WHAT IS CLAIMED IS:

1. An antibody or antigen-binding fragment thereof that binds to CD79b (Cluster of Differentiation 79B) comprising:

a heavy chain variable region (VH) comprising complementarity determining regions (CDRs) 1, 2, and 3, wherein the VH CDR1 region comprises an amino acid sequence that is at least 80% identical to a selected VH CDR1 amino acid sequence, the VH CDR2 region comprises an amino acid sequence that is at least 80% identical to a selected VH CDR2 amino acid sequence, and the VH CDR3 region comprises an amino acid sequence that is at least 80% identical to a selected VH CDR3 amino acid sequence; and

a light chain variable region (VL) comprising CDRs 1, 2, and 3, wherein the VL CDR1 region comprises an amino acid sequence that is at least 80% identical to a selected VL CDR1 amino acid sequence, the VL CDR2 region comprises an amino acid sequence that is at least 80% identical to a selected VL CDR2 amino acid sequence, and the VL CDR3 region comprises an amino acid sequence that is at least 80% identical to a selected VL CDR3 amino acid sequence,

wherein the selected VH CDRs 1, 2, and 3 amino acid sequences and the selected VL CDRs, 1, 2, and 3 amino acid sequences are one of the following:

(1) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 39, 41, 43, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 44-46, respectively;

(2) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 40, 42, 43, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 44-46, respectively;

(3) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 9, 11, 13, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 14-16, respectively;

(4) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 19, 21, 23, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 24-26, respectively;

(5) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 29, 31, 33, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 34-36, respectively;

(6) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 49, 51, 53, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 54-56, respectively;

(7) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 59, 61, 63, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 64-66, respectively;

(8) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 10, 12, 13, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 14-16, respectively;

(9) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 20, 22, 23, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 24-26, respectively;

(10) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 30, 32, 33, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 34-36, respectively;

(11) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 50, 52, 53, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 54-56, respectively; and

(12) the selected VH CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 60, 62, 63, respectively, and the selected VL CDRs 1, 2, 3 amino acid sequences are set forth in SEQ ID NOs: 64-66, respectively;

preferably, the VH and the VL are one of the following:

(1) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 39, 41, 43, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 44-46, respectively, according to Kabat definition;

(2) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 40, 42, 43, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 44-46, respectively, according to Chothia definition;

(3) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 9, 11, 13, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 14-16, respectively, according to Kabat definition;

(4) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 19, 21, 23, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 24-26, respectively, according to Kabat definition;

(5) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 29, 31, 33, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 34-36, respectively, according to Kabat definition;

(6) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 49, 51, 53, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 54-56, respectively, according to Kabat definition;

(7) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 59, 61, 63, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 64-66, respectively, according to Kabat definition;

(8) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 10, 12, 13, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 14-16, respectively, according to Chothia definition;

(9) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 20, 22, 23, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 24-26, respectively, according to Chothia definition;

(10) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 30, 32, 33, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 34-36, respectively, according to Chothia definition;

(11) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 50, 52, 53, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 54-56, respectively, according to Chothia definition; and

(12) the VH comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 60, 62, 63, respectively, and the VL comprises CDRs 1, 2, 3 with the amino acid sequences set forth in SEQ ID NOs: 64-66, respectively, according to Chothia definition.

2. The antibody or antigen-binding fragment thereof of claim 1, comprising

a heavy chain variable region (VH) comprising an amino acid sequence that is at least 90% identical to a selected VH sequence, and a light chain variable region (VL) comprising an amino acid sequence that is at least 90% identical to a selected VL sequence, wherein the selected VH sequence and the selected VL sequence are one of the following:

(1) the selected VH sequence is SEQ ID NO: 37 or 71, and the selected VL sequence is SEQ ID NO: 38 or 72;

(2) the selected VH sequence is SEQ ID NO: 7, and the selected VL sequence is SEQ ID NO: 8;

(3) the selected VH sequence is SEQ ID NO: 17 or 69, and the selected VL sequence is SEQ ID NO: 18 or 70;

(4) the selected VH sequence is SEQ ID NO: 27, and the selected VL sequence is SEQ ID NO: 28;

