WHAT IS CLAIMED IS:

1. A combination therapy for use in treating a solid tumor or hematologic malignancy in a subject, wherein the combination therapy comprises:

(a) a modified stem cell for injection, wherein:

the modified stem cell comprises a cytotoxic payload; and

the cytotoxic payload comprises a lytic virus; and

(b) a treatment that activates a T-cell response within the subject, wherein the treatment comprises a blocking antibody against a negative co-stimulatory molecule, or comprises an agonist antibody against a co-stimulatory molecule.

2. The combination therapy of claim 1, wherein in (b) the treatment comprises a blocking antibody against a negative co-stimulatory molecule.

3. The combination therapy of claim 2, wherein the blocking antibody is against a negative co-stimulatory molecule selected from among CTLA-1, CTLA-4, PD-1, TIM-3, BTLA, VISTA and LAG-3.

4. The combination therapy of any of claims 1-3, wherein in (b) the treatment comprises an inhibitor of the PD-1 pathway.

5. The combination therapy of claim 4, wherein the inhibitor of the PD-1 pathway is selected from among antibodies against PD-1 and soluble PD-1 ligand.

6. The combination therapy of claim 4, wherein the inhibitor of the PD-1 pathway is an antibody selected from among AMP-244, MEDI-4736, MPDL328 OA, and MIH1.

7. The combination therapy any one of claims 1-3, wherein in (b) the treatment comprises an anti-CTLA-4 antibody, an anti-PD-L1 antibody, or an anti-PD-1 antibody.

8. The combination therapy of claim 1 or claim 2, wherein in (b) the treatment comprises blocking antibodies against negative co-stimulatory molecules selected from among PD-L1 and CTLA-4.

9. The combination therapy of any one of claims 1-8, wherein in (b) the treatment comprises an agonist antibody against a co-stimulatory molecule.

10. The combination therapy of claim 9, wherein the co-stimulatory molecule is selected from among CD28, OX40, GITR, CD137, CD27 and HVEM.

11. The combination therapy of any one of claims 1-10, wherein (a) is for use after (b).

12. The combination therapy of any one of claims 1-10, wherein (a) is for use before (b).

13. The combination therapy of any one of claims 1 to 12, further comprising a treatment that induces apoptosis in cells within the tumor, wherein the treatment is selected from among radiation therapy, chemotherapy, immunotherapy, phototherapy, or a combination thereof.

14. The combination therapy of claim 13, wherein the treatment that induces apoptosis comprises radiation therapy.

15. The combination therapy of any one of claims 1 to 14, further comprising a treatment for modification of the tumor microenvironment, wherein the treatment comprises a cytokine-blocking agent.

16. The combination therapy of any one of claims 1-15, wherein the lytic virus is selected from among a poxvirus, adenovirus, herpes simplex virus, Newcastle disease virus, vesicular stomatitis virus, mumps virus, influenza virus, measles virus, reovirus, human immunodeficiency virus (HIV), hanta virus, myxoma virus, cytomegalovirus (CMV) and lentivirus.

17. The combination therapy of any one of claims 1-15, wherein the lytic virus is a vaccinia virus.

18. The combination therapy of any one of claims 1-15, wherein the modified stem cell is transformed with a retrovirus.

19. The combination therapy of claim 18, wherein the retrovirus is a lentivirus.

20. The combination therapy of any one of claims 1-19, wherein the modified stem cell is selected from among adult stem cells, embryonic stem cells, fetal stem cells, mesenchymal stem cells, neural stem cells, totipotent stem cells, pluripotent stem cells, multipotent stem cells, oligopotent stem cells, unipotent stem cells, adipose stromal stem cells, endothelial stem cells, umbilical cord-derived mesenchymal-like cell and combinations thereof.

21. The combination therapy of any one of claims 1-19, wherein the modified stem cell is an umbilical cord-derived mesenchymal like cell.

22. The combination therapy of any one of claims 1-19, wherein the modified cell is derived from adipose- derived Stromal Vascular Fraction (SVF), which comprises adult stem cells, monocytes/macrophages, regulatory T cells, endothelial cells, and combinations thereof.

