CLAIMS

1. A bispecific antibody or bispecific antibody fragment thereof that specifically binds to

IL-13 and IL-4,

wherein the bispecific antibody or bispecific antibody fragment thereof comprises two light chains and two heavy chains;

wherein the light chains comprise an outer variable light chain domain linked to an inner variable light chain domain which is linked to a constant light chain domain (CL), and the heavy chains comprise an outer variable heavy chain domain linked to an inner variable heavy chain domain which is linked to a constant heavy chain domain (CH1); and

wherein:

(a) the outer variable light chain domain comprises the amino acid sequence of SEQ ID NO:1, the inner variable light chain domain comprises the amino acid sequence of SEQ ID NO:3, the outer variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 2, and the inner variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 4;

(b) the outer variable light chain domain comprises the amino acid sequence of SEQ ID NO: 1, the inner variable light chain domain comprises the amino acid sequence of SEQ ID NO: 3, the outer variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 2, and the inner variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 5;

(c) the outer variable light chain domain comprises the amino acid sequence of SEQ ID NO: 3, the inner variable light chain domain comprises the amino acid sequence of SEQ ID NO: 1, the outer variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 4, and the inner variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 2;

(d) the outer variable light chain domain comprises the amino acid sequence of SEQ ID NO: 3, the inner variable light chain domain comprises the amino acid sequence of SEQ ID NO: 1, the outer variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 5, and the inner variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 2;

(e) the outer variable light chain domain comprises the amino acid sequences RASESVDSYGQSYMH (CDR1; SEQ ID NO: 8), LASNLES (CDR2; SEQ ID NO: 9), and QQNAEDSRT (CDR3; SEQ ID NO: 10), the inner variable light chain domain comprises the amino acid sequences HASQNIDVWLS (CDR1; SEQ ID NO: 14), KASNLHTG (CDR2; SEQ ID NO: 15), and QQAHSYPFT (CDR3; SEQ ID NO: 16), the outer variable heavy chain domain comprises the amino acid sequences GFSLTDSSIN (CDR1; SEQ ID NO: 11), DGRID (CDR2; SEQ ID NO: 12), and DGYFPYAMDF (CDR3; SEQ ID NO: 13), and the inner variable heavy chain domain comprises the amino acid sequences GYSFTSYWIH (CDR1; SEQ ID NO: 17), IDPSDGETR (CDR2; SEQ ID NO: 18), and LKEYGNYDSFYFDV (CDR3; SEQ ID NO: 19);

(f) the outer variable light chain domain comprises the amino acid sequences RASESVDSYGQSYMH (CDR1; SEQ ID NO: 8), LASNLES (CDR2; SEQ ID NO: 9), and QQNAEDSRT (CDR3; SEQ ID NO: 10), the inner variable light chain domain comprises the amino acid sequences HASQNIDVWLS (CDR1; SEQ ID NO: 14), KASNLHTG (CDR2; SEQ ID NO: 15), and QQAHSYPFT (CDR3; SEQ ID NO: 16), the outer variable heavy chain domain comprises the amino acid sequences GFSLTDSSIN (CDR1; SEQ ID NO: 11), DGRID (CDR2; SEQ ID NO: 12), and DGYFPYAMDF (CDR3; SEQ ID NO: 13), and the inner variable heavy chain domain comprises the amino acid sequences GYSFTSYWIH (CDR1; SEQ ID NO: 20), IDASDGETR (CDR2; SEQ ID NO: 21), and LKEYGNYDSFYFDV (CDR3; SEQ ID NO: 22);

(g) the outer variable light chain domain comprises the amino acid sequences HASQNIDVWLS (CDR1; SEQ ID NO: 14), KASNLHTG (CDR2; SEQ ID NO: 15), and QQAHSYPFT (CDR3; SEQ ID NO: 16), the inner variable light chain domain comprises the amino acid sequences RASESVDSYGQSYMH (CDR1; SEQ ID NO: 8), LASNLES (CDR2; SEQ ID NO: 9), and QQNAEDSRT (CDR3; SEQ ID NO: 10), the outer variable heavy chain domain comprises the amino acid sequences GYSFTSYWIH (CDR1; SEQ ID NO: 17), IDPSDGETR (CDR2; SEQ ID NO: 18), and LKEYGNYDSFYFDV (CDR3; SEQ ID NO: 19), and the inner variable heavy chain domain comprises the amino acid sequences

