

Claims

1. An antibody or fragment thereof that binds to human CD38 comprising a heavy chain CDR1 comprising the amino acid sequence of SEQ ID NO: 25 or SEQ ID NO: 208, and/or a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO: 26 or SEQ ID NO: 209, and/or a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO: 27 or SEQ ID NO: 210; and/or comprising a light chain CDR1 comprising the amino acid sequence of SEQ ID NO: 28 or SEQ ID NO: 211 or SEQ ID NO: 214, and/or a light chain CDR2 comprising the amino acid sequence of SEQ ID NO: 29 or SEQ ID NO: 212, and/or a light chain CDR3 comprising the amino acid sequence of SEQ ID NO: 30 or SEQ ID NO: 213.
2. The antibody or fragment thereof of claim 1, wherein the antibody or fragment thereof is a murine antibody, chimeric antibody or a humanized antibody.
3. The antibody or fragment thereof of claim 1 or 2, wherein the antibody or fragment thereof comprises a heavy chain variable region sequence comprising the amino acid sequence consisting of SEQ ID NO: 52, SEQ ID NO: 58, SEQ ID NO: 60 or a sequence at least 80% identical to the non-CDR region of either of said heavy chain variable region sequences and/or wherein the antibody or fragment thereof comprises a light chain variable region sequence comprising the amino acid sequence of SEQ ID NO: 55, SEQ ID NO: 59, SEQ ID NO: 61 or a sequence at least 80% identical to the non-CDR region of any one of said light chain variable region sequences.
4. The antibody or fragment thereof of claim 1 or 2, wherein the antibody or fragment thereof comprises a heavy chain sequence comprising the amino acid sequence consisting of SEQ ID NO: 73, SEQ ID NO: 75, SEQ ID NO: 76, SEQ ID NO: 145, SEQ ID NO: 147, SEQ ID NO: 149 or a sequence at least 80% identical to the non-CDR region of either of said heavy chain ~~variable region~~ sequences and/or wherein the antibody or fragment thereof comprises a light chain ~~variable region~~ sequence comprising the amino acid sequence of SEQ ID NO: 74, SEQ ID NO: 77, SEQ ID NO: 146, SEQ ID NO: 148, SEQ ID NO: 150 or a sequence at least 80% identical to the non-CDR region of any one of said light chain ~~variable region~~ sequences.

5. The antibody or fragment thereof of any one of claims 1 to 34, wherein said antibody or fragment comprises human heavy and/or light chain constant regions and wherein the human heavy constant region is selected from the group of human immunoglobulins consisting of IGHG1, non fucosylated IGHG1 and IGHG4.
6. A bispecific antibody comprising an anti-CD38 antibody fragment of ~~according to~~ any one of claims 1 to 34.
7. The bispecific antibody ~~of~~ according to claim 6, wherein said anti-CD38 antibody fragment is selected from the group consisting of Fab, Fab', Fab'-SH, Fd, Fv, dAb, F(ab')₂, scFv, bispecific single chain Fv dimers, diabodies, triabodies and scFv.
8. The bispecific antibody ~~according to~~ of ~~any one of claims 6 to 7~~, further comprising an anti-CD3 antibody fragment selected from the group consisting of Fab, Fab', Fab'-SH, Fd, Fv, dAb, F(ab')₂, scFv, bispecific single chain Fv dimers, diabodies, triabodies and scFv.
9. The bispecific antibody ~~according to~~ of claim 8, wherein said anti-CD3 antibody fragment comprises a heavy chain CDR1 comprising the amino acid sequence of SEQ ID NO: 3, and a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO: 4, and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO: 5 or SEQ ID NO: 9; and comprising a light chain CDR1 comprising the amino acid sequence of SEQ ID NO: 6, and a light chain CDR2 comprising the amino acid sequence of SEQ ID NO: 7, SEQ ID NO: 11, and a light chain CDR3 comprising the amino acid sequence of SEQ ID NO: 8, SEQ ID NO: 10, SEQ ID NO: 12; or
 wherein said anti-CD3 antibody fragment comprises a heavy chain CDR1 comprising the amino acid sequence of SEQ ID NO: 163, and a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO: 164, and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO: 165; and comprising a light chain CDR1 comprising the amino acid sequence of SEQ ID NO: 166, and a light chain CDR2 comprising the amino acid sequence of SEQ ID NO: 167, and a light chain CDR3 comprising the amino acid sequence of SEQ ID NO: 168.

10. An antibody or fragment thereof that binds to human and cynomolgus CD38 and which binds to the same epitope as said antibody or fragment thereof ~~according to~~ any one of claims 1 to 5 or said bispecific antibody ~~according to~~ any one of claims 6 to 9.

~~11. An epitope on soluble human CD38 which is bound by said antibody or fragment thereof according to any one of claims 1 to 5 or said bispecific antibody according to any one of claims 6 to 9.~~

~~12.11.~~ A composition comprising the antibody or fragment thereof of any one of claims 1 to 5 or 10 or said bispecific antibody ~~according to~~ any one of claims 6 to 9 and a pharmaceutically acceptable carrier.

~~13.12.~~ An immunoconjugate comprising the antibody or fragment thereof of any one of claims 1 to 5 or 10 or said bispecific antibody ~~according to~~ any one of claims 6 to 9, linked to a therapeutic agent.

~~14. The antibody or fragment thereof according to any one of claims 1 to 5 or said bispecific antibody according to any one of claims 6 to 9, for use as a medicament.~~

~~15.13.~~ Use of the antibody or fragment thereof of any one of claims 1 to 5 or 10, the bispecific antibody of any one of claims 6 to 9, the composition of claim 11 or the immunoconjugate of claim 12 in the preparation of a medicament for the treatment of a disease ~~The antibody or fragment thereof according to any one of claims 1 to 5 or said bispecific antibody according to any one of claims 6 to 9, for use as a medicament in treating a disease~~ selected from the group consisting of malignant hematological diseases, including multiple myeloma, B-cell chronic lymphocytic leukaemia, B-cell acute lymphocytic leukaemia, Waldenström's macroglobulinemia, primary systemic amyloidosis, mantle-cell lymphoma, pro-lymphocytic/myelocytic leukaemia, acute myeloid leukaemia, chronic myeloid leukaemia, follicular lymphoma, NK-cell leukaemia and plasma-cell leukaemia.