CLAIMS

1. A heterodimeric antibody comprising:

a) a CD3 binding domain;

b) a CD20 binding domain; and

C) a first Fc domain and a second Fc domain;

Wherein said CD20 binding domain comprises a heavy variable domain comprising a VHCDR1 of SEQ ID NO:431 or SEQ ID NO:422, a VHCDR2 of SEQ ID NO:432 or SEQ ID NO:423, and a VHCDR3 of SEQ ID NO:433 or SEQ ID NO:424; and a variable light domain comprising a VLCDR1 of SEQ ID NO:435 or SEQ ID NO:426, a VLCDR2 of SEQ ID NO:436 or SEQ ID NO:427, and a VLCDR3 of SEQ ID NO:437 or SEQ ID NO:428.

2. A heterodimeric antibody comprising:

a) A first monomer comprising:
   i) A first Fc domain;
   ii) a CD3 binding domain;

b) A second monomer comprising:
   i) A heavy variable domain; and
   ii) A heavy chain constant domain comprising a second Fc domain; and

c) A light chain comprising a variable light domain and a variable light constant domain;

wherein said variable light domain comprising a VLCDR1 of SEQ ID NO:435 or SEQ ID NO:426, a VLCDR2 of SEQ ID NO:436 or SEQ ID NO:427, and a VLCDR3 of SEQ ID NO:437 or SEQ ID NO:428; and said heavy variable domain comprises a VHCDR1 of SEQ ID NO:431 or SEQ ID NO:422, a VHCDR2 of SEQ ID NO:432 or SEQ ID NO:423, and a VHCDR3 of SEQ ID NO:433 or SEQ ID NO:424; and wherein said heavy variable domain and variable light domain bind to CD20.

3. The heterodimeric antibody of claim 1 or 2, wherein said heavy variable domain comprises SEQ ID NO:421.

4. The heterodimeric antibody of any one of claims 1-3, wherein said variable light domain comprises SEQ ID NO:425.

5. The heterodimeric antibody of claim 1 or 2, wherein said variable light domain comprising a VLCDR1 of SEQ ID NO:435, a VLCDR2 of SEQ ID NO:436, and a VLCDR3 of SEQ ID NO:437; and said heavy variable domain comprises a VHCDR1 of SEQ ID NO:431, a VHCDR2 of SEQ ID NO:432, and a VHCDR3 of SEQ ID NO:433.

6. The heterodimeric antibody of claim 1, 2 or 5, wherein said heavy variable domain comprises SEQ ID NO:430.

7. The heterodimeric antibody of claim 1, 2, 5 or 6, wherein said variable light domain comprises SEQ ID NO:434.

8. The heterodimeric antibody of claim 1 or 2 comprises a sequence selected from the sequences in FIGs. 74-105.

9. A heterodimeric antibody comprising:

a) a CD3 binding domain;

b) a CD123 binding domain; and

C) a first Fc domain and a second Fc domain;

Wherein said CD123 binding domain comprises a heavy variable domain comprising a VHCDR1 of SEQ ID NO:440, a VHCDR2 of SEQ ID NO:441, and a VHCDR3 of SEQ ID NO:442; and a variable light domain comprising a VLCDR1 of SEQ ID NO:444; a VLCDR2 of SEQ ID NO:445, a VLCDR3 of SEQ ID NO:446.

10. A heterodimeric antibody comprising:

a) A first monomer comprising:
   i) A first Fc domain;
   ii) a CD3 binding domain;

b) A second monomer comprising:
   i) A heavy variable domain; and
   ii) A heavy chain constant domain comprising a second Fc domain; and

c) A light chain comprising a variable light domain and a variable light constant domain;

Wherein said variable light domain comprises a VLCDR1 of SEQ ID NO:444; a VLCDR2 of SEQ ID NO:445, a VLCDR3 of SEQ ID NO:446; and wherein said heavy variable domain comprises a VHCDR1 of SEQ ID NO:440, a VHCDR2 of SEQ ID NO:441, and a VHCDR3 of SEQ ID NO:442.

11. The heterodimeric antibody of claim 9 or 10, wherein said heavy variable domain comprises SEQ ID NO:439.

12. The heterodimeric antibody of claim 9, 10 or 11, wherein said variable light domain comprises SEQ ID NO:443.

13. The heterodimeric antibody of any of the proceeding claims, wherein the Fc domains comprise an ablation variant of Fig 31.

14. The heterodimeric antibody of any of the proceeding claims, wherein the first or second Fc domain comprises a pI variant of FIG 30.

15. The heterodimeric antibody of any preceding claims, wherein the first and second Fc domain comprise a set of amino acid substitutions of figure 29.

