Claims

1. A bispecific antibody comprising:

a first antigen binding region for specifically binding to human CD3, comprising a heavy chain variable (VH) region having the sequence as set forth in SEQ ID NO: 6, and a light chain variable (VL) region having the sequence as set forth in SEQ ID NO: 10; and

a second antigen binding region for specifically binding to human CD20.

2. The bispecific antibody according to claim 1, wherein said bispecific antibody comprises a first immunoglobulin heavy chain and a second immunoglobulin heavy chain.

3. The bispecific antibody according to claim 2, wherein in at least one of said first and said second heavy chains the amino acids in the positions corresponding to positions L234 and L235 in a human IgG1 heavy chain, are F and E, respectively, wherein the amino acid positions are numbered according to the EU numbering system.

4. The bispecific antibody according to claim 2, wherein in at least one of said first and said second heavy chains the amino acids in the positions corresponding to positions L234, L235, and D265 in a human IgG1 heavy chain, are F, E, and A, respectively, wherein the amino acid positions are numbered according to the EU numbering system.

5. The bispecific antibody according to claim 2, wherein in at least one of said first and said second immunoglobulin heavy chains the amino acids in the positions corresponding to positions L234, L235, and D265 in a human IgG1 heavy chain, are F, E, and A, respectively, and the amino acids in the positions corresponding to N297 and P331 in a human IgG1 heavy chain, are N and P, respectively, wherein the amino acid positions are numbered according to the EU numbering system.

6. The bispecific antibody according to any one of claims 2 to 5, wherein each of said first and said second heavy chain comprises at least a hinge region, a CH2, and CH3 region, wherein in said first heavy chain at least one of the amino acids in the positions corresponding to a position selected from the group consisting of T366, L368, K370, D399, F405, Y407, and K409 in a human IgG1 heavy chain has been substituted, and in said second heavy chain at least one of the amino acids in the positions corresponding to a

position selected from the group consisting of T366, L368, K370, D399, F405, Y407, and K409 in a human IgG1 heavy chain has been substituted, and wherein said first and said second heavy chains are not substituted in the same positions, wherein the amino acid positions are numbered according to the EU numbering system.

7. The bispecific antibody according to claim 6, wherein the amino acid in the position corresponding to F405 in a human IgG1 heavy chain is L in said first heavy chain, and the amino acid in the position corresponding to K409 in a human IgG1 heavy chain is R in said second heavy chain, or vice versa.

8. A bispecific antibody comprising:

a first immunoglobulin heavy chain and a first immunoglobulin light chain, which are connected via disulfide bridges forming a first antigen binding region for specifically binding to human CD3, comprising a heavy chain variable (VH) region having the sequence as set forth in SEQ ID NO: 6, and a light chain variable (VL) region having the sequence as set forth in SEQ ID NO: 10, and

a second immunoglobulin heavy chain and a second immunoglobulin light chain, which are connected via disulfide bridges forming a second antigen binding region for specifically binding to a different target than said first antigen binding region;

wherein in at least one of the first and the second heavy chains, the amino acids in the positions corresponding to position L234, L235, and D265 in a human IgG1 heavy chain are F, E, and A, respectively, the amino acid in the position corresponding to F405 in a human IgG1 heavy chain is L in the first heavy chain, and the amino acid in the position corresponding to K409 in a human IgG1 heavy chain is R in the second heavy chain, wherein the amino acid positions are numbered according to the EU numbering system.

9. The bispecific antibody of claim 8, wherein in both the first and the second heavy chains the amino acids in the positions corresponding to position L234, L235, and D265 in a human IgG1 heavy chain are F, E, and A, respectively.

10. The bispecific antibody of claims 8 or 9, wherein the first heavy chain comprises a heavy chain constant region of SEQ ID NO:25.

11. The bispecific antibody of any one of claims 8 to 22, wherein the second heavy chain comprises a heavy chain constant region of SEQ ID NO:26.

12. The bispecific antibody according to any one of claims 8 to 11, wherein the second antigen binding region is for specifically binding to human CD20.

13. The bispecific antibody according to claim 12, wherein the second antigen binding region comprises a heavy chain comprising a heavy chain variable region having the sequence as set forth in SEQ ID NO: 29, and a light chain comprising a light chain variable region having the sequence as set forth in SEQ ID NO: 30.

14. The bispecific antibody according to claim 9, wherein the second heavy chain comprises a heavy chain variable region having the sequence as set forth in SEQ ID NO: 29, and a light chain comprising a light chain variable region having the sequence as set forth in SEQ ID NO: 30.

15. The bispecific antibody according to claim 14, wherein the bispecific antibody is a full-length antibody.

16. A composition comprising the bispecific antibody as defined in any one of claims 1 to 12 together with an excipient, diluent or carrier.

17. A composition comprising the bispecific antibody as defined in any one of claims 13 to 15; together with an excipient, diluent or carrier.

18. A pharmaceutical composition comprising the bispecific antibody as defined in any one of claims 1 to 13 and a pharmaceutical acceptable carrier.

19. A pharmaceutical composition comprising the bispecific antibody as defined in any one of claims 13 to 15 and a pharmaceutical acceptable carrier.

20. The bispecific antibody as defined in any one of claims 1 to 12, the composition as defined in claim 16, or the pharmaceutical composition as defined in claim 18 for use as a medicament.

21. The bispecific antibody as defined in any one of claims 13 to 15, the composition as defined in claim 17, or the pharmaceutical composition as defined in claim 19 for use as a medicament.

22. A use of the bispecific antibody as defined in any one of claims 1 to 12, the composition as defined in claim 16, or the pharmaceutical composition as defined in claim 18 for preparation of a medicament for the treatment of a cancer, an infectious disease, or an autoimmune disease.

23. A use of the bispecific antibody as defined in any one of claims 13 to 15, the composition as defined in claim 17, or the pharmaceutical composition as defined in claim 19, for preparation of a medicament for the treatment of a cancer, an infectious disease, or an autoimmune disease.