# CLAIMS

1. Use of an immune cell expressing interleukin-10, a fragment thereof, or a biologically active variant thereof, in the manufacture of a medicament for the prevention or treatment of cancer, wherein the immune cell comprises a plurality of recombinant constructs, the plurality of recombinant constructs comprising:

a recombinant construct encoding the interleukin-10, fragment, or biologically active variant thereof; and

a second recombinant construct encoding a chimeric antigen receptor (CAR), a T cell receptor (TCR) or any other synthetic tumor targeting motif, and wherein

the cancer is a solid cancer or a liquid cancer.

2. The use of claim 1, wherein the immune cell is a T cell, chimeric antigen receptor (CAR)-T cell, T cell receptor (TCR)-transgenic T cell, tumor infiltrating lymphocyte (TIL), NK cell, NK-T cell, CAR-NK cell, CAR-NKT cell, TCR-transgenic NK cell, TCR-transgenic NK-T cell, dendritic cell, macrophage, CAR-macrophage or any synthetic tumor specific immune cells.

3. The use of claim 1 or 2, wherein the recombinant construct encoding the interleukin-10, fragment, or biologically active variant thereof comprises or encodes a sequence of SEQ ID No. 1, a fragment thereof, or a biologically active variant thereof.

4. The use of any one of the preceding claims, wherein the recombinant construct encoding the interleukin-10, fragment, or biologically active variant thereof is linked to the second recombinant construct encoding the CAR, the TCR, or the any other synthetic tumor targeting motif.

5. The use of claim 4, wherein the recombinant construct encoding the interleukin-10, fragment, or biologically active variant thereof is linked to the second recombinant construct encoding the CAR, the TCR or the any other synthetic tumor targeting motif, via a sequence encoding a self-cleaving peptide (e.g. peptide 2A).

6. The use of claim 4 or 5, wherein the second recombinant construct encoding the CAR contains an extracellular antigen recognition domain of a single-chain Fragment variant (scFv) derived from an antibody.

7. The use of any one of claims 4 to 6, wherein the second recombinant construct encoding the CAR contains a nucleic acid encoding a polypeptide of a transmembrane region.

8. The use of any one of claims 4 to 7, wherein the second recombinant construct encoding the CAR contains a nucleic acid encoding a polypeptide of an intracellular T cell activation domain of CD3ζ.

9. The use of any one of claims 4 to 8, wherein the second recombinant construct encoding the CAR contains a 4-1BB or CD28 or a combination of 4-1BB and CD28 intracellular region.

10. The use of any one of claims 4 to 9, wherein

i) an extracellular antigen recognition domain of the single-chain Fragment variant (scFv) derived from an antibody recognizes an antigen selected from the group comprising c-MET, TRP-1, CD7, CD19, CD20, CD22, CD38, CD123, CD133, CD171, CD70, BCMA, CEA, EGFR-VIII, EpCAM, EphA2, FAP, GD2, GPC3, HER2, IL-13Ra2, Mesothelin, MUC1, PSCA, PSMA, ROR1, VEGFR2, Claudin 18.2, or

ii) the TCR recognizes an antigen selected from the group comprising: gp100, NY-ESO-1, MAGE-A3 and TRP-1, or a combination of one or more thereof.

11. The use of any one of the preceding claims, wherein the interleukin-10, fragment, or biologically active variant thereof is secreted or membrane-bound by the immune cell, preferably in a tumor microenvironment.

12. The use of any one of the preceding claims, wherein the recombinant construct encoding the interleukin-10, fragment, or biologically active variant thereof is comprised within or without a sequence encoding a Fc, HSA, or antibody fusion protein.

13. The use of any one of the preceding claims, wherein the solid cancer is selected from the group comprising lung cancer, breast cancer, ovarian cancer, cervical cancer, uterus cancer, head and neck cancer, glioblastoma, hepatocellular carcinoma, colon cancer, rectal cancer, colorectal carcinoma, kidney cancer, prostate cancer, gastric cancer, bronchus cancer, pancreatic cancer, urinary bladder cancer, hepatic cancer, brain cancer and skin cancer, in particular melanoma, or a combination of one or more thereof.

14. The use of any one of the preceding claims, wherein the immune cell is autologous, allogeneic, or heterologous.

15. The use of claim 6 or 10 i), wherein the extracellular antigen recognition domain of the single-chain Fragment variant (scFv) derived from an antibody recognizes an antigen selected from the group comprising HER2, TRP-1, EGFRvIII, and CD19.

16. The use of claim 15, wherein the amino acid sequence of the scFv recognizing HER2 is as set forth in SEQ ID NO: 2, a fragment thereof, or a biologically active variant thereof.

17. The use of claim 15, wherein the amino acid sequence of the scFv recognizing TRP-1 is as set forth in SEQ ID NO: 3, a fragment thereof, or a biologically active variant thereof.

18. The use of claim 15, wherein the amino acid sequence of the scFv recognizing EGFRvIII is as set forth in SEQ ID NO: 4, a fragment thereof, or a biologically active variant thereof.

19. The use of claim 15, wherein the amino acid sequence of the scFv recognizing CD19 is as set forth in SEQ ID NO: 5, a fragment thereof, or a biologically active variant thereof.

20. The use of claim 7 to 19, wherein the transmembrane domain is a CD8 transmembrane domain and hinge, and the amino acid sequence of a polypeptide of the CD8 transmembrane domain and hinge is as set forth in SEQ ID NO: 6, a fragment thereof, or a biologically active variant thereof.

21. The use of claim 8 to 20, wherein the amino acid sequence of the polypeptide of the intracellular T cell activation domain of CD3ζ is as set forth in SEQ ID NO: 7, a fragment thereof, or a biologically active variant thereof.

22. A nucleic acid comprising the plurality of recombinant constructs of any one of claims 1 to 21.

23. A vector comprising the nucleic acid of claim 22.

24. Use of a pharmaceutical composition in the manufacture of a medicament for the prevention or treatment of a solid cancer or a liquid cancer, wherein the pharmaceutical composition comprises i) the immune cell of any one of claims 1 to 21, ii) the nucleic acid of claim 22, and/or iii) the vector of claim 23, and at least one pharmaceutically acceptable carrier and/or diluent.

25. The use of claim 24, wherein the medicament is to be administered with at least one additional therapeutic agent or therapy.

26. The use of claim 25, wherein the at least one additional therapeutic agent is an anticancer agent useful to treat a cancer, preferably a solid cancer and/or an anti-inflammatory agent.

27. The use of claim 25, wherein the therapy is an anti-cancer therapy selected from the group comprising radiotherapy, chemotherapy, immunotherapy and hormone therapy, or a combination of one of more thereof.

28. The use of claim 26, wherein the anticancer agent is an immune checkpoint inhibitor selected from the group comprising a PD-1 inhibitor, a PD-L1 inhibitor, and a CTLA-4 inhibitor, or a combination of one of more thereof.