

## CLAIMS

### **What is claimed is:**

1. An isolated antibody or fragment thereof, wherein the antibody or fragment thereof has specificity to a human CD73 protein and comprises a VH CDR1 comprising the amino acid sequence of SEQ ID NO: 1, a VH CDR2 comprising the amino acid sequence of SEQ ID NO: 2, a VH CDR3 comprising the amino acid sequence of SEQ ID NO: 3, a VL CDR1 comprising the amino acid sequence of SEQ ID NO: 4, a VL CDR2 comprising the amino acid sequence of SEQ ID NO: 5, and a VL CDR3 comprising the amino acid sequence of SEQ ID NO: 6.
2. The antibody or fragment thereof of claim 1, further comprising a heavy chain constant region, a light chain constant region, an Fc region, or the combination thereof.
3. The antibody or fragment thereof of claim 1, wherein the light chain constant region is a kappa or lambda chain constant region.
4. The antibody or fragment thereof of claim 1, wherein the antibody or fragment thereof is of an isotype of IgG, IgM, IgA, IgE or IgD.
5. The antibody or fragment thereof of claim 4, wherein the isotype is IgG1, IgG2, IgG3 or IgG4.
6. The antibody or fragment thereof of claim 1, wherein the antibody or fragment thereof is a chimeric antibody, a humanized antibody, or a fully human antibody.
7. The antibody or fragment thereof of claim 6, wherein the antibody or fragment thereof is a humanized antibody.
8. The antibody or fragment thereof of claim 6, comprising a heavy chain variable region comprising one or more amino acid residues selected from the group consisting of:
  - (a) Thr at position 30,
  - (b) Lys at position 44,
  - (c) Met at position 48,

- (d) Ile at position 67, and
  - (e) Arg at position 71, according to Kabat numbering, and combinations thereof.
9. The antibody or fragment thereof of claim 6, comprising a light chain variable region comprising one or more amino acid residues selected from the group consisting of:
- (a) Ser at position 5,
  - (b) Pro at position 46,
  - (c) Trp at position 47,
  - (d) Ser at position 49,
  - (e) Ser at position 70, and
  - (f) Tyr at position 71, according to Kabat numbering, and combinations thereof.
10. The antibody or fragment thereof of claim 1, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 7 or 9.
11. The antibody or fragment thereof of claim 1, wherein the light chain variable region comprises the amino acid sequence of SEQ ID NO: 8.
12. The antibody or fragment thereof of any one of claims 1-11, wherein the antibody or fragment thereof is for use in a method of treating cancer in a patient in need thereof, comprising administering to the patient the antibody or fragment thereof.
13. The antibody or fragment thereof of claim 12, wherein the cancer is selected from the group consisting of bladder cancer, breast cancer, colorectal cancer, endometrial cancer, esophageal cancer, head and neck cancer, kidney cancer, leukemia, liver cancer, lung cancer, lymphoma, melanoma, pancreatic cancer, prostate cancer, and thyroid cancer.
14. The antibody or fragment thereof of claim 12, wherein the cancer is a solid tumor.
15. The antibody or fragment thereof of any one of claims 1-11, wherein the antibody or fragment thereof is for use in a method of treating cancer in a patient in need thereof, comprising:
- (a) treating a T cell, in vitro, with the antibody or fragment thereof; and
  - (b) administering the treated T cell to the patient.

16. The antibody or fragment thereof of claim 15, wherein the method further comprises, prior to step (a), isolating the T cell from an individual.
17. The antibody or fragment thereof of claim 16, wherein the T cell is isolated from the patient.
18. The antibody or fragment thereof of claim 16, wherein the T cell is isolated from a donor individual different from the patient.
19. The antibody or fragment thereof of claim 18, wherein the T cell is a tumor-infiltrating T lymphocyte, a CD4<sup>+</sup> T cell, a CD8<sup>+</sup> T cell, or the combination thereof.
20. The antibody or fragment thereof of any one of claims 1-11, wherein the antibody or fragment thereof is for use in a method of detecting expression of CD73 in a sample, comprising contacting the sample with the antibody or fragment thereof under conditions for the antibody or fragment thereof to bind to the CD73, and detecting the binding which indicates expression of CD73 in the sample.
21. The antibody or fragment thereof of any one of claims 1-11, wherein the antibody or fragment thereof is for use in a method of identifying a cancer patient suitable for treatment with an anti-CD73 therapy, comprising isolating a cell from the cancer patient and detecting the presence of a CD73 protein with the antibody or fragment thereof.