CLAIMS:

1. A CD3-binding protein comprising a CD3-binding domain that binds specifically to human CD3 and that comprises a humanized immunoglobulin light chain variable region and a humanized immunoglobulin heavy chain variable region wherein the immunoglobulin light chain variable region comprises an LCDR1 amino acid sequence of SEQ ID NO:94, an LCDR2 amino acid sequence of SEQ ID NO:95, and an LCDR3 amino acid sequence of SEQ ID NO:96 and wherein the immunoglobulin heavy chain variable region comprises an HCDR1 amino acid sequence of SEQ ID NO:91, an HCDR2 amino acid sequence of SEQ ID NO:92, and an HCDR3 amino acid sequence of SEQ ID NO:93;

wherein the amino acid residue at position 9 according to the IMGT numbering system of the immunoglobulin heavy chain variable region is proline; and

wherein the amino acid residue at position 21 according to the IMGT numbering system of the immunoglobulin light chain variable region is methionine; and

wherein the amino acid residue at position 87 according to the IMGT numbering system of the immunoglobulin light chain variable region is tyrosine.

2. The CD3-binding protein of claim 1, wherein the immunoglobulin light chain variable region comprises framework regions based on the human IGKV3D-20*1 germline amino acid sequence.

3. The CD3-binding protein of claim 1, wherein the immunoglobulin heavy chain variable region comprises framework regions based on the human IGHV1-69*02 germline amino acid sequence.

4. The CD3-binding protein of claim 1, wherein the amino acid residue at position 52 according to the IMGT numbering system of the immunoglobulin light chain variable region is arginine and/or the amino acid residue at position 53 according to the IMGT numbering system of the immunoglobulin light chain variable region is tryptophan.

5. The CD3-binding protein of claim 1, wherein the amino acid residue at position 27 according to the IMGT numbering system of the immunoglobulin heavy chain variable region is tyrosine.

6. The CD3-binding protein of claim 1, wherein the amino acid residue at position 53 according to the IMGT numbering system of the immunoglobulin heavy chain variable region is isoleucine.

7. The CD3-binding protein of claim 1, wherein the amino acid residue at position 86 according to the IMGT numbering system of the immunoglobulin light chain variable region is aspartic acid.

8. The CD3-binding protein of claim 1, wherein the CD3-binding domain comprises SEQ ID NO:83 or SEQ ID NO:84.

9. The CD3-binding protein of claim 1, wherein the CD3-binding domain is a single chain variable fragment (scFv).

10. The CD3-binding protein of claim 9, wherein said scFv comprises a linker between the heavy chain variable region and the light chain variable region of said scFv and wherein said linker comprises the amino acid sequence QRHNNSSLNTGTQMAGHSPNS (SEQ ID NO:148).

11. The CD3-binding protein of claim 9, wherein the heavy chain variable region of said scFv is amino-terminal to the light chain variable region of said scFv.

12. The CD3-binding protein of claim 1, wherein the CD3-binding protein binds specifically to cynomolgus CD3.

13. The CD3-binding protein of claim 1, wherein the CD3-binding protein comprises an immunoglobulin constant region.

14. The CD3-binding protein of claim 1, further comprising a second binding domain.

15. The CD3-binding protein of claim 14, wherein said CD3-binding protein is a single chain molecule comprising, in order from amino-terminus to carboxyl-terminus, (i) the second binding domain, (ii) a hinge region, (iii) an immunoglobulin constant region, (iv) a carboxyl-terminus linker, and (v) the CD3-binding domain.

16. The CD3-binding protein of claim 14, wherein the second binding domain comprises (a) an immunoglobulin light chain variable region comprising LCDR1, LCDR2, and LCDR3, and (b) an immunoglobulin heavy chain variable region comprising HCDR1, HCDR2, and HCDR3.

17. The CD3-binding protein of claim 15, wherein the hinge region is derived from an immunoglobulin hinge region.

18. The CD3-binding protein of claim 15, wherein the carboxyl-terminus linker comprises or consists of SEQ ID NO:196.

19. The CD3-binding protein of claim 13, wherein the immunoglobulin constant region comprises immunoglobulin CH2 and CH3 domains of IgG1, IgG2, IgG3, IgG4, IgA1, IgA2 or IgD.

