Claims

1. A bispecific antibody comprising a first antibody variable domain and a second antibody variable domain, wherein the first antibody variable domain specifically binds to Cluster of Differentiation 3 (CD3), the second antibody variable domain specifically binds to B-Cell Maturation Antigen (BCMA), and wherein

(a) the first antibody variable domain comprises a heavy chain variable region complementarity determining region one (VH CDR1) comprising the sequence shown in SEQ ID NO: 333; a VH CDR2 comprising the sequence shown in SEQ ID NO: 417; a VH CDR3 comprising the sequence shown in SEQ ID NO: 335; a light chain variable region CDR1 (VL CDR1) comprising the sequence shown in SEQ ID NO: 343; a VL CDR2 comprising the sequence shown in SEQ ID NO: 341; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 342; and the second antibody variable domain comprises a VH CDR1 comprising the sequence shown in SEQ ID NO: 157; a VH CDR2 comprising the sequence shown in SEQ ID NO: 159; a VH CDR3 comprising the sequence shown in SEQ ID NO: 155; a VL CDR1 comprising the sequence shown in SEQ ID NO: 209; a VL CDR2 comprising the sequence shown in SEQ ID NO: 221; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 225;

(b) the first antibody variable domain comprises a heavy chain variable region complementarity determining region one (VH CDR1) comprising the sequence shown in SEQ ID NO: 331; a VH CDR2 comprising the sequence shown in SEQ ID NO: 336; a VH CDR3 comprising the sequence shown in SEQ ID NO: 335; a light chain variable region CDR1 (VL CDR1) comprising the sequence shown in SEQ ID NO: 343; a VL CDR2 comprising the sequence shown in SEQ ID NO: 341; and a VL_CDR3 comprising the sequence shown in SEQ ID NO: 342; and the second antibody variable domain comprises a VH CDR1 comprising the sequence shown in SEQ ID NO: 156; a VH CDR2 comprising the sequence shown in SEQ ID NO: 503; a VH CDR3 comprising the sequence shown in SEQ ID NO: 155; a VL CDR1 comprising the sequence shown in SEQ ID NO: 209; a VL CDR2 comprising the sequence shown in SEQ ID NO: 221; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 225;

(c) the first antibody variable domain comprises a heavy chain variable region complementarity determining region one (VH CDR1) comprising the sequence shown in

SEQ ID NO: 332; a VH CDR2 comprising the sequence shown in SEQ ID NO: 417; a VH CDR3 comprising the sequence shown in SEQ ID NO: 335; a light chain variable region CDR1 (VL CDR1) comprising the sequence shown in SEQ ID NO: 343; a VL CDR2 comprising the sequence shown in SEQ ID NO: 341; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 342; and the second antibody variable domain comprises a VH CDR1 comprising the sequence shown in SEQ ID NO: 151; a VH CDR2 comprising the sequence shown in SEQ ID NO:159; a VH CDR3 comprising the sequence shown in SEQ ID NO: 155; a VL CDR1 comprising the sequence shown in SEQ ID NO: 209; a VL CDR2 comprising the sequence shown in SEQ ID NO: 221; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 225; or

(d) the first antibody variable domain comprises a heavy chain variable region complementarity determining region one (VH CDR1) comprising the sequence shown in SEQ ID NO: 333; a VH CDR2 comprising the sequence shown in SEQ ID NO: 336; a VH CDR3 comprising the sequence shown in SEQ ID NO: 335; a light chain variable region CDR1 (VL CDR1) comprising the sequence shown in SEQ ID NO: 343; a VL CDR2 comprising the sequence shown in SEQ ID NO: 341; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 342; and the_second antibody variable domain comprises a VH CDR1 comprising the sequence shown in SEQ ID NO: 157; a VH CDR2 comprising the sequence shown in SEQ ID NO:503; a VH CDR3 comprising the sequence shown in SEQ ID NO: 155; a VL CDR1 comprising the sequence shown in SEQ ID NO: 209; a VL CDR2 comprising the sequence shown in SEQ ID NO: 221; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 225.

2. The bispecific antibody of claim 1, wherein the first antibody variable domain comprises a heavy chain variable region complementarity determining region one (VH CDR1) comprising the sequence shown in SEQ ID NO: 333; a VH CDR2 comprising the sequence shown in SEQ ID NO: 417; a VH CDR3 comprising the sequence shown in SEQ ID NO: 335;

a light chain variable region CDR1 (VL CDR1) comprising the sequence shown in SEQ ID NO: 343; a VL CDR2 comprising the sequence shown in SEQ ID NO: 341; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 342; and the second antibody variable domain comprises a VH CDR1 comprising the sequence shown in SEQ ID NO:

157; a VH CDR2 comprising the sequence shown in SEQ ID NO: 159; a VH CDR3 comprising the sequence shown in SEQ ID NO: 155; a VL CDR1 comprising the sequence shown in SEQ ID NO: 209; a VL CDR2 comprising the sequence shown in SEQ ID NO: 221; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 225.