(5) the selected VH sequence is SEQ ID NO: 47 or 73, and the selected VL sequence is SEQ ID NO: 48 or 74; and

(6) the selected VH sequence is SEQ ID NO: 57 or 75, and the selected VL sequence is SEQ ID NO: 58 or 76;

preferably, the VH and the VL are one of the following:

(1) the VH comprises the sequence of SEQ ID NO: 37 and the VL comprises the sequence of SEQ ID NO: 38;

(2) the VH comprises the sequence of SEQ ID NO: 71 and the VL comprises the sequence of SEQ ID NO: 72;

(3) the VH comprises the sequence of SEQ ID NO: 7 and the VL comprises the sequence of SEQ ID NO: 8;

(4) the VH comprises the sequence of SEQ ID NO: 17 and the VL comprises the sequence of SEQ ID NO: 18;

(5) the VH comprises the sequence of SEQ ID NO: 27 and the VL comprises the sequence of SEQ ID NO: 28;

(6) the VH comprises the sequence of SEQ ID NO: 47 and the VL comprises the sequence of SEQ ID NO: 48;

(7) the VH comprises the sequence of SEQ ID NO: 57 and the VL comprises the sequence of SEQ ID NO: 58;

(8) the VH comprises the sequence of SEQ ID NO: 69 and the VL comprises the sequence of SEQ ID NO: 70;

(9) the VH comprises the sequence of SEQ ID NO: 73 and the VL comprises the sequence of SEQ ID NO: 74; and

(10) the VH comprises the sequence of SEQ ID NO: 75 and the VL comprises the sequence of SEQ ID NO: 76.

3. An antibody or antigen-binding fragment thereof that binds to CD79b comprising

a heavy chain variable region (VH) comprising VH CDR1, VH CDR2, and VH CDR3 that are identical to VH CDR1, VH CDR2, and VH CDR3 of a selected VH sequence; and a light chain variable region (VL) comprising VL CDR1, VL CDR2, and VL CDR3 that are identical to VL CDR1, VL CDR2, and VL CDR3 of a selected VL sequence, wherein the selected VH sequence and the selected VL sequence are one of the following:

(1) the selected VH sequence is SEQ ID NO: 37 or 71, and the selected VL sequence is SEQ ID NO: 38 or 72;

(2) the selected VH sequence is SEQ ID NO: 7, and the selected VL sequence is SEQ ID NO: 8;

(3) the selected VH sequence is SEQ ID NO: 17 or 69, and the selected VL sequence is SEQ ID NO: 18 or 70;

(4) the selected VH sequence is SEQ ID NO: 27, and the selected VL sequence is SEQ ID NO: 28;

(5) the selected VH sequence is SEQ ID NO: 47 or 73, and the selected VL sequence is SEQ ID NO: 48 or 74; and

(6) the selected VH sequence is SEQ ID NO: 57 or 75, and the selected VL sequence is SEQ ID NO: 58 or 76.

4. The antibody or antigen-binding fragment thereof of any one of claims 1-3, wherein the antibody or antigen-binding fragment thereof specifically binds to human, mouse, monkey, or dog CD79b.

5. The antibody or antigen-binding fragment thereof of any one of claims 1-4, wherein the antibody or antigen-binding fragment thereof is a humanized antibody or antigen-binding fragment thereof, a chimeric antibody, a single-chain variable fragment (scFv), a one-armed antibody, and/or a multi-specific antibody (e.g., a bispecific antibody).

6. The antibody or antigen-binding fragment thereof of any one of claims 1-5, wherein the antibody or antigen-binding fragment thereof comprises a human IgG1 constant region, a human IgG2 constant region, or a human IgG4 constant region; or

the antibody or antigen-binding fragment thereof comprises a human IgG1 Fc, a human IgG2 Fc, or a human IgG4 Fc.

7. The antibody or antigen-binding fragment thereof of any one of claims 1-6, wherein the antibody or antigen-binding fragment thereof comprises a fragment crystallizable region (Fc region).

8. A nucleic acid comprising a polynucleotide encoding the antibody or antigen-binding fragment thereof of any one of claims 1-7;

preferably, the nucleic acid is cDNA.

