

CLAIMS

1. An antibody or antigen binding fragment thereof that binds to human SIRP α V1 having the sequence of SEQ ID NO: 34 with an EC₅₀ between 4.83 nM and 0.022 nM, wherein the antibody or antigen binding fragment comprises each of:
 - a. a heavy chain variable region CDR1 comprising the amino acid sequence SYWMH (SEQ ID NO:69),
 - b. a heavy chain variable region CDR2 comprising the amino acid sequence AIYPVNNDTTYNQKFKG (SEQ ID NO:70), AIYPVNSDTTYNQKFKG (SEQ ID NO: 136) or ALYPVNSDTTYNQKFKG (SEQ ID NO: 137),
 - c. a heavy chain variable region CDR3 comprising the amino acid sequence SFYYSLDAAWFVY (SEQ ID NO:71),
 - d. a light chain variable region CDR1 comprising the amino acid sequence RASQDIGSRLN (SEQ ID NO:72),
 - e. a light chain variable region CDR2 comprising the amino acid sequence ATSSLDS (SEQ ID NO:73), and
 - f. a light chain variable region CDR3 comprising the amino acid sequence LQYASSPFT (SEQ ID NO:74).or wherein the antibody or antigen binding fragment comprises each of:
 - g. a heavy chain variable region CDR1 comprising the amino acid sequence NYYIH (SEQ ID NO:1),
 - h. a heavy chain variable region CDR2 comprising the amino acid sequence WIYPGNVNTKYNEKFKA (SEQ ID NO:2),
 - i. a heavy chain variable region CDR3 comprising the amino acid sequence PTIIATDFDV (SEQ ID NO:3),
 - j. a light chain variable region CDR1 comprising the amino acid sequence KASQGVGTAVG (SEQ ID NO:4),
 - k. a light chain variable region CDR2 comprising the amino acid sequence WASTRHT (SEQ ID NO:5), and
 - l. a light chain variable region CDR3 comprising the amino acid sequence QQYSTYPFT (SEQ ID NO:6).

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

wherein the antibody or antigen binding fragment comprises

a heavy chain variable region comprising an amino acid sequence selected from the group consisting of:

SEQ ID NO: 75 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 78 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 80 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 82 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 84 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 86 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 88 or an amino acid sequence at least 95% identical thereto, and

SEQ ID NO: 102 or an amino acid sequence at least 95% identical thereto;

and

a light chain variable region comprising an amino acid sequence selected from the group consisting of:

SEQ ID NO: 76 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 90 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 92 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 94 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 96 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 98 or an amino acid sequence at least 95% identical thereto,

SEQ ID NO: 100 or an amino acid sequence at least 95% identical thereto, and

SEQ ID NO: 104 or an amino acid sequence at least 95% identical thereto;

or wherein the antibody or antigen binding fragment comprises

a heavy chain variable region comprising an amino acid sequence selected from the group consisting of:

SEQ ID NO: 7 or an amino acid sequence at least 95% identical thereto,
SEQ ID NO: 10 or an amino acid sequence at least 95% identical thereto,
SEQ ID NO: 12 or an amino acid sequence at least 95% identical thereto,
SEQ ID NO: 14 or an amino acid sequence at least 95% identical thereto,
SEQ ID NO: 16 or an amino acid sequence at least 95% identical thereto,
SEQ ID NO: 18 or an amino acid sequence at least 95% identical thereto, and
SEQ ID NO: 30 or an amino acid sequence at least 95% identical thereto;

and

a light chain variable region comprising an amino acid sequence selected from the group consisting of:

SEQ ID NO: 8 or an amino acid sequence at 95% identical thereto,
SEQ ID NO: 20 or an amino acid sequence at least 95% identical thereto,
SEQ ID NO: 22 or an amino acid sequence at least 95% identical thereto,
SEQ ID NO: 24 or an amino acid sequence at least 95% identical thereto,
SEQ ID NO: 26 or an amino acid sequence at least 95% identical thereto, and
SEQ ID NO: 28 or an amino acid sequence at least 95% identical thereto, and
SEQ ID NO: 32 or an amino acid sequence at least 95% identical thereto.

3. The antibody or antigen binding fragment of claim 1, wherein the antibody or antigen binding fragment thereof comprises one of the following combinations of heavy chain variable region sequence and light chain variable region sequence:

a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 78 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 90,

a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 78 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 92,

a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 16 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 26,

a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 16 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 28,

a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 18 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 20,

a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 18 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 22,

a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 18 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 24,

a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 18 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 26,

a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 18 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 28,

or, in each case, at least 95% identical to a respective SEQ ID.

4. The antibody or antigen binding fragment of claim 3, wherein the antibody is an intact IgG.

5. The antibody or antigen binding fragment of claim 4, wherein the antibody comprises a wild-type or mutated IgG2 Fc region.

6. The antibody or antigen binding fragment of claim 4, wherein the antibody comprises a mutated IgG1 Fc region.

7. The antibody or antigen binding fragment of claim 4, wherein the antibody comprises a mutated IgG4 Fc region.

8. The antibody or antigen binding fragment of claim 3, wherein the antibody or antigen binding fragment thereof comprises a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 80 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 90.

9. The antibody or antigen binding fragment of claim 3, wherein the antibody or antigen binding fragment thereof comprises a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 80 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 92.

10. The antibody or antigen binding fragment of claim 3, wherein the antibody or antigen binding fragment thereof comprises a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 80 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 94.

11. The antibody or antigen binding fragment of claim 3, wherein the antibody or antigen binding fragment thereof comprises a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 80 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 96.

12. The antibody or antigen binding fragment of claim 3, wherein the antibody or antigen binding fragment thereof comprises a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 80 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 98.

13. The antibody or antigen binding fragment of claim 3, wherein the antibody or antigen binding fragment thereof comprises a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 80 and a light chain variable region comprising an amino acid sequence of SEQ ID NO: 100.

14. The antibody or antigen binding fragment of claim 1, wherein the heavy chain variable region CDR1 comprises the amino acid sequence of SEQ ID NO:69, the heavy chain variable region CDR2 comprises the amino acid sequence of SEQ ID NO: 136, the heavy chain variable region CDR3 comprises the amino acid sequence of SEQ ID NO:71, the light chain variable region CDR1 comprises the amino acid sequence of SEQ ID NO:72, the light chain variable region CDR2 comprises the amino acid sequence of SEQ ID NO:73, and the light chain variable region CDR3 comprises the amino acid sequence of SEQ ID NO:74.

15. A composition comprising:
an antibody or antigen binding fragment of claim 1; and

a pharmaceutically acceptable carrier or diluent.

16. The composition of claim 15, further comprising a second antibody or antigen binding fragment thereof that induces ADCC and/or ADCP.

17. An isolated nucleic acid encoding any one of the antibodies or antigen binding fragments of claim 1.

18. An expression vector comprising the isolated nucleic acid of claim 17.

19. A host cell comprising expression vector of claim 18.