

CLAIMS

What is claimed:

1. An aqueous composition comprising a bispecific antibody construct at a concentration of between about 0.001 µg/ml and about 100 µg/ml and a surfactant at a concentration of at least about 0.25 x of the critical micelle concentration (CMC) of the surfactant, wherein the bispecific antibody construct comprises a first binding domain that binds to a target cell surface antigen, a second binding domain that binds to human CD3 on the surface of a T cell, and optionally, a third domain comprising, in an amino to carboxyl order, hinge-CH2 domain-CH3 domain-linker-hinge-CH2 domain-CH3 domain, wherein the second binding domain comprises a polypeptide having the sequence of SEQ ID NO: 201.
2. The composition of claim 1, wherein the bispecific antibody construct is present at a concentration of between about 0.001 µg/ml and about 50 µg/ml.
3. The composition of claim 1 or 2, wherein the bispecific antibody construct is present at a concentration of between about 0.01 µg/ml to about 50 µg/ml, or between 0.1 µg/ml to about 50 µg/ml, or 0.1 µg/ml to about 10 µg/ml, or 1 µg/ml to about 10 µg/ml.
4. The composition of any one of claims 1-3, wherein the surfactant is a polysorbate, a poloxamer or triton x-100.
5. The composition of any one of claims 1-4, wherein the surfactant is polysorbate 80, polysorbate 60, polysorbate 40, polysorbate 20, or Triton X-100.
6. The composition of any one of claims 1-4, wherein the surfactant is poloxamer 188 or poloxamer 407.
7. The composition of any one of claims 1-6, wherein the surfactant is present at a concentration of between about 0.25x and about 20x of the CMC, or between about 0.25x and about 10x of the CMC of the surfactant.

8. The composition of any one of claims 1-7, wherein the composition further comprising a salt, an amino acid, a saccharide or saccharide derivative, or combinations thereof.
9. The composition of claim 8, wherein the composition further comprises a buffer or a preservative.
10. The composition of claim 8 or 9, wherein the pH of the composition is between about 3.5 and about 7.5.
11. The composition of claim 10, wherein the pH of the composition is between about 4.2 and about 7.0.
12. The composition of any one of claims 8-11, wherein the salt is NaCl.
13. The composition of any one of claims 8-12, wherein the saccharide or saccharide derivative is a monosaccharide, a disaccharide, a cyclic polysaccharide or a sugar alcohol.
14. The composition of claim 8-13, wherein the saccharide is sucrose, trehalose, mannitol or sorbitol.
15. The composition of any one of claims 8-14, wherein the amino acid is lysine.
16. The composition of any one of claims 9-15, wherein the buffer is an acetate buffer, a glutamate buffer, a citrate buffer, a succinate buffer, a tartrate buffer, a fumarate buffer, a maleate buffer, a histidine buffer, or phosphate buffer.
17. The composition of any one of claims 1-16, wherein each of the first and second binding domains of the bispecific antibody construct comprises a VH region and a VL region.
18. The composition of any one of claims 1-17, wherein the bispecific antibody construct is a single chain antibody construct.

19. The composition of any one of claims 1-18, wherein the bispecific antibody construct comprises a polypeptide having the amino acid sequence selected from SEQ ID NO: 11, SEQ ID NO: 13, SEQ ID NO: 15, SEQ ID NO: 24, SEQ ID NO: 25, SEQ ID NO: 47, SEQ ID NO: 48, SEQ ID NO: 66, SEQ ID NO: 67, SEQ ID NO: 76, SEQ ID NO: 78, SEQ ID NO: 87, SEQ ID NO: 88, SEQ ID NO: 108, SEQ ID NO: 109, SEQ ID NO: 110, SEQ ID NO: 165, SEQ ID NO: 166, SEQ ID NO: 167, SEQ ID NO: 176, SEQ ID NO: 178, and SEQ ID NO: 192.
20. The composition of any one of claims 1-19, wherein the composition is a pharmaceutical composition.
21. The composition of any one of claims 1-20, wherein the composition is contained in a plastic container.
22. The composition of claim 21, wherein the container is made of a material comprising polyolefin, PVC, EVA, or polyurethane.
23. The composition of claim 22, wherein the container is made of a material comprising PVC and wherein the PVC is substantially free of DEHP or TOTM.
24. The composition of any one of claims 21-23, wherein the container is an IV bag or IV tube.
25. A pharmaceutical preparation comprising an aqueous pharmaceutical composition contained inside a container, wherein the aqueous pharmaceutical composition comprising:
- a) a bispecific antibody construct at a concentration of between about 0.001 µg/ml and about 100 µg/ml, and
 - b) a surfactant at a concentration of at least about 0.25 x of CMC of the surfactant, wherein the surfactant has an HLB value of at least 20.
26. The pharmaceutical preparation of claim 25, wherein the aqueous pharmaceutical composition comprises the bispecific antibody construct at a concentration of between about 0.001 µg/ml and about 50 µg/ml.

