CLAIMS

1. A single chain antibody construct comprising:

a first domain which binds to B cell maturation agent (BCMA),

a second domain which binds to an extracellular epitope of the human and/or the *Macaca* CD3ε chain; and

a third domain which comprises two polypeptide monomers, each comprising a hinge, a CH2 domain and a CH3 domain, wherein said two polypeptide monomers are fused to each other via a peptide linker.

2. The antibody construct of claim 1, wherein said third domain comprises in an amino to carboxyl order:

hinge-CH2-CH3-linker-hinge-CH2-CH3.

3. The antibody construct of claim 1, wherein each of said polypeptide monomers comprises an amino acid sequence that is at least 90% identical to a sequence selected from the group consisting of SEQ ID NOs: 17-24.

4. The antibody construct of claim 1, wherein each of said polypeptide monomers comprises an amino acid sequence selected from the group consisting of SEQ ID NOs: 17-24.

5. The antibody construct of claim 1, wherein the CH2 domain comprises an intra-domain cysteine disulfide bridge.

6. The antibody construct of claim 1, wherein

(i) the first domain comprises two antibody variable domains and the second domain comprises two antibody variable domains;
(ii) the first domain comprises one antibody variable domain and the second domain comprises two antibody variable domains;
(iii) the first domain comprises two antibody variable domains and the second domain comprises one antibody variable domain; or
(iv) the first domain comprises one antibody variable domain and the second domain comprises one antibody variable domain.

7. The antibody construct of claim 1, wherein the first and second domain are fused to the third domain via a peptide linker.

8. The antibody construct of claim 1, comprising in an amino to carboxyl order:
   (a) the first domain;
   (b) a peptide linker having an amino acid sequence selected from the group consisting of SEQ ID NOs: 1-3;
   (c) the second domain;
   (d) a peptide linker comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 1, 2, 3, 9, 10, 11 and 12;
   (e) the first polypeptide monomer of the third domain;
   (f) a peptide linker comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 5, 6, 7 and 8; and
   (g) the second polypeptide monomer of the third domain.

9. The antibody construct of claim 1, comprising in an amino to carboxyl order:
   (a) the first domain comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 53, 59, 71, 77, 89 and 95;
   (b) a peptide linker comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 1-3;
   (c) the second domain comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 15, 117, 118, 129, 130, 138, 139, 147, 148, 156, 157, 165, 166, 177, 178, 186, 187, 198, 199, 207, and 208;
   (d) a peptide linker comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 1, 2, 3, 9, 10, 11 and 12;
   (e) the first polypeptide monomer of the third domain comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 17-24;
   (f) a peptide linker comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 5, 6, 7 and 8; and
   (g) the second polypeptide monomer of the third domain comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 17-24.

10. The antibody construct of claim 1, comprising an amino acid sequence selected from the group consisting of SEQ ID NO: 55, 56, 61, 62, 73, 74, 79, 80, 91, 92, 97 and 98.

11. A polynucleotide encoding the antibody construct of claim 1.

12. A vector comprising the polynucleotide of claim 11.

13. A host cell transformed or transfected with the polynucleotide of claim 11.

14. A process for producing the antibody construct of claim 1, said process comprising culturing a host cell transformed or transfected with a polynucleotide encoding an antibody construct comprising:

a first domain which binds to B cell maturation agent (BCMA),

a second domain which binds to an extracellular epitope of the human and/or the *Macaca* CD3ε chain; and

a third domain which comprises two polypeptide monomers, each comprising a hinge, a CH2 domain and a CH3 domain, wherein said two polypeptide monomers are fused to each other via a peptide linker under conditions allowing the expression of the antibody construct, and recovering the antibody construct from the culture.

15. A composition comprising the antibody construct of claim 1 and a carrier, stabilizer, excipient, diluent, solubilizer, surfactant, emulsifier, preservative or adjuvant.

16. The composition of claim 15, which is stable for at least four weeks at about -20°C.

17. A kit comprising the antibody construct of claim 1 packaged in a container or recipient.

18. The kit of claim 17 further comprising directions for use.