblast growth factor-8a ("FGF8a"), fibroblast growth factor-8b ("FGF8b"), FLK-1/KDR, folic acid receptor, G250, G melanoma antigen gene family ("GAGE-family"), gastrin 17, gastrin-releasing hormone, ganglioside 2 ("GD2")/ganglioside 3 ("GD3")/ganglioside-monosialic acid-2 ("GM2"), gonadotropin releasing hormone ("GnRH"), UDP-GlcNAc:R1Man(α1-6)R2 [GlcNAc to Man(α1-6)] β1,6-N¬-acetylglucosaminyltransferase V ("GnT V"), GP1, gp100/Pme117, gp-100-in4, gp15,

gp75/tyrosine-related protein-1 (“gp75/TRP-1”), human chorionic gonadotropin (“hCG”), heparanase, HER2, human mammary tumor virus (“HMTV”), 70 kiloDalton heat-shock protein (“HSP70”), human telomerase reverse transcriptase (“hTERT”), insulin-like growth factor receptor-1 (“IGFR-1”), interleukin-13 receptor (“IL-13R”), inducible nitric oxide synthase (“iNOS”), Ki67, KIAA0205, K-ras, H-ras, N-ras, KSA, LKLR-FUT, melanoma antigen-encoding gene 1 (“MAGE-1”), melanoma antigen-encoding gene 2 (“MAGE-2”), melanoma antigen-encoding gene 3 (“MAGE-3”), melanoma antigen-encoding gene 4 (“MAGE-4”), mammaglobin, MAP17, Melan-A/melanoma antigen recognized by T-cells-1 (“MART-1”), mesothelin, MIC A/B, MT-MMPs, mucin, testes-specific antigen NY-ESO-1, osteonectin, p15, P170/MDR1, p53, p97/melanotransferrin, PAI-1, platelet-derived growth factor (“PDGF”), μPA, PRAME, probasin, progenipoietin, prostate-specific antigen (“PSA”), prostate-specific membrane antigen (“PSMA”), RAGE-1, Rb, RCAS1, SART-1, SSX-family, STAT3, STn, TAG-72, transforming growth factor-alpha (“TGF-α”), transforming growth factor-beta (“TGF-β”), Thymosin-beta-15, tumor necrosis factor-alpha (“TNF-α”), TP1, TRP-2, tyrosinase, vascular endothelial growth factor (“VEGF”), ZAG, p16INK4, and glutathione-S-transferase (“GST”).

4. The pharmaceutical combination for use of anyone of claims 1- 3, wherein the first and/or second TAA comprise one or more mutations to prevent the antibody from binding to the first and/or second TAA.

5. The pharmaceutical combination for use of any one of claims 1- 4, wherein the first TAA is HER2.

6. The pharmaceutical combination for use of claim 5 , wherein the HER2 antigen comprises at least one mutation to: (a) prevent a HER2 antibody binding to the HER2 antigen; (b) prevent extracellular dimerization of the HER2 antigen; (c) prevent tyrosine kinase activity of the HER2 antigen; and/or (d) prevent phosphorylation of the HER2 antigen.

7. The pharmaceutical combination for use of claim 6, wherein the HER2 antigen comprises at least one mutation in the trastuzumab binding domain and selected from the group consisting of: E580, D582, P594, F595, K615, and Q624.

8. The pharmaceutical combination for use of claim 6, wherein the HER2 antigen comprises at least one mutation in the pertuzumab binding domain and selected from the group consisting of: H267, Y274, F279, V308, S310, L317, H318, K333, and P337.

9. The pharmaceutical combination for use of claim 5 or 6, wherein the HER2 antigen comprises at least one mutation selected from the group consisting of:

(a) a mutation that prevents extracellular dimerization of HER2 that is D277R or E280K;

(b) a mutation that prevents tyrosine kinase activity of HER2 that is K753M; and

(c) a mutation that interferes with phosphorylation of HER2 that is Y1023A or is the deletion of residues 1139-1248.

10. The pharmaceutical combination for use of claim 1, wherein the first nucleic acid encodes a HER2 antigen having the amino acid sequence set forth in SEQ ID NO:1 or SEQ ID NO: 13.

11. The pharmaceutical combination for use of claim 1, wherein the first nucleic acid encodes a HER2 antigen and the antibody is an anti-HER2 antibody.

12. The pharmaceutical combination for use of any of claims 1-2, wherein the first nucleic acid encodes a HER2 antigen that comprises the sequence set forth in SEQ ID NO: 2 or SEQ ID NO:14.

13. The pharmaceutical combination for use of any of claims 1-12, wherein the second TAA is Brachyury.

14. The pharmaceutical combination for use of claim 13, wherein the Brachyury antigen comprises one or more mutations to the nuclear localization domain.