GFSLTDSSIN (CDR1; SEQ ID NO: 11), DGRID (CDR2; SEQ ID NO: 12), and DGYFPYAMDF (CDR3; SEQ ID NO: 13); or

(h) the outer variable light chain domain comprises the amino acid sequences HASQNIDVWLS (CDR1; SEQ ID NO: 14), KASNLHTG (CDR2; SEQ ID NO: 15), and QQAHSYPFT (CDR3; SEQ ID NO: 16), the inner variable light chain domain comprises the amino acid sequences RASESVDSYGQSYMH (CDR1; SEQ ID NO: 8), LASNLES (CDR2; SEQ ID NO: 9), and QQNAEDSRT (CDR3; SEQ ID NO: 10), the outer variable heavy chain domain comprises the amino acid sequences GYSFTSYWIH (CDR1; SEQ ID NO: 20), IDASDGETR (CDR2; SEQ ID NO: 21), and LKEYGNYDSFYFDV (CDR3; SEQ ID NO: 22), and the inner variable heavy chain domain comprises the amino acid sequences GFSLTDSSIN (CDR1; SEQ ID NO: 11), DGRID (CDR2; SEQ ID NO: 12), and DGYFPYAMDF (CDR3; SEQ ID NO: 13)

2. The bispecific antibody or bispecific antibody fragment thereof according to claim 1, wherein a peptide linker links the outer variable light chain domain to the inner variable light chain domain, and a peptide linker links the outer variable heavy chain domain to the inner variable heavy chain domain.

3. The bispecific antibody or bispecific antibody fragment thereof according to claim 2, wherein the peptide linker consists of the amino acid sequence of SEQ ID NO:6.

4. The bispecific antibody or antibody fragment thereof according to claim 1 or 2 that further comprises additional constant region domains.

5. The bispecific antibody or bispecific antibody fragment thereof according to claim 4, wherein the additional constant region domains consist of CH2 and CH3.

6. A bispecific antibody or bispecific antibody fragment thereof that specifically binds to IL-13 and IL-4, wherein the bispecific antibody or bispecific antibody fragment thereof comprises an IgG molecule having two light chains and two heavy chains;

wherein each of the light chains is elongated at its N-terminus by an additional variable light chain domain, and each of the heavy chains is elongated at its N-terminus by an additional variable heavy chain domain; and

wherein:

(a) the light chains comprise the amino acid sequence of SEQ ID NO: 3, the additional variable light chain domain comprises the amino acid sequence of SEQ ID NO: 1, the heavy chains comprise the amino acid sequence of SEQ ID NO: 4, and the additional variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 2;

(b) the light chains comprise the amino acid sequence of SEQ ID NO: 3, the additional variable light chain domain comprises the amino acid sequence of SEQ ID NO: 1, the heavy chains comprise the amino acid sequence of SEQ ID NO: 5, and the additional variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 2;

(c) the light chains comprise the amino acid sequence of SEQ ID NO: 1, the additional variable light chain domain comprises the amino acid sequence of SEQ ID NO: 3, the heavy chains comprise the amino acid sequence of SEQ ID NO: 2, and the additional variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 4;

(d) the light chains comprise the amino acid sequence of SEQ ID NO: 1, the additional variable light chain domain comprises the amino acid sequence of SEQ ID NO: 3, the heavy chains comprise the amino acid sequence of SEQ ID NO: 2, and the additional variable heavy chain domain comprises the amino acid sequence of SEQ ID NO: 5;

(e) the light chains comprise the amino acid sequences HASQNIDVWLS (CDR1; SEQ ID NO: 14), KASNLHTG (CDR2; SEQ ID NO: 15), and QQAHSYPFT (CDR3; SEQ ID NO: 16), the

additional variable light chain domain comprises the amino acid sequences RASESVDSYGQSYMH (CDR1; SEQ ID NO: 8), LASNLES (CDR2; SEQ ID NO: 9), and QQNAEDSRT (CDR3; SEQ ID NO: 10), the heavy chains comprise the amino acid sequences GYSFTSYWIH (CDR1; SEQ ID NO: 17), IDPSDGETR (CDR2; SEQ ID NO: 18), and LKEYGNYDSFYFDV (CDR3; SEQ ID NO: 19), and the additional variable heavy chain domain comprises the amino acid sequences GFSLTDSSIN (CDR1; SEQ ID NO: 11), DGRID (CDR2; SEQ ID NO: 12), and DGYFPYAMDF (CDR3; SEQ ID NO: 13);

