

WHAT IS CLAIMED IS:

1. An antibody comprising:
 - (i) a heavy chain (HC) immunoglobulin variable domain sequence comprising an amino acid sequence of any one of SEQ ID NOS: 2 or 6 or an equivalent of each thereof; and/or
 - (ii) a light chain (LC) immunoglobulin variable domain sequence comprising an amino acid sequence of any one of SEQ ID NOS: 4 or 8 or an equivalent of each thereof.
2. The antibody of claim 1, wherein the heavy chain (HC) immunoglobulin variable domain sequence comprises an amino acid sequence SEQ ID NO: 2 and the light chain (LC) immunoglobulin variable domain sequence comprises an amino acid sequence SEQ ID NO: 4, or an equivalent of each thereof.
3. The antibody of claim 1, wherein the heavy chain (HC) immunoglobulin variable domain sequence comprises an amino acid sequence SEQ ID NO: 2 and the light chain (LC) immunoglobulin variable domain sequence comprises an amino acid sequence SEQ ID NO: 8, or an equivalent of each thereof.
4. The antibody of claim 1, wherein the heavy chain (HC) immunoglobulin variable domain sequence comprises an amino acid sequence SEQ ID NO: 6 and the light chain (LC) immunoglobulin variable domain sequence comprises an amino acid sequence SEQ ID NO: 4, or an equivalent of each thereof.
5. The antibody of claim 1, wherein the heavy chain (HC) immunoglobulin variable domain sequence comprises an amino acid sequence SEQ ID NO: 6 and the light chain (LC) immunoglobulin variable domain sequence comprises an amino acid sequence SEQ ID NO: 8, or an equivalent of each thereof.
6. An antibody comprising:
 - (i) a heavy chain (HC) immunoglobulin variable domain sequence comprising an amino acid sequence of SEQ ID NO: 10 or an equivalent thereof; and/or
 - (ii) a light chain (LC) immunoglobulin variable domain sequence comprising an amino acid sequence of SEQ ID NO: 12 or an equivalent thereof.

7. An antigen binding fragment of the antibody of any one of claims 1 to 6.
8. A polypeptide comprising an amino acid sequence of any one of SEQ ID NOS: 2, 4, 6, 8, 10 or 12 or an equivalent of each thereof.
9. A chimeric antigen receptor (CAR) comprising: (a) an antigen binding domain of the antibody of any one of claims 1 to 6, (b) a hinge domain, (c) a transmembrane domain, and (d) an intracellular signaling domain or a DAP domain.
10. The CAR of claim 9, further comprising one or more costimulatory signaling regions.
11. The CAR of claim 9 or 10, wherein the DAP domain is DAP10 and/or DAP12.
12. The CAR of any one of claims 9 to 11, further comprising the peptide AVPPQQWALS inserted after the HC and LC variable domains.
13. An isolated nucleic acid sequence, wherein the nucleic acid sequence comprises a sequence selected from any one of a sequence disclosed herein, or an equivalent of each thereof, and optionally operatively linked to a promoter and/or enhancer element.
14. An isolated nucleic acid sequence encoding the antibody of any one of claims 1 to 6, the antigen binding fragment of claim 7, the polypeptide of claim 8, or the CAR of any one of claims 9 to 12.
15. A vector comprising the isolated nucleic acid sequence of claim 14.
16. An isolated cell comprising antibody of any one of claims 1 to 6, the antigen binding fragment of claim 7, the polypeptide of claim 8, the CAR of any one of claims 9 to 12, the isolated nucleic acid of claim 13 or 14, and/or the vector of claim 15.
17. The isolated cell of claim 16, wherein the isolated cell is an immune cell.
18. The isolated cell of claim 17, wherein the immune cell is a T-cell or a natural killer (NK) cell.
19. A composition comprising a carrier and one or more of the antibody of any one of claims 1 to 6, the antigen binding fragment of claim 7, the polypeptide of claim 8, the CAR of any one of claims 9 to 12, the isolated nucleic acid of claim 13 or 14, the vector of claim 15 and/or the isolated cell of any one of claims 16 to 18.
20. A method of producing a CAR expressing cells comprising:

- (i) introducing a population of immune cells with a nucleic acid sequence encoding the CAR of any one of claims 9 to 12; and
 - (ii) selecting a subpopulation of immune cells that have been successfully transduced with said nucleic acid sequence of step (i) thereby producing CAR expressing cells.
- 21. The method of claim 20, wherein the immune cells are T-cells or NK-cells.
- 22. The method of claim 20 or 21, wherein the population of immune cells have been modified to reduce or eliminate expression of endogenous immune cell receptors.
- 23. Use of an effective amount of the antibody of any one of claims 1 to 6, the antigen binding domain of claim 7, the polypeptide of claim 8, or the CAR of any one of claims 9 to 12, in the manufacture of a medicament for inhibiting the growth of a tumor and/or treating a cancer and/or preventing relapse of cancer in a subject in need thereof, wherein said medicament is to be administered to the subject.
- 24. The use of claim 23, further comprising administering one or more anti-cancer therapeutics, checkpoint inhibitors, regulatory T cells (Treg), myeloid derived suppressor cells (MDSC), Fluorouracil (5-FU), Histone deacetylase (HDAC) inhibitors, IL-12 treatment, CpG (TLR9 agonists), and/or stimulator of interferon genes (STING) pathway agonists.
- 25. The use of claim 23 or 24, wherein the tumor or cancer cell expresses or overexpresses Lym1 and/or Lym2, or CD19
- 26. Use of an effective amount of the antibody of any one of claims 1 to 6, the antigen binding domain of claim 7, the polypeptide of claim 8, or the CAR of any one of claims 9 to 12, in the manufacture of a medicament for inhibiting the proliferation of cancer cells or cancer stem cells.
- 27. A method for determining if a subject is likely to respond or is not likely to therapy, comprising contacting a sample isolated from the patient with the antibody of any one of claims 1 to 6, or the antigen binding fragment of claim 7, the polypeptide of claim 8, wherein the presence of the complex between the antibody, antigen binding fragment or polypeptide indicates that the subject is likely to respond to the therapy

and the absence of complex indicates that the subject is not likely to respond to the therapy.

28. A method for monitoring therapy in a subject, comprising contacting a sample isolated from the subject with one or more of antibody of any one of claims 1 to 6, the antigen binding fragment of claim 7, the polypeptide of claim 8, or the polypeptide of claim 8, and detecting a complex in the sample.
29. A kit comprising one or more of the antibody of any one of claims 1 to 6, the antigen binding fragment of claim 7, the polypeptide of claim 8, or the CAR of any one of claims 9 to 12, and instructions for use.