20. The CD3-binding protein of claim 19, wherein the immunoglobulin constant region comprises a human IgG1 CH2 domain comprising the substitutions L234A, L235A, G237A, and K322A, according to the EU numbering system.

21. The CD3-binding protein of claim 14, wherein the CD3-binding protein induces redirected T-cell cytotoxicity (RTCC).

22. The CD3-binding protein of claim 14, wherein the second binding domain is a single chain variable fragment (scFv).

23. The CD3-binding protein of claim 14, wherein the second binding domain binds a tumor associated antigen.

24. The CD3-binding protein of claim 23, wherein said CD3-binding protein induces T-cell-dependent lysis of cells expressing the tumor associated antigen.

25. The CD3-binding protein of claim 23, wherein the tumor associated antigen is selected from the group consisting of PSMA, CD19, CD20, CD37, CD38, CD123, Her2, ROR1, RON, glycoprotein A33 antigen (gpA33), and CEA.

26. The CD3-binding protein of claim 1, wherein said CD3-binding protein further comprises an immunoglobulin heterodimerization domain.

27. The CD3-binding protein of claim 26, wherein the immunoglobulin heterodimerization domain comprises an immunoglobulin CH1 domain or an immunoglobulin CL domain.

28. The CD3-binding protein of claim 1, wherein said CD3-binding protein is a bispecific single chain antibody molecule comprising a CD3-binding domain and a second binding domain, wherein the binding domains are arranged in the order VH CD3-VL CD3-VH second binding domain-VL second binding domain, VL CD3-VH CD3-VH second binding domain -VL second binding domain, VH second binding domain-VL second binding domain-VH CD3-VL CD3 or VH second binding domain-VL second binding domain-VL CD3-VH CD3.

29. A pharmaceutical composition comprising the CD3-binding protein of claim 1 and a pharmaceutically acceptable carrier, diluent, or excipient.

30. The CD3-binding protein of claim 23 for use in the treatment of cancer in a subject in need thereof.

31. Use of the CD3-binding protein of claim 23 for the manufacture of a medicament for treating cancer in a subject in need thereof.

32. The CD3-binding protein of claim 30 for use in the treatment of cancer, or the use of claim 31 for the manufacture of a medicament for treating cancer, wherein the cancer is prostate cancer, colorectal cancer, renal cell carcinoma, bladder cancer, salivary gland cancer, pancreatic cancer, ovarian cancer, non-small cell lung cancer, breast cancer, melanoma, adrenal cancer, mantle cell lymphoma, acute lymphoblastic leukemia, chronic lymphocytic leukemia, Non-Hodgkin's lymphoma, acute myeloid leukemia (AML), B-lymphoid leukemia, blastic plasmocytoid dendritic neoplasm (BPDCN), or hairy cell leukemia.

33. A CD3-binding protein that is a dimer of two identical proteins, wherein each protein is the CD3-binding protein of claim 15.

34. The CD3-binding protein of claim 1, wherein

(a) the immunoglobulin light chain variable region comprises SEQ ID NO:88 and the immunoglobulin heavy chain variable region comprises SEQ ID NO:86; or

(b) the immunoglobulin light chain variable region comprises SEQ ID NO:89 and the immunoglobulin heavy chain variable region comprises SEQ ID NO:86.

35. The CD3-binding protein of claim 1, wherein

(a) the immunoglobulin light chain variable region comprises an amino acid sequence that is at least 96% identical to SEQ ID NO:88 and the immunoglobulin heavy chain variable region comprises an amino acid sequence that is at least 96% identical to SEQ ID NO:86; or

(b) the immunoglobulin light chain variable region comprises an amino acid sequence that is at least 96% identical to SEQ ID NO:89 and the immunoglobulin heavy chain variable region comprises an amino acid sequence that is at least 96% identical to SEQ ID NO:86.

36. The CD3-binding protein of claim 32 for use in the treatment of cancer, or the use of claim 32 for the manufacture of a medicament for treating cancer, wherein the breast cancer is triple negative breast cancer.