3. The bispecific antibody of claim 1, wherein the first antibody variable domain comprises a heavy chain variable region complementarity determining region one (VH CDR1) comprising the sequence shown in SEQ ID NO: 331; a VH CDR2 comprising the sequence shown in SEQ ID NO: 336; a VH CDR3 comprising the sequence shown in SEQ ID NO: 335; a light chain variable region CDR1 (VL CDR1) comprising the sequence shown in SEQ ID NO: 343; a VL CDR2 comprising the sequence shown in SEQ ID NO: 341; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 342; and the second antibody variable domain comprises a VH CDR1 comprising the sequence shown in SEQ ID NO: 156; a VH CDR2 comprising the sequence shown in SEQ ID NO:503; a VH CDR3 comprising the sequence shown in SEQ ID NO: 155; a VL CDR1 comprising the sequence shown in SEQ ID NO: 209; a VL CDR2 comprising the sequence shown in SEQ ID NO: 221; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 225.

4. The bispecific antibody of claim 1, wherein the first antibody variable domain comprises a heavy chain variable region complementarity determining region one (VH CDR1) comprising the sequence shown in SEQ ID NO: 332; a VH CDR2 comprising the sequence shown in SEQ ID NO: 417; a VH CDR3 comprising the sequence shown in SEQ ID NO: 335; a light chain variable region CDR1 (VL CDR1) comprising the sequence shown in SEQ ID NO: 343; a VL CDR2 comprising the sequence shown in SEQ ID NO: 341; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 342; and the second antibody variable domain comprises a VH CDR1 comprising the sequence shown in SEQ ID NO: 151;

a VH CDR2 comprising the sequence shown in SEQ ID NO: 159; a VH CDR3 comprising the sequence shown in SEQ ID NO: 155; a VL CDR1 comprising the sequence shown in SEQ ID NO: 209; a VL CDR2 comprising the sequence shown in SEQ ID NO: 221; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 225.

5. The bispecific antibody of claim 1, wherein the first antibody variable domain comprises a heavy chain variable region complementarity determining region one (VH CDR1) comprising the sequence shown in SEQ ID NO: 333; a VH CDR2 comprising the sequence shown in SEQ ID NO: 336; a VH CDR3 comprising the sequence shown in SEQ ID NO: 335; a light chain variable region CDR1 (VL CDR1) comprising the sequence shown in SEQ ID NO: 343; a VL CDR2 comprising the sequence shown in SEQ ID NO: 341; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 342; and the second antibody variable domain comprises a VH CDR1 comprising the sequence shown in SEQ ID NO: 157; a VH CDR2 comprising the sequence shown in SEQ ID NO: 503; a VH CDR3 comprising the sequence shown in SEQ ID NO: 155; a VL CDR1 comprising the sequence shown in SEQ ID NO: 209; a VL CDR2 comprising the sequence shown in SEQ ID NO: 221; and a VL CDR3 comprising the sequence shown in SEQ ID NO: 225.

6. The bispecific antibody of claim 1, wherein the second antibody variable domain comprises a VH CDR2 comprising the sequence shown in SEQ ID NO: 159.

7. The bispecific antibody of any one of claims 1 to 6, wherein the bispecific antibody further comprises a human IgG2 heavy chain constant region.

8. The bispecific antibody of claim 7, wherein the human IgG2 heavy chain constant region is a modified human IgG2 heavy chain constant region, as compared to a wildtype human IgG2 heavy chain constant region.

9. The bispecific antibody of claim 7, wherein the bispecific antibody comprises two human IgG2 heavy chain constant regions, wherein one heavy chain constant region comprises the sequence shown in SEQ ID NO: 496 and the other heavy chain constant region comprises the sequence shown in SEQ ID NO: 497.

10. The bispecific antibody of any one of claims 1 to 6, further comprising two heavy chain constant regions, wherein one heavy chain constant region comprises the sequence shown in SEQ ID NO: 496.

11. The bispecific antibody of any one of claims 1 to 6, further comprising two heavy chain constant regions, wherein one heavy chain constant region comprises the sequence shown in SEQ ID NO: 497.

12. The bispecific antibody of claim 1, wherein the first antibody variable domain comprises a heavy chain variable region comprising the sequence shown in SEQ ID NO: 324, and a light chain variable region comprising the sequence shown in SEQ ID NO: 323; and

the second antibody variable domain comprises a heavy chain variable region comprising the sequence shown in SEQ ID NO: 504, and a light chain variable region comprising the sequence shown in SEQ ID NO: 38.