(f) the light chains comprise the amino acid sequences HASQNIDVWLS (CDR1; SEQ ID NO: 14), KASNLHTG (CDR2; SEQ ID NO: 15), and QQAHSYPFT (CDR3; SEQ ID NO: 16), the additional variable light chain domain comprises the amino acid sequences RASESVDSYGQSYMH (CDR1; SEQ ID NO: 8), LASNLES (CDR2; SEQ ID NO: 9), and QQNAEDSRT (CDR3; SEQ ID NO: 10), the heavy chains comprise the amino acid sequences GYSFTSYWIH (CDR1; SEQ ID NO: 20), IDASDGETR (CDR2; SEQ ID NO: 21), and LKEYGNYDSFYFDV (CDR3; SEQ ID NO: 22), and the additional variable heavy chain domain comprises the amino acid sequences GFSLTDSSIN (CDR1; SEQ ID NO: 11), DGRID (CDR2; SEQ ID NO: 12), and DGYFPYAMDF (CDR3; SEQ ID NO: 13);

(g) the light chains comprise the amino acid sequences RASESVDSYGQSYMH (CDR1; SEQ ID NO: 8), LASNLES (CDR2; SEQ ID NO: 9), and QQNAEDSRT (CDR3; SEQ ID NO: 10), the additional light chain domain comprises the amino acid sequences HASQNIDVWLS (CDR1; SEQ ID NO: 14), KASNLHTG (CDR2; SEQ ID NO: 15), and QQAHSYPFT (CDR3; SEQ ID NO: 16), the heavy chains comprise the amino acid sequences GFSLTDSSIN (CDR1; SEQ ID NO: 11), DGRID (CDR2; SEQ ID NO: 12), and DGYFPYAMDF (CDR3; SEQ ID NO: 13), and the additional variable heavy chain domain comprises the amino acid sequences GYSFTSYWIH (CDR1; SEQ ID NO: 17), IDPSDGETR (CDR2; SEQ ID NO: 18), and LKEYGNYDSFYFDV (CDR3; SEQ ID NO: 19); or

(h) the light chains comprise the amino acid sequences RASESVDSYGQSYMH (CDR1; SEQ ID NO: 8), LASNLES (CDR2; SEQ ID NO: 9), and QQNAEDSRT (CDR3; SEQ ID NO: 10), the additional variable light chain domain comprises the amino acid sequences HASQNIDVWLS (CDR1; SEQ ID NO: 14), KASNLHTG (CDR2; SEQ ID NO: 15), and QQAHSYPFT (CDR3; SEQ ID NO: 16), the heavy chains comprise the amino acid sequences GFSLTDSSIN (CDR1; SEQ ID NO: 11), DGRID (CDR2; SEQ ID NO: 12), and DGYFPYAMDF (CDR3; SEQ ID NO: 13), and the additional variable heavy chain domain comprises the amino

acid sequences GYSFTSYWIH (CDR1; SEQ ID NO: 20), IDASDGETR (CDR2; SEQ ID NO: 21), and LKEYGNYDSFYFDV (CDR3; SEQ ID NO: 22).

7. The bispecific antibody or bispecific antibody fragment thereof according to claim 6, wherein a peptide linker links the additional variable light chain domains to the inner variable light chains, and a peptide linker links the additional variable heavy chain domains to the heavy chains.

8. The bispecific antibody or antibody fragment thereof according to claim 7, wherein the peptide linker consists of the amino acid sequence of SEQ ID NO: 6.

