

CLAIMS

1. An antibody or antigen-binding fragment thereof that binds to human SIRP α , wherein the antibody or the antigen-binding fragment thereof comprises:

(i) a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 having an amino acid sequence of a VL CDR1, a VL CDR2, and a VL CDR3, respectively, of a VL having the amino acid sequence of SEQ ID NO:67; and

(ii) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 having an amino acid sequence of a VH CDR1, a VH CDR2, and a VH CDR3, respectively, of a VH having the amino acid sequence of SEQ ID NO:80.

2. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises:

(a) a VL comprising: a VL CDR1 comprising the amino acid sequence of SEQ ID NO:62, a VL CDR2 comprising the amino acid sequence of SEQ ID NO:63, and a VL CDR3 comprising the amino acid sequence of SEQ ID NO:65; and

(b) a VH comprising: a VH CDR1 comprising the amino acid sequence of SEQ ID NO:78, a VH CDR2 comprising the amino acid sequence of SEQ ID NO:69, and a VH CDR3 comprising the amino acid sequence of SEQ ID NO:57.

3. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a VL comprising an amino acid sequence having at least 95% identity to the amino acid sequence of SEQ ID NO:67.

4. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a VL comprising the amino acid sequence of SEQ ID NO:67.

5. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a VH comprising an amino acid sequence having at least 95% identity to the amino acid sequence of SEQ ID NO:80.

6. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a VH comprising the amino acid sequence of SEQ ID NO:80.
7. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a VL comprising an amino acid sequence having at least 95% identity to the amino acid sequence of SEQ ID NO:67; and a VH comprising an amino acid sequence having at least 95% identity to the amino acid sequence of SEQ ID NO:80.
8. An antibody or antigen-binding fragment thereof that binds to human SIRP α , wherein the antibody or the antigen-binding fragment thereof comprises a VL comprising the amino acid sequence of SEQ ID NO:67; and a VH comprising the amino acid sequence of SEQ ID NO:80.
9. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a light chain comprising an amino acid sequence having at least 95% identity to the amino acid sequence of SEQ ID NO:143.
10. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a light chain comprising the amino acid sequence of SEQ ID NO:143.
11. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a heavy chain comprising an amino acid sequence having at least 95% identity to the amino acid sequence of SEQ ID NO:119.
12. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a heavy chain comprising the amino acid sequence of SEQ ID NO:119.
13. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a light chain comprising an amino acid sequence having at least 95% identity to the amino acid sequence of SEQ ID NO:143, and a

heavy chain comprising an amino acid sequence having at least 95% identity to the amino acid sequence of SEQ ID NO:119.

14. An antibody that binds to human SIRP α , wherein the antibody comprises a light chain comprising the amino acid sequence of SEQ ID NO:143, and a heavy chain comprising the amino acid sequence of SEQ ID NO:119.

15. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antigen-binding fragment is a Fab, Fab', (Fab')₂, Fv, or scFv fragment.

16. The antibody or the antigen-binding fragment of claim 8, wherein the antigen-binding fragment is a Fab, Fab', (Fab')₂, Fv, or scFv fragment.

17. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a human IgG1 Fc region or a mutant thereof.

18. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises a heavy chain Fc region comprising the amino acid sequence selected from the group consisting of SEQ ID NOS:144 and 155-159.

19. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof further comprises a light chain constant region comprising the amino acid sequence of SEQ ID NO:211.

20. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof comprises: a light chain constant region comprising the amino acid sequence of SEQ ID NO:211; and a heavy chain Fc region comprising the amino acid sequence selected from the group consisting of SEQ ID NOS:144 and 155-159.

21. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody is a monoclonal antibody.

22. The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody is a humanized, human, or chimeric antibody.

23 The antibody or the antigen-binding fragment thereof of claim 1, wherein the antibody or the antigen-binding fragment thereof is conjugated to an agent.

24. The antibody or the antigen-binding fragment thereof of claim 23, wherein the agent is selected from the group consisting of a radioisotope, a metal chelator, an enzyme, a fluorescent compound, a bioluminescent compound, and a chemiluminescent compound.