

[0010a] In one aspect, the present disclosure refers to an isolated monoclonal antigen-binding protein that binds to CD3, wherein the antigen binding protein binds an epitope on CD3 comprising at least one residue selected from CD3 epsilon (SEQ ID NO:23): K73 and S83; and at least one residue selected from CD3 delta (SEQ ID NO:24) K82 and C93, wherein the epitope is determined by diethylpyrocarbonate labelling.

[0010b] In another aspect, the present disclosure refers to a pharmaceutical composition comprising an antigen-binding protein as described herein.

[0010c] In another aspect, the present disclosure refers to a polynucleotide encoding an antigen-binding protein as described herein.

[0010d] In another aspect, the present disclosure refers to a vector comprising the polynucleotide as described herein.

[0010e] In another aspect, the present disclosure refers to a cell comprising the vector as described herein.

[0010f] In another aspect, the present disclosure refers to a method of producing an antigen-binding protein as described herein, comprising growing a cell as described herein under conditions permissive for expression of the protein, and isolating the protein from the cell and/or a cell culture medium.

[0010g] In another aspect, the present disclosure refers to use of an antigen-binding protein as described herein in the manufacture of a medicament for the treatment of a disease in an individual in need, wherein the disease is an autoimmune disease, cancer or a pathogen infection.

[0010h] In yet another aspect, the present disclosure refers to an antigen-binding protein as described herein for use in the treatment of a disease.

WHAT IS CLAIMED IS:

1. An isolated monoclonal antigen-binding protein that binds to CD3, wherein the antigen binding protein binds an epitope on CD3 comprising at least one residue selected from CD3 epsilon (SEQ ID NO:23): K73 and S83; and at least one residue selected from CD3 delta (SEQ ID NO:24) K82 and C93, wherein the epitope is determined by diethylpyrocarbonate labelling.
2. The antigen-binding protein of claim 1, wherein the epitope on CD3 comprises a region of CD3 delta defined by K82, E83, S84, T85, V86, Q87, V88, H89, Y90, R91, M92, C93.
3. The antigen-binding protein of claim 1, wherein the epitope on CD3 comprises a region of CD3 epsilon defined by K73, N74, I75, G76, S77, D78, E79, D80, H81, L82, S83.
4. The antigen-binding protein of any one of claims 1-3, wherein the epitope comprises a conformational epitope comprising residues of both CD3 delta and CD3 epsilon.
5. The antigen-binding protein of any one of claims 1-4, wherein the conformational epitope comprises each of residues CD3 epsilon K73 and S83; and CD3 delta K82 and C93.
6. The antigen-binding protein of any one of claims 1-5, wherein the antibody does not cross-react with cynomolgus CD3 protein.
7. The antigen-binding protein of any one of claims 1-6, wherein the antigen-binding protein induces a cytokine release upon binding to a T cell that is not more than 200% of a maximum cytokine release observed with a reference antibody.
8. The antigen-binding protein of any one of claims 1-7, wherein the binding affinity for CD3 is 50 nM or greater.
9. The antigen-binding protein of any one of claims 1-8, which is a human antibody.
10. The antigen-binding protein of any one of claims 1-8, which is a humanized antibody.

11. The antigen-binding protein of any one of claims 1-10, comprising a light chain variable region comprising a set of CDR sequences in SEQ ID NO:19.

12. The antigen-binding protein of any one of claims 1-11, comprising a light chain variable region comprising an amino acid sequence of SEQ ID NO:19.

13. The antigen-binding protein of any one of claims 1-12, further comprising an Fc region.

14. The antigen-binding protein of claim 13, wherein the Fc region has been engineered to reduce one or more effector functions.

15. The antigen-binding protein of any one of claims 1-14, further comprising an antigen binding domain that binds to a protein other than CD3.

16. The antigen-binding protein of claim 15, wherein the antigen binding domain that binds to a protein other than CD3 comprises a heavy chain only variable region.

17. The antigen-binding protein of claim 16, wherein the protein other than CD3 is a tumor associated antigen.

18. The antigen-binding protein of claim 16, wherein the protein other than CD3 is a pathogen antigen.

19. The antigen-binding protein of claim 16, wherein the protein other than CD3 is an immunoregulatory protein.

20. A pharmaceutical composition comprising an antigen-binding protein of any one of claims 1-19.

21. The pharmaceutical composition of claim 20, in a unit dose formula.

22. A polynucleotide encoding an antigen-binding protein of any one of claims 1-19.

23. A vector comprising the polynucleotide of claim 22.

24. A cell comprising the vector of claim 23.
25. A method of producing an antigen-binding protein of any one of claims 1-19, comprising growing a cell according to claim 24 under conditions permissive for expression of the protein, and isolating the protein from the cell and/or a cell culture medium.
26. Use of an antigen-binding protein of any one of claims 1-19 in the manufacture of a medicament for the treatment of a disease in an individual in need, wherein the disease is an autoimmune disease, cancer or a pathogen infection.
27. An antigen-binding protein of any one of claims 1-19 for use in the treatment of a disease.
28. The use of claim 26, wherein the individual in need is a human.