9. A bispecific antibody or bispecific antibody fragment thereof that specifically binds to IL-13 and IL-4;

wherein the bispecific antibody or bispecific antibody fragment thereof comprises two light chains having the structure V_{L1}-L_1-V_{L2}-C_L, and two heavy chains having the structure V_{H1}-L_2-V_{H2}-C_{H1};

wherein C_L is a constant light chain domain and CH_1 is a constant heavy chain domain;

wherein L_1 and L_2 are amino acid linkers; and wherein:

(a) V_{L1} comprises the amino acid sequence of SEQ ID NO: 1, V_{L2} comprises the amino acid sequence of SEQ ID NO: 3, V_{H1} comprises the amino acid sequence of SEQ ID NO: 2, and V_{H2} comprises the amino acid sequence of SEQ ID NO: 4;

(b) V_{L1} comprises the amino acid sequence of SEQ ID NO: 1, V_{L2} comprises the amino acid sequence of SEQ ID NO: 3, V_{H1} comprises the amino acid sequence of SEQ ID NO: 2, and V_{H2} comprises the amino acid sequence of SEQ ID NO: 5;

(c) V_{L1} comprises the amino acid sequence of SEQ ID NO: 3, V_{L2} comprises the amino acid sequence of SEQ ID NO: 1, V_{H1} comprises the amino acid sequence of SEQ ID NO: 4, and V_{H2} comprises the amino acid sequence of SEQ ID NO: 2;

(d) V_{L1} comprises the amino acid sequence of SEQ ID NO: 3, V_{L2} comprises the amino acid sequence of SEQ ID NO: 1, V_{H1} comprises the amino acid sequence of SEQ ID NO: 5, and V_{H2} comprises the amino acid sequence of SEQ ID NO: 2;

(e) V_{L1} comprises the amino acid sequences RASESVDSYGQSYMH (SEQ ID NO: 8), LASNLES (SEQ ID NO: 9), and QQNAEDSRT (SEQ ID NO: 10), V_{L2} comprises the amino acid sequences HASQNIDVWLS (SEQ ID NO: 14), KASNLHTG (SEQ ID NO: 15), and QQAHSYPFT (SEQ ID NO: 16), V_{H1} comprises the amino acid sequences GFSLTDSSIN (SEQ ID NO: 11), DGRID (SEQ ID NO: 12), and DGYFPYAMDF (SEQ ID NO: 13), and V_{H2} comprises the amino acid sequences GYSFTSYWIH (SEQ ID NO: 17), IDPSDGETR (SEQ ID NO: 18), and LKEYGNYDSFYFDV (SEQ ID NO: 19);

(f) V_{L1} comprises the amino acid sequences RASESVDSYGQSYMH (SEQ ID NO: 8), LASNLES (SEQ ID NO: 9), and QQNAEDSRT (SEQ ID NO: 10), V_{L2} comprises the amino acid sequences HASQNIDVWLS (SEQ ID NO: 14), KASNLHTG (SEQ ID NO: 15), and QQAHSYPFT (SEQ ID NO: 16), V_{H1} comprises the amino acid sequences GFSLTDSSIN (SEQ ID NO: 11), DGRID (SEQ ID NO: 12), and DGYFPYAMDF (SEQ ID NO: 13), and V_{H2} comprises the amino acid sequences GYSFTSYWIH (SEQ ID NO: 20), IDASDGETR (SEQ ID NO: 21), and LKEYGNYDSFYFDV (SEQ ID NO: 22);

(g) V_{L1} comprises the amino acid sequences HASQNIDVWLS (SEQ ID NO: 14), KASNLHTG (SEQ ID NO: 15), and QQAHSYPFT (SEQ ID NO: 16), V_{L2} comprises the amino acid sequences RASESVDSYGQSYMH (SEQ ID NO: 8), LASNLES (SEQ ID NO: 9), and QQNAEDSRT (SEQ ID NO: 10), V_{H1} comprises the amino acid sequences GYSFTSYWIH (SEQ ID NO: 17), IDPSDGETR (SEQ ID NO: 18) , and LKEYGNYDSFYFDV (SEQ ID NO: 19), and V_{H2} comprises the amino acid sequences GFSLTDSSIN (SEQ ID NO: 11), DGRID (SEQ ID NO: 12), and DGYFPYAMDF (SEQ ID NO: 13); or

(h) V_{L1} comprises the amino acid sequences HASQNIDVWLS (SEQ ID NO: 14), KASNLHTG (SEQ ID NO: 15), and QQAHSYPFT (SEQ ID NO: 16), V_{L2} comprises the amino acid

sequences RASESVDSYGQSYMH (SEQ ID NO: 8), LASNLES (SEQ ID NO: 9), and QQNAEDSRT (SEQ ID NO: 10), V_{H1} comprises the amino acid sequences GYSFTSYWIH (SEQ ID NO: 20), IDASDGETR (SEQ ID NO: 21), and LKEYGNYDSFYFDV (SEQ ID NO: 22), and V_{H2} comprises the amino acid sequences GFSLTDSSIN (SEQ ID NO: 11), DGRID (SEQ ID NO: 12), and DGYFPYAMDF (SEQ ID NO: 13).

