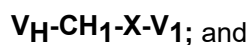


CLAIMS

1. A multi-specific antibody which binds human IL-13, and at least one of human IL-17A and/or human IL-17F, comprising an IL-13 binding site which comprises:
a light chain variable region comprising the sequence given in SEQ ID NO:15 for CDR-L1, the sequence given in SEQ ID NO:16 for CDR-L2 and the sequence given in SEQ ID NO:17 for CDR-L3, and
a heavy chain variable region comprising the sequence given in SEQ ID NO:18 for CDR-H1, the sequence given in SEQ ID NO:19 for CDR-H2 and the sequence given in SEQ ID NO:20 for CDR-H3;
wherein the multi-specific antibody further comprises a binding site that binds to at least one of IL-17A and/or IL-17F which comprises:
a light chain variable region comprising the sequence given in SEQ ID NO:1 for CDR-L1, the sequence given in SEQ ID NO:2 for CDR-L2 and the sequence given in SEQ ID NO:3 for CDR-L3, and
a heavy chain variable region comprising the sequence given in SEQ ID NO:4 for CDR-H1, the sequence given in SEQ ID NO:5 for CDR-H2 and the sequence given in SEQ ID NO:6 for CDR-H3.
2. A multi-specific antibody according to claim 1, wherein the IL-13 binding site comprises a light chain variable region comprising the sequence given in SEQ ID NO:27 and a heavy chain variable region comprising the sequence given in SEQ ID NO:28.
3. A multi-specific antibody according to claim 1, wherein the IL-13 binding site comprises a light chain variable region comprising the sequence given in SEQ ID NO:31 and a heavy chain variable region comprising the sequence given in SEQ ID NO:32.
4. A multi-specific antibody according to any preceding claim, wherein the antigen binding site that binds to at least one of human IL-17A and/or human IL-17F comprises a light chain variable region comprising the sequence given in SEQ ID NO:7 and a heavy chain variable region comprising the sequence given in SEQ ID NO:9.
5. A multi-specific antibody according to any preceding claim which binds human IL-13, and at least one of human IL-17A and/or human IL-17F, comprising:

a) a polypeptide chain of formula (Ia):



b) a polypeptide chain of formula (IIa):



wherein:

V_H represents a heavy chain variable domain;

CH_1 represents domain 1 of a heavy chain constant region;

X represents a bond or linker;

Y represents a bond or linker;

V_1 represents a scFv, a dsscFv, or a dsFv;

V_L represents a light chain variable domain;

C_L represents a domain from a light chain constant region, such as Ckappa;

V_2 represents a scFv, a dsscFv or a dsFv;

wherein the polypeptide chain of formula (Ia) comprises a protein A binding domain;

and

wherein the polypeptide chain of formula (IIa) does not bind protein A.

6. A multi-specific antibody according to claim 5, wherein:

V_L and V_H comprise an antigen binding site that binds to at least one of human IL-17A and/or human IL-17F,

V_2 comprises an antigen binding site that binds to human IL-13, and

V_1 comprises an antigen binding site that binds to human serum albumin;

wherein

V_L comprises the sequence given in SEQ ID NO:1 for CDR-L1, the sequence given in SEQ ID NO:2 for CDR-L2 and the sequence given in SEQ ID NO:3 for CDR-L3, and

V_H comprises the sequence given in SEQ ID NO:4 for CDR-H1, the sequence given in SEQ ID NO:5 for CDR-H2 and the sequence given in SEQ ID NO:6 for CDR-H3;

wherein

V_1 comprises a light chain variable region comprising the sequence given in SEQ ID NO:39 for CDR-L1, the sequence given in SEQ ID NO:40 for CDR-L2 and the sequence given in SEQ ID NO:41 for CDR-L3; and a heavy chain variable region comprising the sequence given in SEQ ID NO:42 for CDR-H1, the sequence

given in SEQ ID NO:43 for CDR-H2 and the sequence given in SEQ ID NO:44 for CDR-H3; and

wherein

V₂ comprises a light chain variable region comprising the sequence given in SEQ ID NO:15 for CDR-L1, the sequence given in SEQ ID NO:16 for CDR-L2 and the sequence given in SEQ ID NO:17 for CDR-L3, and a heavy chain variable region comprising the sequence given in SEQ ID NO:18 for CDR-H1, the sequence given in SEQ ID NO:19 for CDR-H2 and the sequence given in SEQ ID NO:20 for CDR-H3.