15. The pharmaceutical combination for use of claim 14, wherein the second nucleic acid encodes a Brachyury antigen comprising the amino acid sequence set forth in SEQ ID NO:3.

16. The pharmaceutical combination for use of any one of claims 1-15, wherein the antibody is selected from the group consisting of: Anti-CD20 (e.g., rituximab; ofatumumab; tositumomab), Anti-CD52 (e.g., alemtuzumab Campath®), Anti-EGFR (e.g., cetuximab Erbitux®¸ panitumumab), Anti-CD2 (e.g.,Siplizumab), Anti-CD37 (e.g., BI836826), Anti-CD123 (e.g., JNJ-56022473), Anti-CD30 (e.g., XmAb2513), Anti-CD38

(e.g., daratumumab Darzalex®), Anti-PDL1 (e.g., avelumab, atezolilzumab, durvalumab), Anti-GD2 (e.g., 3F8, ch14.18, KW-2871, dinutuximab), anti-CTLA-4, Anti-CEA, Anti-MUC1, Anti-FLT3, Anti-CD19, Anti-CD40, Anti-SLAMF7, Anti-CCR4, Anti-B7-H3, Anti-ICAM1, Anti-CSF1R, anti-CA125 (e.g. Oregovomab), anti-FRα (e.g. MOv18-IgG1, Mirvetuximab soravtansine (IMGN853), MORAb-202), anti-mesothelin (e.g. MORAb-009), anti-Trp1, and Anti-HER2.

17. The pharmaceutical combination for use of claim 11, wherein the antibody is selected from Pertuzumab, Trastuzumab, Herzuma, ABP 980, and Ado-trastuzumab emtansine.

18. The pharmaceutical combination for use of any one of claims 1-17, wherein the MVA is MVA-BN.

19. The pharmaceutical combination for use of any one of claims 1-18, wherein (a) is to be administered at the same time as or after (b).

20. The pharmaceutical combination for use of any one of claims 1-19, wherein (a) and (b) are to be administered to the cancer patient in a priming administration followed by one or more boosting administrations of (a) and (b) to be administered to the cancer patient.

21. The pharmaceutical combination for use of any one of claims 1-20, wherein the cancer patient is suffering from and/or is diagnosed with a cancer selected from the group consisting of: breast cancer, lung cancer, head and neck cancer, thyroid, melanoma, gastric cancer, bladder cancer, kidney cancer, liver cancer, melanoma, pancreatic cancer, prostate cancer, ovarian cancer, or colorectal cancer.

22. The pharmaceutical combination for use of claim 21, wherein the cancer patient is suffering from and/or is diagnosed with breast cancer that is HER2 positive.

23. A synthetic HER2 polypeptide, wherein one or more amino acids of a HER2 are mutated in a HER2 antibody binding region.

24. A synthetic HER2 polypeptide, wherein one or more amino acids of HER2 are mutated to prevent extracellular dimerization, tyrosine kinase activity, and/or phosphorylation of the HER2 antigen.

25. The synthetic HER2 polypeptide of claim 23, wherein one or more mutations have been made to at least one of 3 loops in a juxtamembrane region of HER2 selected from amino acids 579-583 (loop 1), 592-595 (loop 2), and 615-625 (loop 3).

26. The synthetic HER2 polypeptide of claim 23 or 25 that comprises at least one mutation in the trastuzumab binding domain and selected from the group consisting of: E580, D582, P594, F595, K615, and Q624.

27. The synthetic HER2 polypeptide of claim 23, wherein the HER2 polypeptide comprises at least one mutation in the pertuzumab binding domain and selected from the group consisting of: H267, Y274, F279, V308, S310, L317, H318, K333, and P337.

28. The synthetic HER2 polypeptide of claim 24 that comprises at least one mutation selected from the group consisting of:

(a) a mutation of D277, E280, L317, or H318 that prevents extracellular dimerization of HER2;

(b) a mutation of K753 the interferes with HER2 tyrosine kinase activity; and

(c) a mutation that interferes with phosphorylation of the HER2 antigen and is Y1023A, is a deletion of one or more amino acids between positions 1139 to 1248, or is a deletion of amino acids 1139-1248.

29. A synthetic HER2 polypeptide comprising the amino acid sequence set forth in SEQ ID NO:1 or SEQ ID NO: 13.

30. A synthetic Brachyury polypeptide comprising one or more mutations to the nuclear localization signal (NLS) domain or in which the NLS domain is deleted.

31. A synthetic nucleic acid sequence encoding a modified Brachyury polypeptide comprising the sequence set forth in SEQ ID NO:3.

32. A recombinant poxvirus comprising a synthetic nucleic acid of any one of claims 23-32.