13. The bispecific antibody of claim 1, wherein the first antibody variable domain comprises a heavy chain variable region comprising the sequence shown in SEQ ID NO: 324, and a light chain variable region comprising the sequence shown in SEQ ID NO: 323; and

the second antibody variable domain comprises a heavy chain variable region encoded by the polynucleotide sequence shown in SEQ ID NO: 486, and a light chain variable region encoded by the polynucleotide sequence shown in SEQ ID NO: 485.

14. The bispecific antibody of claim 13, further comprising two heavy chain constant regions, wherein one heavy chain constant region comprises the sequence shown in SEQ ID NO: 496 and the other heavy chain constant region comprises the sequence shown in SEQ ID NO: 497.

15. The bispecific antibody of claim 1, wherein the first antibody variable domain comprises a heavy chain variable region comprising the sequence shown in SEQ ID NO: 324, and a light chain variable region comprising the sequence shown in SEQ ID NO: 323; and

the second antibody variable domain comprises a heavy chain variable region encoded by the polynucleotide having ATCC Accession No. PTA-122094, and a light chain variable region encoded by the polynucleotide having ATCC Accession No. PTA-122093.

16. The bispecific antibody of claim 15, further comprising two heavy chain constant regions, wherein one heavy chain constant region comprises the sequence shown in SEQ ID NO: 496 and the other heavy chain constant region comprises the sequence shown in SEQ ID NO: 497.

17. A bispecific antibody comprising a first antibody variable domain and a second antibody variable domain, wherein

the first antibody variable domain comprises a heavy chain variable region comprising the sequence shown in SEQ ID NO: 324, and a light chain variable region comprising the sequence shown in SEQ ID NO: 323; and

the second antibody variable domain comprises a heavy chain variable region comprising the sequence shown in SEQ ID NO: 504, and a light chain variable region comprising the sequence shown in SEQ ID NO: 38.

18. A bispecific antibody comprising a first antibody variable domain and a second antibody variable domain, wherein

the first antibody variable domain comprises a heavy chain variable region comprising the sequence shown in SEQ ID NO: 324, and a light chain variable region comprising the sequence shown in SEQ ID NO: 323; and

the second antibody variable domain comprises a heavy chain variable region encoded by the polynucleotide sequence shown in SEQ ID NO: 486, and a light chain variable region encoded by the polynucleotide sequence shown in SEQ ID NO: 485.

19. A pharmaceutical composition comprising the bispecific antibody of any one of claims 1 to 18 and a pharmaceutically acceptable carrier.

20. An isolated polynucleotide comprising a nucleotide sequence encoding the bispecific antibody of any one of claims 1-18.

21. A vector comprising the polynucleotide of claim 20.

22. A host cell comprising the vector of claim 21.

23. Use of the bispecific antibody of any one of claims 1 to 18, in the manufacture of a medicament for the treatment of a B-cell related cancer.

24. The use of claim 23, wherein the B cell-related cancer is selected from the group consisting of multiple myeloma, malignant plasma cell neoplasm, Hodgkin's lymphoma, nodular lymphocyte predominant Hodgkin's lymphoma, Kahler's disease and Myelomatosis, plasma cell leukemia, plasmacytoma, B-cell prolymphocytic leukemia, hairy cell leukemia, B-cell non-Hodgkin's lymphoma (NHL), acute myeloid leukemia (AML), chronic lymphocytic leukemia (CLL), acute lymphocytic leukemia (ALL), chronic myeloid leukemia (CML), follicular lymphoma, Burkitt's lymphoma, marginal zone lymphoma, mantle cell lymphoma, large cell lymphoma, precursor B-lymphoblastic lymphoma, myeloid leukemia, Waldenstrom's macroglobulienemia, diffuse large B cell lymphoma, follicular lymphoma, marginal zone lymphoma, mucosa-associated lymphatic tissue lymphoma, small cell lymphocytic lymphoma, mantle cell lymphoma, Burkitt lymphoma, primary mediastinal (thymic) large B-cell lymphoma, lymphoplasmactyic lymphoma, Waldenström macroglobulinemia, nodal marginal zone B cell lymphoma, splenic marginal zone lymphoma, intravascular large B-cell lymphoma, primary effusion lymphoma, lymphomatoid granulomatosis, T cell/histiocyte-rich large B-cell lymphoma, primary central nervous system lymphoma, primary cutaneous diffuse large B-cell

lymphoma (leg type), EBV positive diffuse large B-cell lymphoma of the elderly, diffuse large B-cell lymphoma associated with inflammation, intravascular large B-cell lymphoma, ALK-positive large B-cell lymphoma, plasmablastic lymphoma, large B-cell lymphoma arising in HHV8-associated multicentric Castleman disease, B-cell lymphoma unclassified with features intermediate between diffuse large B-cell lymphoma and Burkitt lymphoma, B-cell lymphoma unclassified with features intermediate between diffuse large B-cell lymphoma and classical Hodgkin lymphoma, and other B-cell related lymphoma.

25. The use of claim 23 or claim 24, wherein the B cell-related cancer is multiple myeloma.