10. The bispecific antibody or bispecific antibody fragment thereof of claim 9, wherein L_1 and L_2 consist of the amino acid sequence of SEQ ID NO: 6.

11. A bispecific antibody or bispecific antibody fragment thereof that specifically binds to IL-13 and IL-4;

wherein the bispecific antibody or bispecific antibody fragment thereof comprises four polypeptide chains that form four antigen binding sites;

wherein two polypeptide chains have a structure represented by the formula: V_{L1}-L_1-V_{L2}-C_L [I]

and two polypeptide chains have a structure represented by the formula: V_{H1}-L_2-V_{H2}-C_{H1} [11]

wherein:

V_{L1} is a first immunoglobulin light chain variable domain;

V_{L2} is a second immunoglobulin light chain variable domain;

V_{H1} is a first immunoglobulin heavy chain variable domain;

V_{H2} is a second immunoglobulin heavy chain variable domain;

C_L is an immunoglobulin light chain constant domain;

C_{H1} is the immunoglobulin C_{H1} heavy chain constant domain;

L_1 and L_2 are amino acid linkers; and

wherein:

(a) V_{L1} comprises the amino acid sequence of SEQ ID NO: 1, V_{L2} comprises the amino acid sequence of SEQ ID NO: 3, V_{H1} comprises the amino acid sequence of SEQ ID NO: 2, and V_{H2} comprises the amino acid sequence of SEQ ID NO: 4;

(b) V_{L1} comprises the amino acid sequence of SEQ ID NO: 1, V_{L2} comprises the amino acid sequence of SEQ ID NO: 3, V_{H1} comprises the amino acid sequence of SEQ ID NO: 2, and V_{H2} comprises the amino acid sequence of SEQ ID NO: 5;

(c) V_{L1} comprises the amino acid sequence of SEQ ID NO: 3, V_{L2} comprises the amino acid sequence of SEQ ID NO: 1, V_{H1} comprises the amino acid sequence of SEQ ID NO: 4, and VH_2 comprises the amino acid sequence of SEQ ID NO: 2;

(d) V_{L1} comprises the amino acid sequence of SEQ ID NO: 3, V_{L2} comprises the amino acid sequence of SEQ ID NO: 1, V_{H1} comprises the amino acid sequence of SEQ ID NO: 5, and V_{H2} comprises the amino acid sequence of SEQ ID NO: 2;

(e) V_{L1} comprises the amino acid sequences RASESVDSYGQSYMH (SEQ ID NO: 8), LASNLES (SEQ ID NO: 9), and QQNAEDSRT (SEQ ID NO: 10), V_{L2} comprises the amino acid sequences HASQNIDVWLS (SEQ ID NO: 14), KASNLHTG (SEQ ID NO: 15), and QQAHSYPFT (SEQ ID NO: 16), V_{H1} comprises the amino acid sequences GFSLTDSSIN (SEQ ID NO: 11), DGRID (SEQ ID NO: 12), and DGYFPYAMDF (SEQ ID NO: 13), and V_{H2} comprises the amino acid sequences GYSFTSYWIH (SEQ ID NO: 17), IDPSDGETR (SEQ ID NO: 18) , and LKEYGNYDSFYFDV (SEQ ID NO: 19);

(f) V_{L1} comprises the amino acid sequences RASESVDSYGQSYMH (SEQ ID NO: 8), LASNLES (SEQ ID NO: 9), and QQNAEDSRT (SEQ ID NO: 10), V_{L2} comprises the amino

acid sequences HASQNIDVWLS (SEQ ID NO: 14), KASNLHTG (SEQ ID NO: 15), and QQAHSYPFT (SEQ ID NO: 16), V_{H1} comprises the amino acid sequences GFSLTDSSIN (SEQ ID NO: 11), DGRID (SEQ ID NO: 12), and DGYFPYAMDF (SEQ ID NO: 13), and V_{H2} comprises the amino acid sequences GYSFTSYWIH (SEQ ID NO: 20), IDASDGETR (SEQ ID NO: 21), and LKEYGNYDSFYFDV (SEQ ID NO: 22); or