7. A multi-specific antibody according to claim 5 or claim 6, wherein V_L comprises the sequence given in SEQ ID NO:7 and V_H comprises the sequence given in SEQ ID NO:9.
8. A multi-specific antibody according to any of claims 5 to 7, wherein V₂ comprises a light chain variable region comprising the sequence given in SEQ ID NO:27 and a heavy chain variable region comprising the sequence given in SEQ ID NO:28.
9. A multi-specific antibody according to any of claims 5 to 7, wherein V₂ comprises a light chain variable region comprising the sequence given in SEQ ID NO:31 and a heavy chain variable region comprising the sequence given in SEQ ID NO:32.
10. A multi-specific antibody according to any of claims 5 to 9, wherein V₁ comprises a light chain variable region comprising the sequence given in SEQ ID NO:45 and a heavy chain variable region comprising the sequence given in SEQ ID NO:46.
11. A multi-specific antibody according to any of claims 5 to 9, wherein V₁ comprises a light chain variable region comprising the sequence given in SEQ ID NO:49 and a heavy chain variable region comprising the sequence given in SEQ ID NO:50.
12. A multi-specific antibody according to any of claims 5 to 11, wherein the light chain variable region and heavy chain variable region of V₂ are connected by a linker, said linker comprising the sequence given in SEQ ID NO:66.
13. A multi-specific antibody according to claim 12, wherein V₂ is a scFv comprising the sequence given in SEQ ID NO:35 or a dsscFv comprising the sequence given in SEQ ID NO:37.

14. A multi-specific antibody according to any of claims 5 to 13, wherein the light chain variable region and heavy chain variable region of V_1 are connected by a linker, said linker comprising the sequence given in SEQ ID NO:68.
15. A multi-specific antibody according to claim 14, wherein V_1 is a scFv comprising the sequence given in SEQ ID NO:53 or a dsscFv comprising the sequence given in SEQ ID NO:55.
16. A multi-specific antibody according to any of claims 5 to 15, wherein Y is a linker comprising the sequence given in SEQ ID NO:65.
17. A multi-specific antibody according to any of claims 5 to 16, wherein X is a linker comprising the sequence given in SEQ ID NO:67.
18. A multi-specific antibody according to any preceding claim comprising the sequence given in SEQ ID NO:57 or SEQ ID NO: 59.
19. A multi-specific antibody according to any preceding claim, comprising the sequence given in SEQ ID NO:61 or SEQ ID NO: 63.
20. A multi-specific antibody according to any preceding claim comprising the sequence given in SEQ ID NO:59 and the sequence given in SEQ ID NO: 63.
21. An isolated polynucleotide encoding a multi-specific antibody as defined in any one of claims 1 to 20.
22. An expression vector carrying the polynucleotide of claim 21.
23. A host cell comprising the vector as defined in claim 22.
24. A method of producing the multi-specific antibody as defined in any one of claims 1-20, comprising culturing the host cell of claim 23 under conditions permitting production of the antibody, and recovering the antibody produced.
25. The method of claim 24 comprising a protein A purification step.

26. A pharmaceutical composition comprising an antibody as defined in any one of claims 1 to 20 and a pharmaceutically acceptable adjuvant and/or carrier.
27. An antibody as defined in any one of claims 1-20 or a pharmaceutical composition as defined in claim 26 for use in a method of treatment of the human or animal body by therapy.
28. The antibody or pharmaceutical composition according to claim 27, for use in the treatment of atopic dermatitis, chronic hand eczema, nasal micropolyposis or polyposis, food allergy, or eosinophilic esophagitis.
29. Use of a multi-specific antibody according to claims 1-20 or a pharmaceutical composition according to claim 26 in the manufacture of a medicament for the treatment of atopic dermatitis, chronic hand eczema, nasal micropolyposis or polyposis, food allergy, or eosinophilic esophagitis.