

manufacture of a medicament for the treatment of an autoimmune disease in a subject, wherein the monoclonal antibody or antigen binding fragment thereof is to be administered to the subject in at least one effective amount.

5 The following disclosure is thus provided:

one aspect of the present disclosure relates to a monoclonal antibody or an antigen binding fragment thereof, wherein,

10 the heavy chain variable region (VH) of the monoclonal antibody comprises: HCDR1-HCDR3 with the amino acid sequences shown in SEQ ID NOs: 31-33 respectively, or HCDR1-HCDR3 with the amino acid sequences shown in SEQ ID NOs: 37-39 respectively; and

15 the light chain variable region (VL) of the monoclonal antibody comprises: LCDR1-LCDR3 with the amino acid sequences shown in SEQ ID NOs: 34-36 respectively, or LCDR1-LCDR3 with the amino acid sequences shown in SEQ ID NOs: 40-42 respectively.

The variable regions of the light chain and the heavy chain determine the binding of the antigen; the variable region of each chain contains three hypervariable regions, namely complementarity determining regions (CDRs) 20 (the CDRs of the heavy chain (H) include HCDR1, HCDR2, HCDR3, and the CDRs of the light chain (L) include LCDR1, LCDR2, LCDR3; defined by Kabat et al., see Sequences of Proteins of Immunological Interest, Fifth Edition (1991), Volumes 1-3, NIH Publication 91-3242, Bethesda Md).

25 The amino acid sequences of the CDR regions of the monoclonal antibody in (1) to (2) above are analyzed by technical means well known to those skilled in the art, for example, by a VBASE2 database:

the antibodies 13E9, 13E9 H1L1, 13E9 H2L2, and 13E9 H3L2 of the present disclosure have the same CDRs:

30 the amino acid sequences of the three CDR regions of the heavy chain variable region are as follows:

HCDR1: SYSFTSDYA (SEQ ID NO: 31),

HCDR2: ITYSGVT (SEQ ID NO: 32),

HCDR3: ARADYDSYYTMDY (SEQ ID NO: 33); and

CLAIMS

1. A monoclonal antibody, or an antigen binding fragment thereof, comprising:

5 a) a heavy chain variable region (V_H) comprising complementary determining regions (CDRs) of CDR1, CDR2, and CDR3, wherein the amino acid sequence of CDR1 is set forth in SEQ ID NO: 31, the amino acid sequence of CDR2 is set forth in SEQ ID NO: 32, and the amino acid sequence of CDR3 is set forth in SEQ ID NO: 33; and

10 b) a light chain variable region (V_L) comprising CDRs of CDR1, CDR2, and CDR3, wherein having the amino acid sequence of CDR1 is set forth in SEQ ID NO: 34, the amino acid sequence of CDR2 is set forth in SEQ ID NO: 35, and the amino acid sequence of CDR3 is set forth in SEQ ID NO: 36.

2. The monoclonal antibody or antigen binding fragment thereof of claim 1, wherein

15 the V_H comprises the amino acid sequence set forth in SEQ ID NO: 2, and
 the V_L comprises the amino acid sequence set forth in SEQ ID NO: 4.

3. The monoclonal antibody or antigen binding fragment thereof of claim 1, wherein

20 the V_H comprises the amino acid sequence set forth in SEQ ID NO: 6, and
 the V_L comprises the amino acid sequence set forth in SEQ ID NO: 8.

4. The monoclonal antibody or antigen binding fragment thereof of claim 1, wherein

 the V_H comprises the amino acid sequence set forth in SEQ ID NO: 10, and
 the V_L comprises the amino acid sequence set forth in SEQ ID NO: 12.

5. The monoclonal antibody or antigen binding fragment thereof of claim 1, wherein
the V_H comprises the amino acid sequence set forth in SEQ ID NO: 14, and
the V_L comprises the amino acid sequence set forth in SEQ ID NO: 12.

5

6. The monoclonal antibody or antigen binding fragment thereof of any one of claims 1-5,
wherein the monoclonal antibody or antigen binding fragment thereof is selected from an Fab,
an Fab', an F(ab')₂, an Fv, a single chain antibody, a humanized antibody, a chimeric antibody,
and a diabody.

10

7. The monoclonal antibody or antigen binding fragment thereof of any one of claims 1-5,
wherein the monoclonal antibody or antigen binding fragment thereof binds to IL-17A with an
EC₅₀ of less than 100 nM.

15

8. The monoclonal antibody or antigen binding fragment thereof of any one of claims 1-5,
wherein the monoclonal antibody or antigen binding fragment thereof comprises non-CDR
regions derived from species other than mouse.

20

9. An isolated nucleic acid molecule, comprising a nucleic acid encoding the heavy chain
variable region and the light chain variable region of the monoclonal antibody or antigen
binding fragment thereof of any one of claims 1-5.

10. A conjugate comprising the monoclonal antibody or antigen binding fragment thereof
of any one of claims 1-5 and a conjugated portion comprising a detectable label.

25

11. A reagent kit comprising the monoclonal antibody or antigen binding fragment thereof of any one of claims 1-5.

12. A pharmaceutical composition, comprising the monoclonal antibody or antigen
5 binding fragment thereof of any one of claims 1-5 and at least one pharmaceutically acceptable carrier or excipient.

13. Use of the monoclonal antibody or antigen binding fragment thereof of any one of
claims 1-5 in the manufacture of a medicament for the treatment of an autoimmune disease in a
10 subject, wherein the monoclonal antibody or antigen binding fragment thereof is to be administered to the subject in at least one effective amount.

14. The use of claim 13, wherein the autoimmune disease is selected from psoriasis,
moderate to severe plaque psoriasis, rheumatoid arthritis, psoriatic arthritis, ankylosing
15 spondylitis, and systemic lupus erythematosus.