

ID NO: 308; SEQ ID NO: 312; SEQ ID NO: 316; SEQ ID NO: 320; SEQ ID NO: 324; SEQ ID NO: 328; SEQ ID NO: 332; SEQ ID NO: 336; SEQ ID NO: 340; SEQ ID NO: 344; SEQ ID NO: 348; SEQ ID NO: 352; SEQ ID NO: 356; SEQ ID NO: 360; SEQ ID NO: 364; SEQ ID NO: 368; SEQ ID NO: 372; SEQ ID NO: 376; SEQ ID NO: 380; SEQ ID NO: 384; SEQ ID NO: 388; SEQ ID NO: 392; SEQ ID NO: 396; SEQ ID NO: 400; SEQ ID NO: 404; SEQ ID NO: 408.

[0041] In a further aspect, the Fc region of the heavy chains further comprises an FcRn variant, including but not limited to 428L/434S.

[0042] In an additional aspect, the invention provides nucleic acid compositions comprising a first nucleic acid encoding a first heavy chain comprising an Fc region and a scFv that binds to CD3, a second nucleic acid encoding a second heavy chain that comprises a heavy constant chain and a heavy variable chain, and a third nucleic acid encoding a light chain, wherein the Fv regions of the second heavy chain and the light chain bind CD38. These nucleic acids can be in different expression vectors or the same. The invention provides host cells comprising the nucleic acid compositions.

[0043] In a further aspect, the invention provides methods of producing heterodimeric antibodies of the invention comprising providing a first expression vector comprising a first nucleic acid encoding a first heavy chain comprising a first Fc domain and a first variable heavy chain; providing a second expression vector comprising a second nucleic acid encoding a second heavy chain comprising a first Fc domain and a single chain Fv region (scFv) that binds CD3; and providing a third expression vector comprising nucleic acid comprising a light chain; wherein said first variable heavy chain and the variable light domain of said light chain bind CD38. The first, second and third expression vectors are transfected into host cells at a ratio selected from the group consisting of 1:1.5:1.5, 1:2:1.5, 1:0.667:2, 1:1:2, 1:1.5:2, and 1:2:2. The first, second and third nucleic acids in the host cells produce a first, second and third amino acid sequence, respectively, such that said first, second and third amino acid sequences form heterodimeric antibody.

[0044] In an additional aspect, the invention provides use of a heterodimeric antibody as described herein in the manufacture of a medicament for treating a patient in need thereof. Also disclosed is a methods of treating a patient in need thereof by administering a heterodimeric antibody according to the invention as described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0045] Figure 1A and 1B depict the sequence of human CD38. Figure 1A depicts the full length sequence and Figure 1B depicts the extracellular domain.

d) wherein said first, second and third expression vectors are transfected into host cells at a ratio selected from the group consisting of 1:1.5:1.5, 1:2:1.5, 1:0.667:2, 1:1:2, 1:1.5:2, and 1:2:2 ;

e) expressing said first, second and third nucleic acids in said host cells to produce a first, second and third amino acid sequence, respectively, such that said first, second and third amino acid sequences form said heterodimeric antibody.

20. ~~A method of treating a patient in need thereof by administering~~ Use of a heterodimeric antibody according to any of claims 1 to 14 in the manufacture of a medicament for treating a patient in need thereof.