23. The combination therapy of any one of claims 1-22, wherein in (a):

the modified stem cell is in combination with an agent selected from among: a TLR agonist; intravenous immunoglobulin (IVIG); monocyte conditioned media; supernatant from neutrophil extracellular trap-exposed peripheral blood mononuclear cells ; peptidoglycan isolated from gram positive bacteria; lipoarabinomannan isolated from mycobacteria; zymosan isolated from a yeast cell wall; polyadenylic-polyuridylic acid; poly (IC); lipopolysaccharide; monophosphoryl lipid A; flagellin; Gardiquimod; Imiquimod; R848; oligonucleosides containing CpG motifs; and 23 S ribosomal RNA; or

the modified stem cell has been co-cultured with monocytes that have been pretreated with IVIG, T cells, T cells that have been exposed to a T cell stimulus or natural killer cells.

24. The combination therapy of any one of claims 1-23, wherein the solid tumor is selected from among a bladder tumor, breast tumor, prostate tumor, carcinoma, basal cell carcinoma, biliary tract cancer, bladder cancer, bone cancer, brain cancer, CNS cancer, glioma tumor, cervical cancer, choriocarcinoma, colon and rectum cancer, connective tissue cancer, cancer of the digestive system, endometrial cancer, esophageal cancer, eye cancer, cancer of the head and neck, gastric cancer, intra-epithelial neoplasm, kidney cancer, larynx cancer, leukemia, liver cancer, lung cancer, lymphoma, Hodgkin's lymphoma, Non-Hodgkin's lymphoma, melanoma,

myeloma, neuroblastoma, oral cavity cancer, ovarian cancer, pancreatic cancer, retinoblastoma, rhabdomyosarcoma, rectal cancer, renal cancer, cancer of the respiratory system, sarcoma, skin cancer, stomach cancer, testicular cancer, thyroid cancer, uterine cancer, and cancer of the urinary system, such as lymphosarcoma, osteosarcoma, mammary tumors, mastocytoma, brain tumor, melanoma, adenosquamous carcinoma, carcinoid lung tumor, bronchial gland tumor, bronchiolar adenocarcinoma, small cell lung cancer, non-small cell lung cancers, fibroma, myxochondroma, pulmonary sarcoma, neurosarcoma, osteoma, papilloma, retinoblastoma, Ewing's sarcoma, Wilm's tumor, Burkitt's lymphoma, microglioma, neuroblastoma, osteoclastoma, oral neoplasia, fibrosarcoma, osteosarcoma and rhabdomyosarcoma, genital squamous cell carcinoma, transmissible venereal tumor, testicular tumor, seminoma, Sertoli cell tumor, hemangiopericytoma, histiocytoma, chloroma, granulocytic sarcoma, corneal papilloma, corneal squamous cell carcinoma, hemangiosarcoma, pleural mesothelioma, basal cell tumor, thymoma, stomach tumor, adrenal gland carcinoma, oral papillomatosis, hemangioendothelioma, cystadenoma, follicular lymphoma, intestinal lymphosarcoma, fibrosarcoma, and pulmonary squamous cell carcinoma, leukemia, hemangiopericytoma, ocular neoplasia, preputial fibrosarcoma, ulcerative squamous cell carcinoma, preputial carcinoma, connective tissue neoplasia, mastocytoma, hepatocellular carcinoma, lymphoma, pulmonary adenomatosis, pulmonary sarcoma, Rous sarcoma, reticulo-endotheliosis, fibrosarcoma, nephroblastoma, B-cell lymphoma, lymphoid leukosis, retinoblastoma, hepatic neoplasia, lymphosarcoma, plasmacytoid leukemia, swimbladder sarcoma (in fish), caseous lumphadenitis, lung carcinoma, insulinoma, lymphoma, sarcoma, neuroma, pancreatic islet cell tumor, gastric MALT lymphoma and gastric adenocarcinoma.

25. The combination therapy of any one of claims 1-23, wherein the solid tumor is selected from among glioblastoma, breast carcinoma, lung carcinoma, prostate carcinoma, colon carcinoma, ovarian carcinoma, neuroblastoma, central nervous system tumor, and melanoma.

26. The combination therapy of any one of claims 1-25, wherein the modified stem cell is autologous.

27. The combination therapy of any one of claims 1-25, wherein the modified stem cell is allogeneic.