

CLAIMS

What is claimed is:

1. An antibody or fragment thereof having specificity to a human chemokine (C-X-C motif) ligand 13 (CXCL13) protein, wherein the antibody or fragment thereof comprises a heavy chain variable region comprising heavy chain complementarity determining regions HCDR1, HCDR2, and HCDR3, and a light chain variable region comprising light chain complementarity determining regions LCDR1, LCDR2, and LCDR3, wherein:
the HCDR1 comprises the amino acid sequence of SEQ ID NO:127 (RYWMS);
the HCDR2 comprises the amino acid sequence of SEQ ID NO:128 (EINPDSSTINYAPSLKD);
the HCDR3 comprises the amino acid sequence of SEQ ID NO:130 (QDDYEYYAMDY);
the LCDR1 comprises the amino acid sequence of SEQ ID NO:131 (KASQDVNTGVA);
the LCDR2 comprises the amino acid sequence of SEQ ID NO:132 (SASYRYT); and
the LCDR3 comprises the amino acid sequence of SEQ ID NO:133 (QQYYSTPLT);
or
the HCDR1 comprises the amino acid sequence of SEQ ID NO:127 (RYWMS);
the HCDR2 comprises the amino acid sequence of SEQ ID NO:129 (EINPESSTINYAPSLKD);
the HCDR3 comprises the amino acid sequence of SEQ ID NO:130 (QDDYEYYAMDY);
the LCDR1 comprises the amino acid sequence of SEQ ID NO:131 (KASQDVNTGVA);
the LCDR2 comprises the amino acid sequence of SEQ ID NO:132 (SASYRYT); and
the LCDR3 comprises the amino acid sequence of SEQ ID NO:133 (QQYYSTPLT);
or
the HCDR1 comprises the amino acid sequence of SEQ ID NO:127 (RYWMS);
the HCDR2 comprises the amino acid sequence of SEQ ID NO:129 (EINPESSTINYAPSLKD);
the HCDR3 comprises the amino acid sequence of SEQ ID NO:359 (QDDYEYYTMDY);
the LCDR1 comprises the amino acid sequence of SEQ ID NO:360 (KVSQDVNTGVA);
the LCDR2 comprises the amino acid sequence of SEQ ID NO:132 (SASYRYT); and
the LCDR3 comprises the amino acid sequence of SEQ ID NO:361 (QQYWSTPLT);
or
the HCDR1 comprises the amino acid sequence of SEQ ID NO:127 (RYWMS);

the HCDR2 comprises the amino acid sequence of SEQ ID NO:129

(EINPESSTINYAPSLKD);

the HCDR3 comprises the amino acid sequence of SEQ ID NO:359 (QDDYEYYTMDY);

the LCDR1 comprises the amino acid sequence of SEQ ID NO:360 (KVSQDVNTGVA);

the LCDR2 comprises the amino acid sequence of SEQ ID NO:132 (SASYRYT); and

the LCDR3 comprises the amino acid sequence of SEQ ID NO:133 (QQYYSTPLT);

or

the HCDR1 comprises the amino acid sequence of SEQ ID NO:127 (RYWMS);

the HCDR2 comprises the amino acid sequence of SEQ ID NO:129

(EINPESSTINYAPSLKD);

the HCDR3 comprises the amino acid sequence of SEQ ID NO:367 (QDDYETYTMDY);

the LCDR1 comprises the amino acid sequence of SEQ ID NO:360 (KVSQDVNTGVA);

the LCDR2 comprises the amino acid sequence of SEQ ID NO:132 (SASYRYT); and

the LCDR3 comprises the amino acid sequence of SEQ ID NO:133 (QQYYSTPLT).

2. The antibody or fragment thereof of claim 1, wherein the HCDR1, HCDR2, HCDR3, LCDR1, LCD2 and LCDR3 comprise SEQ ID NO:127, 129, 367, 360, 132 and 133, respectively.

3. The antibody or fragment thereof of claim 2, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO:181 or an amino acid sequence having at least 90% sequence identity to SEQ ID NO:181, and the light chain variable region comprises the amino acid sequence of SEQ ID NO:179 or an amino acid sequence having at least 90% sequence identity to SEQ ID NO:179.

4. The antibody or fragment thereof of claim 3, which is humanized and wherein the heavy chain variable region comprises one or more back mutations selected from the group consisting of 5Q, 47I, 48G, and 85V, according to Kabat numbering, and combinations thereof, or wherein the light chain variable region comprises a mutation 78V according to Kabat numbering.

5. The antibody or fragment thereof of claim 2, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO:181, and the light chain variable region comprises the amino acid sequence of SEQ ID NO:179.
6. The antibody or fragment thereof of claim 1, wherein the HCDR1, HCDR2, HCDR3, LCDR1, LCD2 and LCDR3 comprise SEQ ID NO:127, 129, 359, 360, 132 and 133, respectively.
7. The antibody or fragment thereof of claim 6, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO:174 or an amino acid sequence having at least 90% sequence identity to SEQ ID NO:174, and the light chain variable region comprises the amino acid sequence of SEQ ID NO:179 or an amino acid sequence having at least 90% sequence identity to SEQ ID NO:179.
8. The antibody or fragment thereof of claim 1, wherein the HCDR1, HCDR2, HCDR3, LCDR1, LCD2 and LCDR3 comprise SEQ ID NO:127, 129, 359, 360, 132 and 361, respectively.
9. The antibody or fragment thereof of claim 8, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO:174 or an amino acid sequence having at least 90% sequence identity to SEQ ID NO:174, and the light chain variable region comprises the amino acid sequence of SEQ ID NO:175 or an amino acid sequence having at least 90% sequence identity to SEQ ID NO:175.
10. The antibody or fragment thereof of claim 1, wherein the HCDR1, HCDR2, HCDR3, LCDR1, LCD2 and LCDR3 comprise SEQ ID NO:127, 129, 130, 131, 132 and 133, respectively.
11. The antibody or fragment thereof of claim 10, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO:156 or an amino acid sequence having at least 90% sequence identity to SEQ ID NO:156, and the light chain variable region comprises the amino acid sequence of SEQ ID NO:138 or an amino acid sequence having at least 90% sequence identity to SEQ ID NO:138.

12. The antibody or fragment thereof of claim 1, wherein the HCDR1, HCDR2, HCDR3, LCDR1, LCD2 and LCDR3 comprise SEQ ID NO:127, 128, 130, 131, 132 and 133, respectively.

13. The antibody or fragment thereof of claim 12, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO:134 or an amino acid sequence having at least 90% sequence identity to SEQ ID NO:134, and the light chain variable region comprises the amino acid sequence of SEQ ID NO:138 or an amino acid sequence having at least 90% sequence identity to SEQ ID NO:138.

14. The antibody or fragment thereof of claim 6, which is humanized and wherein the heavy chain variable region comprises one or more back mutations selected from the group consisting of 5Q, 47I, 48G, and 85V, according to Kabat numbering, and combinations thereof, or wherein the light chain variable region comprises a mutation 78V according to Kabat numbering.