

Immunol.; 2006, 26(5):377-90; and Zou *et al.*, 2007, *J Exp Med*; 204(13): 3271–3283. The production of knockout rats via embryo microinjections of zinc-finger nucleases is described in Geurts *et al.*, 2009, *Science*, 325(5939):433. Soluble heavy chain-only antibodies and transgenic rodents comprising a heterologous heavy chain locus producing such antibodies are described in U. S. Patent Nos. 8,883,150 and 9,365,655. CAR-T structures comprising single-domain antibodies as binding (targeting) domain are described, for example, in Iri-Sofla *et al.*, 2011, *Experimental Cell Research* 317:2630-2641 and Jamnani *et al.*, 2014, *Biochim Biophys Acta*, 1840:378-386.

SUMMARY

[0008a] In one aspect, the present disclosure refers to a bispecific antibody comprising a first binding unit having binding affinity to CD22 and a second binding unit having binding affinity to CD3, wherein the first binding unit comprises a variable region comprising a CDR1 sequence of SEQ ID NO: 1, a CDR2 sequence of SEQ ID NO: 12, and a CDR3 sequence of SEQ ID NO: 19; and wherein the second binding unit comprises: (a) a heavy chain variable region comprising a CDR1 sequence of SEQ ID NO: 85, a CDR2 sequence of SEQ ID NO: 86, and a CDR3 sequence of SEQ ID NO: 87; and (b) a light chain variable region comprising a CDR1 sequence of SEQ ID NO: 88, a CDR2 sequence of SEQ ID NO: 89, and a CDR3 sequence of SEQ ID NO: 90.

[0008b] In another aspect, the present disclosure refers to a use of a bispecific antibody as described herein in the preparation of a medicament for the treatment of diffuse large B cell lymphoma (DLBCL), systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), or multiple sclerosis (MS). In yet another aspect, the present disclosure refers to a use of a bispecific antibody as described herein in the preparation of a medicament for the treatment of B-cell chronic lymphocytic leukemia. In a still further aspect, the present disclosure refers to a use of a bispecific antibody as described herein in the preparation of a medicament for the treatment of follicular lymphoma.

[0008c] In another aspect, the present disclosure refers to a pharmaceutical composition comprising a bispecific antibody as described herein.

[0008d] In another aspect, the present disclosure refers to a use of a bispecific antibody as described herein, in the preparation of a medicament for the treatment of non-Hodgkin's lymphoma.

[0008e] In yet another aspect, the present disclosure refers to a bispecific antibody as described herein for use in therapy.

[0008f] In yet another aspect, the present disclosure refers to a polynucleotide encoding a bispecific antibody as described herein.

CLAIMS:

1. A bispecific antibody comprising a first binding unit having binding affinity to CD22 and a second binding unit having binding affinity to CD3,
wherein the first binding unit comprises a variable region comprising a CDR1 sequence of SEQ ID NO: 1, a CDR2 sequence of SEQ ID NO: 12, and a CDR3 sequence of SEQ ID NO: 19; and
wherein the second binding unit comprises:
(a) a heavy chain variable region comprising a CDR1 sequence of SEQ ID NO: 85, a CDR2 sequence of SEQ ID NO: 86, and a CDR3 sequence of SEQ ID NO: 87; and
(b) a light chain variable region comprising a CDR1 sequence of SEQ ID NO: 88, a CDR2 sequence of SEQ ID NO: 89, and a CDR3 sequence of SEQ ID NO: 90.
2. The bispecific antibody of claim 1, wherein the first binding unit comprises a heavy chain variable region having at least 95% sequence identity to SEQ ID NOs: 25.
3. The bispecific antibody of claim 2, wherein the first binding unit comprises the heavy chain variable region sequence of SEQ ID NO: 25.
4. The bispecific antibody of claim 1, wherein the second binding unit having binding affinity to CD3 comprises a heavy chain variable region sequence having at least 95% identity to SEQ ID NO: 91.
5. The bispecific antibody of claim 4, wherein the second binding unit having binding affinity to CD3 comprises a heavy chain variable region sequence comprising SEQ ID NO: 91.
6. The bispecific antibody of claim 1, wherein the second binding unit having binding affinity to CD3 comprises a light chain variable region sequence having at least 95% identity to SEQ ID NO: 92.
7. The bispecific antibody of claim 6, wherein the second binding unit having binding affinity to CD3 comprises a light chain variable region sequence comprising SEQ ID NO: 92.
8. The bispecific antibody of claim 1, wherein the CDR1, CDR2 and CDR3 sequences are present in a human VH framework.

9. The bispecific antibody of claim 1, wherein the first binding unit having binding affinity to CD22 further comprises a heavy chain constant region sequence in the absence of a CH1 sequence.
10. The bispecific antibody of any one of claims 1-9, comprising a human IgG1 Fc region.
11. The bispecific antibody of claim 10, wherein the human IgG1 Fc region is a silenced human IgG1 Fc region.
12. The bispecific antibody of claim 10, wherein the human IgG4 Fc region comprises a hinge region mutation.
13. The bispecific antibody of claim 10, wherein the human IgG4 Fc region comprises a plurality of knobs-into-holes mutations.
14. The bispecific antibody of claim 10, wherein the human IgG4 Fc region comprises a C-terminal lysine.
15. The bispecific antibody of claim 10, wherein the human IgG4 Fc region does not comprise a C-terminal lysine.
16. The bispecific antibody of any one of claims 1-9, comprising a human IgG4 Fc region.
17. The bispecific antibody of claim 16, wherein the human IgG4 Fc region is a silenced human IgG4 Fc region.
18. A pharmaceutical composition comprising a bispecific antibody of any one of claims 1 to 17.
19. Use of a bispecific antibody of any one of claims 1 to 17, in the preparation of a medicament for the treatment of non-Hodgkin's lymphoma (NHL).
20. A bispecific antibody of any one of claims 1 to 17 for use in therapy.

21. Use of a bispecific antibody of any one of claims 1 to 17 in the preparation of a medicament for the treatment of diffuse large B cell lymphoma (DLBCL), systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), or multiple sclerosis (MS).
22. Use of a bispecific antibody of any one of claims 1 to 17 in the preparation of a medicament for the treatment of B-cell chronic lymphocytic leukemia.
23. Use of a bispecific antibody of any one of claims 1 to 17 in the preparation of a medicament for the treatment of follicular lymphoma.
24. A polynucleotide encoding a bispecific antibody of any one of claims 1 to 17.
25. A vector comprising the polynucleotide of claim 24.
26. A cell comprising the vector of claim 25.