(g) V_{L1} comprises the amino acid sequences HASQNIDVWLS (SEQ ID NO: 14), KASNLHTG (SEQ ID NO: 15), and QQAHSYPFT (SEQ ID NO: 16), V_{L2} comprises the amino acid sequences RASESVDSYGQSYMH (SEQ ID NO: 8), LASNLES (SEQ ID NO: 9), and QQNAEDSRT (SEQ ID NO: 10), V_{H1} comprises the amino acid sequences GYSFTSYWIH (SEQ ID NO: 17), IDPSDGETR (SEQ ID NO: 18) , and LKEYGNYDSFYFDV (SEQ ID NO: 19), and V_{H2} comprises the amino acid sequences GFSLTDSSIN (SEQ ID NO: 11), DGRID (SEQ ID NO: 12), and DGYFPYAMDF (SEQ ID NO: 13); or

(h) V_{L1} comprises the amino acid sequences HASQNIDVWLS (SEQ ID NO: 14), KASNLHTG (SEQ ID NO: 15), and QQAHSYPFT (SEQ ID NO: 16), V_{L2} comprises the amino acid sequences RASESVDSYGQSYMH (SEQ ID NO: 8), LASNLES (SEQ ID NO: 9), and QQNAEDSRT (SEQ ID NO: 10), V_{H1} comprises the amino acid sequences GYSFTSYWIH (SEQ ID NO: 20), IDASDGETR (SEQ ID NO: 21), and LKEYGNYDSFYFDV (SEQ ID NO: 22), and V_{H2} comprises the amino acid sequences GFSLTDSSIN (SEQ ID NO: 11), DGRID (SEQ ID NO: 12), and DGYFPYAMDF (SEQ ID NO: 13).

12. The bispecific antibody or bispecific antibody fragment thereof of claim 11, wherein L_1 and L_2 consist of the amino acid sequence of SEQ ID NO: 6.

13. The bispecific antibody or bispecific antibody fragment thereof of any one of claims 1-12 that is further conjugated to an effector molecule.

14. The bispecific antibody or bispecific antibody fragment thereof of claim 13, wherein the effector molecule is a heterologous polypeptide, drug, radionucleotide, or toxin.

15. The bispecific antibody or bispecific fragment thereof according to any one of claims 1-14, wherein the bispecific antibody or bispecific antibody fragment thereof further comprises a label, wherein the label is a radiolabel, fluorophore, chromophore, imaging agent, or metal ion.

16. A pharmaceutical composition comprising the bispecific antibody or bispecific antibody fragment thereof according to any one of claims 1-14 and a pharmaceutically acceptable carrier.

17. An isolated nucleic acid molecule encoding the bispecific antibody or bispecific antibody fragment thereof according to any one of claims 1-12.

18. A vector comprising the nucleic acid molecule according to claim 17.

19. An isolated host cell comprising the vector according to claim 18, excluding cells capable of generating a human being.

20. The use of the bispecific antibody or bispecific antibody fragment thereof according to any one of claims 1-14 in the manufacture of a medicament for the treatment of a disease associated with abnormal production of an IL-13 and/or IL-4 mediated disease in a mammal.

21. The use of claim 20, wherein the IL-13 and/or IL-4 mediated disease is an allergic disease, cancer, asthma, a disease associated with abnormal production of IL-4 and/or IL-13, an autoimmune disease, scleroderma, or idiopathic pulmonary fibrosis.

22. The use of the bispecific antibody or antibody fragment thereof according to any one of claims 1-14 for the manufacture of a medicament for suppressing a TH-2 mediated response in a mammal.

23. A method of manufacturing the bispecific antibody or bispecific antibody fragment thereof comprising expressing the nucleic acid molecule of claim 17 in a suitable host cell.

24. A bispecific antibody or bispecific antibody fragment thereof made according to the method of claim 23.

25. A kit comprising the bispecific antibody or bispecific antibody fragment thereof according to any one of claims 1-16 and instructions for use.

26. The bispecific antibody or bispecific antibody fragment thereof according to any one of claims 1-16 or 24, the isolated nucleic according to claim 17, the vector according to claim 18, the isolated cell according to claim 19, the use according to any one of claims 20 to 22, the method according to claim 23, or the kit according to claim 25, substantially as hereinbefore described.