chain variable region comprising the amino acid sequence of SEQ ID NO:101 and a heavy chain variable region comprising the amino acid sequence SEQ ID NO:138; or a light chain variable region comprising the amino acid sequence of SEQ ID NO:103 and a heavy chain variable region comprising the amino acid sequence SEQ ID NO:140; or a light chain variable region comprising the amino acid sequence of SEQ ID NO:105 and a heavy chain variable region comprising the amino acid sequence SEQ ID NO:142; or a light chain variable region comprising the amino acid sequence of SEQ ID NO:107 and a heavy chain variable region comprising the amino acid sequence SEQ ID NO:144; or a light chain variable region comprising the amino acid sequence of SEQ ID NO:109 and a heavy chain variable region comprising the amino acid sequence SEQ ID NO:146; or a light chain variable region comprising the amino acid sequence of SEQ ID NO:111 and a heavy chain variable region comprising the amino acid sequence SEQ ID NO:148; or a light chain variable region comprising the amino acid sequence of SEQ ID NO:113 and a heavy chain variable region comprising the amino acid sequence SEQ ID NO:150; or a light chain variable region comprising the amino acid sequence of SEQ ID NO:115 and a heavy chain variable region comprising the amino acid sequence SEQ ID NO:152; or a light chain variable region comprising the amino acid sequence of SEQ ID NO:117 and a heavy chain variable region comprising the amino acid sequence SEQ ID NO:154; or a light chain variable region comprising the amino acid sequence of SEQ ID NO:119 and a heavy chain variable region comprising the amino acid sequence SEQ ID NO:156.

In one embodiment, the present disclosure further provides an anti-IL-23p19 antibody or antigen-binding fragment thereof, wherein the antibody or antigen-binding fragment thereof comprises a light chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:158, 160, 162 and 164 and a heavy chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:166, 168, 170 and 172.

In one aspect, there is provided a humanized anti-IL-23p19 antibody or antigen-binding fragment thereof, wherein the antibody or antigen-binding fragment thereof comprises:

a) a light chain variable region comprising the amino acid sequence of SEQ ID NO:19 *(CDR1-L)*; the amino acid sequence of SEQ ID NO:20 *(CDR2-L)*; and the amino acid sequence of SEQ ID NO:21 *(CDR3-L)*; and

b) a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 66 or 67 *(CDR1-H)*; the amino acid sequence of SEQ ID NO:64 *(CDR2-H)*; and the amino acid sequence of SEQ ID NO:65 *(CDR3-H)*,

wherein the antibody or antigen-binding fragment thereof has a $K_D$ for IL-23 of less than 40pM.

In one embodiment, the present disclosure further provides an anti-IL-23p19 antibody or antigen-binding fragment thereof, wherein the antibody or antigen-binding fragment

thereof has a $K_D$ for IL-23 of less than 40pM, or a $K_D$ for IL-23 of less than 20pM, or $K_D$ for IL-23 of less than 10pM or $K_D$ for IL-23 of less than 1pM.

In the present disclosure, there is provided an anti-IL-23p19 antibody or antigen-binding fragment thereof that binds to human IL-23p19 at an epitope consisting of amino acid residues 108 to 126 and amino acid residues 137 to 151 of SEQ ID NO: 181.

In a further embodiment, the present disclosure provides an anti-IL-23p19 antibody or antigen-binding fragment thereof that competitively binds to human IL-23p19 with an antibody of the present disclosure. In one enbodiment, the present disclosure provides an anti-IL-23p19 antibody or antigen-binding fragment thereof that competitively binds to human IL-23p19 with a humanized monoclonal anti-IL-23p19 antibody comprising a light chain comprising the amino acid sequence of SEQ ID NO:174 and a heavy chain comprising the amino acid sequence of SEQ ID NO:176. In one embodiment, the present disclosure provides an anti-IL-23p19 antibody or antigen-binding fragment thereof that competitively binds to human IL-23p19 with a humanized monoclonal anti-IL-23p19 antibody comprising a light chain comprising the amino acid sequence of SEQ ID NO:174 and a heavy chain comprising the amino acid sequence of SEQ ID NO:178. In one embodiment, the present disclosure provides an anti-IL-23p19 antibody or antigen-binding fragment thereof that competitively binds to human IL-23p19 with a humanized monoclonal anti-IL-23p19 antibody comprising a light chain comprising the amino acid sequence of SEQ ID NO:180 and a heavy chain comprising the amino acid sequence of SEQ ID NO:176. In one embodiment, the present disclosure provides an anti-IL-23p19 antibody or antigen-binding fragment thereof that competitively binds to human IL-23p19 with a humanized monoclonal anti-IL-23p19 antibody comprising a light chain comprising the amino acid sequence of SEQ ID NO: 180 and a heavy chain comprising the amino acid sequence of SEQ ID NO: 178.

Hence, the present disclosure provides an anti-IL-23p19 antibody or antigen-binding fragment thereof that competitively binds to human IL-23p19 with:

a) a humanized monoclonal anti-IL-23p19 antibody comprising a light chain comprising the amino acid sequence of SEQ ID NO:174 and a heavy chain comprising the amino acid sequence of SEQ ID NO:176; or

b) a humanized monoclonal anti-IL-23p19 antibody comprising a light chain comprising the amino acid sequence of SEQ ID NO:174 and a heavy chain comprising the amino acid sequence of SEQ ID NO:178; or

c) a humanized monoclonal anti-IL-23p19 antibody comprising a light chain comprising the amino acid sequence of SEQ ID NO:180 and a heavy chain comprising the amino acid sequence of SEQ ID NO:176; or

d) a humanized monoclonal anti-IL-23p19 antibody comprising a light chain comprising the amino acid sequence of SEQ ID NO: 180 and a heavy chain comprising the amino acid sequence of SEQ ID NO: 178.