16. The heterodimeric antibody of any of the proceeding claims, wherein the first and second Fc domain have a set of amino acid substitutions selected from the group consisting of: L368D/K370S : S364K; L368D/K370S : S364K/E357L; L368D/K370S : S364K/E357Q; T411E/K360E/Q362E : D401K; L368E/K370S : S364K; K370S : S364K; L368E/K370S : S364K/E357Q; K370S : S364K/E357Q;; L368E/K370S : S364K/E357Q; and K370S : S364K/E357Q

17. The heterodimeric antibody of any of the proceeding claims, wherein said first Fc domain comprises the amino acid substitutions S364K/E357Q and said second Fc domain comprises the amino acid substitutions L368D/K370S.

18. The heterodimeric antibody of any of the proceeding claims, wherein said second Fc domain comprises the amino acid substitutions N208D/Q295E/N384D/Q418E/N421D.

19. The heterodimeric antibody of any of the proceeding claims, wherein said first and second Fc domains each comprise the amino acid substitutions E233P/L234V/L235A/G236del/S267K.

20. The heterodimeric antibody of any of the proceeding claims, wherein said CD3 binding domain is a scFv that comprises a linker selected from FIG 33.

21. The heterodimeric antibody of claim 20, wherein the scFv comprises a linker (SGKPG)*4.

22. The heterodimeric antibody of any of the proceeding claims, wherein said CD3 binding domain is an anti-CD3 scFv that comprises a variable heavy chain complementary determining region 1 (VHCDR1), VHCDR2, and VHCDR3, of any anti-CD3 scFv listed in FIGs 2-7 and 67-68; and a variable light chain complementary determining region 1 (VLCDR1), VLCDR2, and VLCDR3, of any anti-CD3 scFv listed in FIGs 2-7 and 67-68.

23. The heterodimeric antibody of any of the proceeding claims, wherein said CD3 binding domain comprises a VH and VL listed in FIGs 2-7 and 67-68.

24. The heterodimeric antibody of any of the proceeding claims, wherein said CD3 binding domain comprises a VH comprising SEQ ID NO:216 and VL comprising SEQ ID NO:217.

25. The heterodimeric antibody of any of the proceeding claims, wherein said CD3 binding domain comprises SEQ ID NO:215.

26. A heterodimeric antibody comprising:

a) a first monomer comprising SEQ ID NO:324
b) a second monomer comprising SEQ ID NO:323; and
c) a light chain comprising SEQ ID NO:325;

27. A composition comprising:

a) a first nucleic acid encoding said first monomer according to any of claims 2-8, 10-26;

b) a second nucleic encoding said second monomer according to any of claims 2-8, 10-26; and

c) a third nucleic acid encoding said light chain according to any of claims 2-8, 10-26.

28. A composition comprising:

a) a first expression vector comprising said first nucleic acid of claim 27;

b) a second expression vector comprising said second nucleic acid of claim 27; and

c) a third expression vector comprising said third nucleic acid of claim 27.

29. A cell comprising:

a) a first nucleic acid encoding said first monomer according to any of claims 2-8, 10-26;

b) a second nucleic encoding said second monomer according to any of claims 2-8, 10-26; and

c) a third nucleic acid encoding said light chain according to any of claims 2-8, 10-26.

30. A cell comprising the composition of claim 27 or 28.

31. A cell expressing the heterodimeric antibody of any of claims 1-26.

32. A method of making a heterodimeric antibody comprising culturing the cell of claim 29, 30 or 31 and isolating said heterodimeric antibody.

33. A pharmaceutical composition comprising the heterodimeric antibody of any one of claims 1-26.

34. The heterodimeric antibody of any one of claims 1-26 or the pharmaceutical composition of claim 33 for use in treatment of a cancer.

35. The heterodimeric antibody of any one of claims 1-26 or the pharmaceutical composition of claim 33 for use in treatment of hematopoietic malignancies,

36. The heterodimeric antibody of any one of claims 1-26 or pharmaceutical composition of claim 33 for use in treatment of a cancer selected from a group consisting of: B cell lymphomas and leukemias, non-Hodgkin's lymphoma (NHL), Burkitt's lymphoma (BL), multiple myeloma (MM), B chronic lymphocytic leukemia (B-CLL), B and T acute lymphocytic leukemia (ALL), T cell lymphoma (TCL), acute myeloid leukemia (AML), hairy cell leukemia (HCL), Hodgkin's Lymphoma (HL), chronic lymphocytic leukemia (CLL), non-Hodgkin's lymphoma, and chronic myeloid leukemia (CML).