

Claims:

1. Use of an antibody that specifically binds CD38 in the manufacture of a medicament for the treatment of a subject having a solid tumor, wherein the antibody that specifically binds CD38 comprises a heavy chain complementarity determining region (HCDR) 1, a HCDR2, a HCDR3, a light chain complementarity determining region (LCDR) 1, a LCDR2 and a LCDR3 amino acid sequences of SEQ ID NOs: 6, 7, 8, 9, 10 and 11, respectively.
2. The use of claim 1, wherein the antibody that specifically binds CD38 elicits an immune response in the patient.
3. The use of claim 2, wherein the immune response is an effector T cell (Teff) response.
4. The use of claim 3, wherein the Teff response is mediated by CD4⁺ T cells or CD8⁺ T cells.
5. The use of claim 4, wherein the Teff response is mediated by the CD8⁺ T cells.
6. The use of claim 3, wherein the Teff response is an increase in the number of the CD8⁺ T cells, increased CD8⁺ T cell proliferation, increased T cell clonal expansion, increased CD8⁺ memory cell formation, increased antigen-dependent antibody production, increased cytokine production, increased chemokine production or increased interleukin production.
7. The use of claim 1, wherein the antibody that specifically binds CD38 inhibits function of an immune suppressor cell.
8. The use of claim 7, wherein the immune suppressor cell is a regulatory T cell (Treg).
9. The use of claim 8, wherein the Treg is a CD3⁺CD4⁺CD25⁺CD127^{dim} T cell.
10. The use of claim 9, wherein the Treg expresses CD38.
11. The use of claim 10, wherein the Treg function is inhibited by killing the Treg.
12. The use of claim 11, wherein killing the Treg is mediated by antibody-dependent cell cytotoxicity (ADCC).
13. The use of claim 7, wherein the immune suppressor cell is a myeloid-derived suppressor cell (MDSC).

14. The use of claim 13, wherein the MDSC is a CD11b⁺HLADR⁻CD14⁻CD33⁺CD15⁺ cell.
15. The use of claim 14, wherein the CD11b⁺HLADR⁻CD14⁻CD33⁺CD15⁺ cell expresses CD38.
16. The use of claim 15, wherein the MDSC function is inhibited by killing the MDSC.
17. The use of claim 16, wherein killing of MDSC is mediated by ADCC.
18. The use of claim 7, wherein the immune suppressor cell is a regulatory B cell (Breg).
19. The use of claim 18, wherein the Breg is a CD19⁺CD24⁺CD38⁺ cell.
20. The use of claim 19, wherein the Breg function is inhibited by killing the Breg.
21. The use of claim 20, wherein killing the Breg is mediated by ADCC.
22. The use of claim 7, wherein the immune suppressor cell resides in bone marrow or in peripheral blood.
23. The use of any of the claims 1-22, wherein the solid tumor is a melanoma, a lung cancer, a squamous non-small cell lung cancer (NSCLC), a non-squamous NSCLC, a colorectal cancer, a prostate cancer, a castration-resistant prostate cancer, a stomach cancer, an ovarian cancer, a gastric cancer, a liver cancer, a pancreatic cancer, a thyroid cancer, a squamous cell carcinoma of the head and neck, a carcinoma of the esophagus or gastrointestinal tract, a breast cancer, a fallopian tube cancer, a brain cancer, an urethral cancer, a genitourinary cancer, an endometriosis, a cervical cancer or a metastatic lesion of the cancer.
24. The use of any of the claims 1-23, wherein the antibody that specifically binds CD38 is a non-agonistic antibody.
25. The use of claim 24, wherein the non-agonistic antibody induces proliferation of a sample of peripheral blood mononuclear cells in vitro in a statistically insignificant manner.
26. The use of any of the claims 1-25, wherein the antibody that specifically binds CD38 competes for binding to CD38 with an antibody comprising a heavy chain variable region (VH) of SEQ ID NO: 4 and a light chain variable region (VL) of SEQ ID NO: 5.

27. The use of claim 26, wherein the antibody that specifically binds CD38 binds at least to the region SKRNIQFSCKNYR (SEQ ID NO: 2) and the region EKVQTLEAWVIHGG (SEQ ID NO: 3) of human CD38 (SEQ ID NO: 1).
28. The use of any of the claims 1-27, wherein the antibody that specifically binds CD38 comprises the VH of SEQ ID NO: 4 and the VL of SEQ ID NO: 5.
29. The use of any of the claims 1-28, wherein the antibody that specifically binds CD38 is to be administered in combination with a second therapeutic agent.
30. The use of claim 29, wherein the second therapeutic agent is a chemotherapeutic agent, a targeted anti-cancer therapy, a standard of care drug for treatment of solid tumor, or an immune checkpoint inhibitor.
31. The use of claim 30, wherein the immune checkpoint inhibitor is an anti-PD-1 antibody, an anti-PD-L1 antibody, an anti-PD-L2 antibody, an anti-LAG3 antibody, an anti-TIM3 antibody, or an anti-CTLA-4 antibody.
32. The use of claim 31, wherein the immune checkpoint inhibitor is an anti-PD-1 antibody.
33. The use of claim 32, wherein the anti-PD-1 antibody comprises
 - a. the VH of SEQ ID NO: 22 and the VL of SEQ ID NO: 23;
 - b. the VH of SEQ ID NO: 24 and the VL of SEQ ID NO: 25;
 - c. the VH of SEQ ID NO: 32 and the VL of SEQ ID NO: 33; or
 - d. the VH of SEQ ID NO: 34 and the VL of SEQ ID NO: 35.
34. The use of claim 31, wherein the immune checkpoint inhibitor is an anti-PD-L1 antibody.
35. The use of claim 34, wherein the anti-PD-L1 antibody comprises
 - a. the VH of SEQ ID NO: 26 and the VL of SEQ ID NO: 27;
 - b. the VH of SEQ ID NO: 28 and the VL of SEQ ID NO: 29; or
 - c. the VH of SEQ ID NO: 30 and the VL of SEQ ID NO: 31.
36. The use of claim 31, wherein the immune checkpoint inhibitor is an anti-PD-L2 antibody.
37. The use of claim 31, wherein the immune checkpoint inhibitor is an anti-LAG3 antibody.

38. The use of claim 31, wherein the immune checkpoint inhibitor is an anti-TIM-3 antibody.
39. The use of claim 38, wherein the anti-TIM-3 antibody comprises
 - a. the VH of SEQ ID NO: 36 and the VL of SEQ ID NO: 37; or
 - b. the VH of SEQ ID NO: 38 and the VL of SEQ ID NO: 39.
40. The use of any of the claims 29-39, wherein the second therapeutic agent is to be administered simultaneously, sequentially or separately.
41. The use of any of the claims 1-40, wherein the antibody that specifically binds CD38 is to be administered intravenously.
42. The use of any of the claims 1-40, wherein the antibody that specifically binds CD38 is to be administered subcutaneously in a pharmaceutical composition comprising the antibody that specifically binds CD38 and a hyaluronidase.
43. The use of claim 42, wherein the hyaluronidase is rHuPH20 of SEQ ID NO: 40.
44. The use of any of the claims 1-43, wherein the patient is to be treated or has been treated with radiation therapy.
45. The use of any of the claims 1-43, wherein the patient has had or will undergo surgery.