In one embodiment, the anti-IL-23p19 antibody is a humanized antibody. In one embodiment, the anti-IL-23p19 antibody is a monoclonal antibody. In one embodiment,

one or more of the vectors above, cultivating the host cell and recovering and purifying the antibody or antigen-binding fragment thereof.

Further embodiments encompass a method for producing an antibody or antigen-binding fragment thereof above comprising obtaining a mammalian host cell comprising one or more of the vectors above, and cultivating the host cell. In one embodiment, the method further comprises recovering and purifying the antibody or antigen-binding fragment thereof.

In one aspect, the present disclosure further provides an antibody or antigen-binding fragment thereof above for use in medicine. In one embodiment, the use is the treatment of an inflammatory disease, of an autoimmune disease, of a respiratory disease, of a metabolic disorder or of cancer. In one embodiment, the use is for the treatment of psoriasis, inflammatory bowel disease (Crohn's disease, ulcerative colitis), psoriatic arthritis, multiple sclerosis, rheumatoid arthritis, or ankylosing spondylitis. In one embodiment, the use is for the treatment of psoriasis. In one embodiment, the use is for the treatment of inflammatory bowel disease.

In one aspect, the present disclosure further provides a pharmaceutical composition comprising an antibody molecule or antigen-binding fragment above and a pharmaceutically acceptable carrier.

In one embodiment, the present disclosure further provides a method for treating an inflammatory disease, an autoimmune disease, a respiratory disease, a metabolic disorder or cancer comprising administering to a subject in need thereof, for example a patient, an effective amount of an anti-IL-23p19 antibody or antigen-binding fragment thereof above, or a pharmaceutical composition comprising the antibody or antigen-binding fragment thereof. In one embodiment, the antibody or antigen-binding fragment is administered by a parenteral route of administration, or is administered intravenously or subcutaneously. In one embodiment, the antibody or antigen-binding fragment is administered subcutaneously. In one embodiment, the disease is

**Claims:**

What is Claimed is:

1) A humanized anti-IL-23p19 antibody or antigen-binding fragment thereof, wherein the antibody or antigen-binding fragment thereof comprises:
   a) a light chain variable region comprising the amino acid sequence of SEQ ID NO:19 *(CDR1-L)*; the amino acid sequence of SEQ ID NO:20 *(CDR2-L)*; and the amino acid sequence of SEQ ID NO:21 *(CDR3-L)*; and
   b) a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 66 or 67 *(CDR1-H)*; the amino acid sequence of SEQ ID NO:64 *(CDR2-H)*; and the amino acid sequence of SEQ ID NO:65 *(CDR3-H)*,

   wherein the antibody or antigen-binding fragment thereof has a $K_D$ for IL-23 of less than 40pM.

2) The humanized anti-IL-23p19 antibody or antigen-binding fragment thereof according to claim 1, wherein the antibody or antigen-binding fragment thereof comprises:
   a) a light chain variable region comprising the amino acid sequence of SEQ ID NO:19 *(CDR1-L)*; the amino acid sequence of SEQ ID NO:20 *(CDR2-L)*; and the amino acid sequence of SEQ ID NO:21 *(CDR3-L)*; and
   b) a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:66 *(CDR1-H)*; the amino acid sequence of SEQ ID NO:64 *(CDR2-H)*; and the amino acid sequence of SEQ ID NO:65 *(CDR3-H)*.

3) The humanized anti-IL-23p19 antibody or antigen-binding fragment thereof according to claim 1, wherein the antibody or antigen-binding fragment thereof comprises:
   a) a light chain variable region comprising the amino acid sequence of SEQ ID NO:19 *(CDR1-L)*; the amino acid sequence of SEQ ID NO:20 *(CDR2-L)*; and the amino acid sequence of SEQ ID NO:21 *(CDR3-L)*; and
   b) a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:67 *(CDR1-H)*; the amino acid sequence of SEQ ID NO:64 *(CDR2-H)*; and the amino acid sequence of SEQ ID NO:65 *(CDR3-H)*.

4) The humanized anti-IL-23p19 antibody according to any one of claims 1 to 3, wherein said antibody is a monoclonal antibody.

5) An antibody or antigen-binding fragment according to any one of claims 1 to 4 for use in medicine.

6) The antibody or antigen-binding fragment according to claim 5, wherein the use is the treatment of an inflammatory disease, of an autoimmune disease, of a respiratory disease, of a metabolic disorder or of cancer.

7) The antibody or antigen-binding fragment according to claim 6, wherein the use is for the treatment of psoriasis, inflammatory bowel disease, psoriatic arthritis, multiple sclerosis, rheumatoid arthritis, Crohn's disease, ulcerative colitis or ankylosing spondylitis.

8) The antibody or antigen-binding fragment according to claim 6, wherein the use is for the treatment of asthma or COPD (chronic obstructive pulmonary disease).

9) A pharmaceutical composition comprising an antibody or antigen-binding fragment according to any one of claims 1 to 3 and a pharmaceutically acceptable carrier.

# Anti-IL-23 Antibodies

## Abstract

The present invention relates to anti - IL - 23pl9 binding compounds, in particular humanized anti - IL - 23pl9 antibodies and therapeutic and diagnostic methods and compositions for using the same.

(No suitable figure)