27. The pharmaceutical preparation of claim 25 or 26, wherein the aqueous pharmaceutical composition comprises the surfactant is at a concentration of between about 0.25x and about 20x of the CMC or between about 0.25x and about 10x of the CMC, of the surfactant.
28. The pharmaceutical preparation of any one of claims 25-27, wherein the aqueous pharmaceutical composition further comprising a salt, a buffer, an amino acid, a saccharide or saccharide derivative, or combinations thereof.
29. The pharmaceutical preparation of any one of claims 25-28, wherein the aqueous pharmaceutical composition has a pH of between about 4.2 and about 7.0.
30. The pharmaceutical preparation of any one of claims 25-29, wherein the container is made of a material comprising polyolefin, PVC, EVA or polyurethane.
31. The pharmaceutical preparation of any one of claims 25-30, wherein the bispecific antibody construct comprises a polypeptide having the amino acid sequences selected from SEQ ID NO: 11, SEQ ID NO: 13, SEQ ID NO: 15, SEQ ID NO: 24, SEQ ID NO: 25, SEQ ID NO: 47, SEQ ID NO: 48, SEQ ID NO: 66, SEQ ID NO: 67, SEQ ID NO: 76, SEQ ID NO: 78, SEQ ID NO: 87, SEQ ID NO: 88, SEQ ID NO: 108, SEQ ID NO: 109, SEQ ID NO: 110, SEQ ID NO: 165, SEQ ID NO: 166, SEQ ID NO: 167, SEQ ID NO: 176, SEQ ID NO: 178, and SEQ ID NO: 192.
32. A method of administering a bispecific antibody construct to a patient comprising:
- a) preparing an aqueous pharmaceutical composition in a container, wherein the aqueous pharmaceutical composition comprises the bispecific antibody construct at a concentration of between about 0.001 µg/ml and about 100 µg/ml and a surfactant at a concentration of at least about 0.25 x of CMC of the surfactant, and
 - b) administering the aqueous pharmaceutical composition to the patient.
- wherein the bispecific antibody construct comprises a polypeptide having the amino acid sequence selected from SEQ ID NO: 11, SEQ ID NO: 13, SEQ ID NO: 15, SEQ ID NO: 24, SEQ ID NO: 25, SEQ ID NO: 47, SEQ ID NO: 48, SEQ ID NO: 66, SEQ ID NO: 67, SEQ ID NO: 76, SEQ ID NO: 78, SEQ ID NO: 87, SEQ ID NO: 88, SEQ ID NO: 108, SEQ ID NO: 109, SEQ ID NO: 110, SEQ ID NO: 165, SEQ ID NO: 166, SEQ ID NO: 167, SEQ ID NO: 176, SEQ ID NO: 178, and SEQ ID NO: 192.

33. The method of claim 32, wherein the aqueous pharmaceutical composition comprises the bispecific antibody construct is at a concentration of between about 0.001 µg/ml and about 50 µg/ml.
34. The method of claim 32 or 33, wherein the aqueous pharmaceutical composition comprises the surfactant is at a concentration of between about 0.25x and about 20x of the CMC or between about 0.25x and about 10x of the CMC, of the surfactant.
35. The method of any one of claims 32-34, wherein the surfactant is polysorbate 80, polysorbate 60, polysorbate 40, polysorbate 20, poloxamer 188, poloxamer 407, or Triton X-100.
36. The method of any one of claims 32-35, wherein the aqueous pharmaceutical composition further comprising one or more selected from a salt, a buffer, an amino acid, a saccharide, and a preservative.
37. The method of any one of claims 32-36, wherein the aqueous pharmaceutical composition has a pH of between about 4.2 and about 7.0.
38. The method of any one of claims 32-37, wherein the container is made of a material comprising polyolefin, PVC, EVA, or polyurethane.
39. The method of any one of claims 32-38, wherein the surfactant is polysorbate 80, polysorbate 60, polysorbate 40, or polysorbate 20, and wherein the container is made of a material comprising PVC that is substantially free of DEHP or TOTM.
40. The method of any one of claims 32-39, wherein the aqueous pharmaceutical composition is prepared by diluting a first composition comprising the bispecific antibody construct with a suitable aqueous solution.
41. The method of claim 40, wherein the first composition is a liquid composition comprising the bispecific antibody construct.

42. The method of claim 40, wherein the first composition is a liquid composition reconstituted from a lyophilized composition comprising the bispecific antibody construct.
43. The method of any one of claims 41-42, wherein the suitable solution comprises the surfactant at a concentration of at least about 0.25 x of CMC of the surfactant.
44. The method of any one of claims 40-43, wherein the aqueous pharmaceutical composition is prepared by adding the suitable aqueous solution into the container followed by adding an appropriate amount of the first composition into the container.
45. The method of any one of claims 32-44, wherein the patient is a cancer patient.
46. The method of any one of claims 32-45, wherein the administration is IV administration.
47. The pharmaceutical preparation of any one of claims 25-31, wherein the surfactant is poloxamer 188 or poloxamer 407.
48. The composition of claim 19, the pharmaceutical preparation of claim 31 or the method of claim 32, wherein the bispecific antibody construct comprises a polypeptide having the amino acid sequence of SEQ ID NO: 13, SEQ ID NO: 15, SEQ ID NO: 25, SEQ ID NO: 48, SEQ ID NO: 67, SEQ ID NO: 78, SEQ ID NO: 88, SEQ ID NO: 109, SEQ ID NO: 110, SEQ ID NO: 165, SEQ ID NO: 166, SEQ ID NO: 167, SEQ ID NO: 178 or SEQ ID NO: 192.