9. A vector comprising one or more of the nucleic acids of claim 8;

preferably, the vector comprises two of the nucleic acids of claim 8, wherein the vector encodes the VL region and the VH region that together bind to CD79b.

10. A pair of vectors, wherein each vector comprises one of the nucleic acids of claim 8, wherein the pair of vectors together encodes the VL region and the VH region that together bind to CD79b.

11. A cell comprising one or more of the nucleic acids of claim 8, the vector of claim 9, or the pair of vectors of claim 10;

preferably, the cell comprises two of the nucleic acids of claim 8;

preferably, the two nucleic acids together encode the VL region and the VH region that together bind to CD79b;

preferably, the cell is a CHO cell.

12. A method of producing an antibody or an antigen-binding fragment thereof, the method comprising the following steps:

(a) culturing the cell of claim 11 under conditions sufficient for the cell to produce the antibody or the antigen-binding fragment; and

(b) collecting the antibody or the antigen-binding fragment produced by the cell.

13. A chimeric antigen receptor (CAR) comprising the antibody or antigen-binding fragment thereof of any one of claims 1-7.

14. An antibody-drug conjugate comprising the antibody or antigen-binding fragment thereof of any one of claims 1-7 covalently bound to a therapeutic agent;

preferably, the therapeutic agent is a cytotoxic or cytostatic agent.

15. A pharmaceutical composition comprising the antibody or antigen-binding fragment thereof of any one of claims 1-7 or the antibody drug conjugate of claim 14, and a pharmaceutically acceptable carrier.

16. Use of the antibody or antigen-binding fragment thereof of any one of claims 1-7, the CAR of claim 13, or the antibody-drug conjugate of claim 14 in the manufacture of a medicament for the treatment of cancer or autoimmune disease in a subject;

preferably, the cancer is lymphoma, leukemia, breast cancer, stomach cancer, pancreatic cancer, prostate cancer, cervical cancer, endometrial cancer, ovarian cancer or urothelial cancer;

preferably, the cancer is Non-Hodgkin lymphoma (NHL), Diffuse large B-cell lymphoma (DLBCL), B acute lymphoblastic leukemia (B-ALL), chronic lymphocytic leukemia (CLL), B-cell prolymphocytic leukemia (PLL), splenic lymphoma with villous lymphocytes (SLVL), hairy cell leukemia (HCL), follicular lymphoma (FL) or mantle-cell (MCL) lymphoma;

preferably, the autoimmune disease is selected from rheumatoid arthritis, psoriasis, multiple sclerosis, immune thrombocytopenic purpura, myasthenia gravis, neuromyelitis optica, IgG4-related diseases, Lupus, systemic Lupus Erythematosus, lupus nephritis, giant cell arteritis, takayasu disease, cold agglutinin disease, warm autoimmune hemolytic anemia, and anti-neutrophil cytoplasmic antibody (ANCA) associated vasculitides, tranulomatosis with polyangiitis (GPA) (Wegener's Granulomatosis) or Microscopic Polyangiitis (MPA), inflammatory bowel disease (IBD), and autoreactive pancreatitis;

preferably, the autoimmune disease is multiple sclerosis, Lupus, systemic lupus erythematosus, rheumatoid arthritis. inflammatory bowel disease (IBD), autoreactive pancreatitis, or lupus nephritis;

preferably, the subject is further treated with an effective amount of an anti-4-1BB antibody, an anti-OX40 antibody, an anti-PD-1 antibody, an anti-PD-L1 antibody, an anti-CTLA4 antibody, an anti-CD40 antibody, a BTK inhibitor, or a BCL2 inhibitor.

17. Use of the antibody or antigen-binding fragment thereof of any one of claims 1-7, the CAR of claim 13, or the antibody-drug conjugate of claim 14 in the manufacture of a medicament for decreasing the rate of tumor growth.

18. Use of the antibody or antigen-binding fragment thereof of any one of claims 1-7, the CAR of claim 13, or the antibody-drug conjugate of claim 14 in the manufacture of a medicament for killing a tumor cell.

19. Use of the antibody or antigen-binding fragment thereof of any one of claims 1-7, the CAR of claim 13, or the antibody-drug conjugate of claim 14 in the manufacture of a medicament for increasing immune response in a subject.