**WHAT IS CLAIMED IS:**

1. Use of (a) modified stem cells, and (b) an agent that comprises a blocking antibody against a negative co-stimulatory molecule or an agonist antibody against a co-stimulatory molecule, in the manufacture of a medicament for combination therapy of a solid tumor or hematologic malignancy in a subject, wherein:

the modified stem cells are adipose stromal stem cells;

the modified stem cells comprise a cytotoxic payload;

the cytotoxic payload comprises a lytic virus that is a vaccinia virus;

the blocking antibody is against a negative co-stimulatory molecule selected from among CTLA-1, CTLA-4, PD-1, PD-L1, TIM-3, BTLA, VISTA and LAG-3; and

the agonist antibody is against a co-stimulatory molecule selected from among CD28, OX40, GITR, CD137, CD27 and HVEM.

2. The use according to claim 1, wherein in (b) the agent comprises a blocking antibody against a negative co-stimulatory molecule.

3. The use according to claim 2, wherein the blocking antibody is against a negative co-stimulatory molecule selected from among CTLA-1, CTLA-4, PD-1, and PD-L1.

4. The use according to any one of claims 1-3, wherein in (b) the agent comprises an inhibitor of the PD-1 pathway selected from among AMP-244, MEDI-4736, MPDL328 OA, and MIH1.

5. The use according to any one of claims 1-3, wherein the inhibitor of the PD-1 pathway is selected from among antibodies against PD-1 and soluble PD-1 ligand.

6. The use according to any one of claims 1-3, wherein in (b) the agent comprises an anti-CTLA-4 antibody, an anti-PD-L1 antibody, or an anti-PD-1 antibody.

7. The use according to claim 1 or claim 2, wherein in (b) the agent comprises blocking antibodies against negative co-stimulatory molecules selected from among PD-L1 and CTLA-4.

8. The use according to claim 1, wherein in (b) the agent comprises an agonist antibody against a co-stimulatory molecule.

9. The use according to claim 8, wherein the co-stimulatory molecule is selected from among CD28, OX40, GITR, and CD137.

10. The use according to any one of claims 1-9, wherein (a) is for use after (b).

11. The use according to any one of claims 1-9, wherein (a) is for use before (b).

12. The use according to any one of claims 1-11, further comprising a treatment that induces apoptosis in cells within the tumor, wherein the treatment is selected from among radiation therapy, chemotherapy, immunotherapy, phototherapy, and combinations thereof.

13. The use according to claim 12, wherein the treatment that induces apoptosis comprises radiation therapy.

14. The use according to any one of claims 1-13, further comprising a treatment for modification of the tumor microenvironment, wherein the treatment comprises a cytokine-blocking agent selected from among Ustekinumab, Adalimumab, Infliximab, Etanercept, and Golimumab.

15. The use according to any one of claims 1-14, wherein the adipose stromal stem cells are derived from an adipose-derived Stromal Vascular Fraction (SVF).

16. The use according to any one of claims 1-15, wherein in (a):

the modified stem cells are provided 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 cells have 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.

17. The use according to any one of claims 1-16, wherein the solid tumor or hematologic malignancy is selected from among a bladder tumor, breast tumor, prostate tumor, carcinoma, basal cell carcinoma, biliary tract cancer, bone cancer, brain cancer, CNS cancer, glioma tumor, cervical cancer, choriocarcinoma, colon 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, 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, testicular cancer, thyroid cancer, uterine cancer, cancer of the urinary system, lymphosarcoma, osteosarcoma, mammary tumors, mastocytoma, adenosquamous carcinoma, carcinoid lung tumor, bronchial gland tumor, bronchiolar adenocarcinoma, small cell lung cancer, non-small cell lung cancer, fibroma, myxochondroma, pulmonary sarcoma, neurosarcoma, osteoma, papilloma, Ewing's sarcoma, Wilm's tumor, Burkitt's lymphoma, microglioma, osteoclastoma, oral neoplasia, fibrosarcoma, genital squamous cell carcinoma, transmissible venereal tumor, seminoma, Sertoli cell tumor, hemangiopericytoma, histiocytoma, chloroma, granulocytic sarcoma, corneal papilloma, corneal squamous cell carcinoma, hemangiosarcoma, pleural mesothelioma, thymoma, adrenal gland carcinoma, oral papillomatosis, hemangioendothelioma, cystadenoma, follicular lymphoma, intestinal lymphosarcoma, pulmonary squamous cell carcinoma, preputial fibrosarcoma, ulcerative squamous cell carcinoma, preputial carcinoma, hepatocellular carcinoma, pulmonary adenomatosis, Rous sarcoma, reticulo-endotheliosis, nephroblastoma, B-cell lymphoma, lymphoid leukosis, hepatic neoplasia, plasmacytoid leukemia, swimbladder sarcoma in fish, lung carcinoma, insulinoma, neuroma, pancreatic islet cell tumor, gastric MALT lymphoma and gastric adenocarcinoma.

18. The use according to any one of claims 1-16, 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.

19. The use according to any one of claims 1-18, wherein the modified stem cells are autologous.

20. The use according to any one of claims 1-18, wherein the modified stem cells are allogeneic.