WHAT IS CLAIMED IS:

1. A mesenchymal stem cell (MSC) that is genetically modified to overexpress an acyloxyacyl hydrolase (AOAH) polypeptide.

2. The MSC of claim 1, wherein the MSC expresses a recombinant AOAH polypeptide.

3. The MSC of claim 2, wherein the recombinant AOAH polypeptide comprises an amino acid sequence that is at least 70% identical to the amino acid sequence of residues 35 to 575 of SEQ ID NO: 5.

~~4. The MSC of claim 3, wherein the recombinant AOAH polypeptide comprises an amino acid sequence that is at least 90% identical to the amino acid sequence of residues 35 to 575 of SEQ ID NO: 5.~~

~~5.~~4. The MSC of claim ~~3~~4, wherein the recombinant AOAH polypeptide comprises the amino acid sequence of residues 35 to 575 of SEQ ID NO: 5, preferably wherein the recombinant AOAH polypeptide comprises the amino acid sequence of residues 24 to 575 of SEQ ID NO: 5.

~~6. The MSC of claim 5, wherein the recombinant AOAH polypeptide comprises the amino acid sequence of residues 24 to 575 of SEQ ID NO: 5.~~

~~7.~~5. The MSC of any one of claims 2 to ~~4~~6, wherein the MSC comprises a first exogenous nucleic acid comprising an AOAH polypeptide-encoding region operably linked to a promoter or promoter/enhancer combination, preferably wherein the promoter is a cytomegalovirus (CMV) or elongation factor-1 (EF1) promoter, or preferably wherein the promoter/enhancer combination is a CMV promoter/enhancer combination.

~~8. The MSC of claim 7, wherein the promoter is a cytomegalovirus (CMV) or elongation factor-1 (EF1) promoter.~~

~~9. The MSC of claim 7, wherein the promoter/enhancer combination is a CMV promoter/enhancer combination.~~

~~10.~~6. The MSC of ~~any one of~~ claim~~s~~ ~~5~~7 ~~to 9~~, wherein the AOAH polypeptide-encoding region comprises a nucleotide sequence having at least 70% identity with nucleotides 7

to 1734 of SEQ ID NO:1, preferably comprises the nucleotide sequence of nucleotides 7 to 1734 of SEQ ID NO:1.

~~11. The MSC of claim 10, wherein the AOAH polypeptide-encoding region comprises a nucleotide sequence having at least 90% identity with nucleotides 7 to 1734 of SEQ ID NO:1.~~

~~12. The MSC of claim 11, wherein the AOAH polypeptide-encoding region comprises the nucleotide sequence of nucleotides 7 to 1734 of SEQ ID NO:1.~~

~~13.~~7. The MSC of any one of claims 1 to 6~~12~~, wherein the MSC is genetically modified to overexpress an angiopoeitin-1 (ANGPT1) polypeptide, preferably wherein the MSC expresses a recombinant ANGPT1 polypeptide.

~~14. The MSC of claim 13, wherein the MSC expresses a recombinant ANGPT1 polypeptide.~~

~~15.~~8. The MSC of claim 7~~14~~, wherein the recombinant ANGPT1 polypeptide comprises an amino acid sequence that is at least 70% identical to the amino acid sequence of residues 16 to 498 of SEQ ID NO: 7, preferably comprises the amino acid sequence of residues 16 to 498 of SEQ ID NO: 7.

~~16. The MSC of claim 15, wherein the recombinant ANGPT1 polypeptide comprises an amino acid sequence that is at least 90% identical to the amino acid sequence of residues 16 to 498 of SEQ ID NO: 7.~~

~~17. The MSC of claim 16, wherein the recombinant ANGPT1 polypeptide comprises the amino acid sequence of residues 16 to 498 of SEQ ID NO: 7.~~

~~18.~~9. The MSC of ~~any one of~~ claim~~s~~ 7 or 8~~13 to 17~~, wherein the MSC comprises a second exogenous nucleic acid comprising an ANGPT1 polypeptide-encoding region operably linked to a second promoter or promoter/enhancer combination.

~~19.~~10. The MSC of claim 9~~18~~, wherein the second promoter is a CMV or EF1 promoter, or wherein the second promoter/enhancer combination is a CMV promoter/enhancer combination.

20. The MSC of claim 18, wherein the second promoter/enhancer combination is a CMV promoter/enhancer combination.

21.11. The MSC of any one of claims 9 or 1018 to 20, wherein the ANGPT1 polypeptide-encoding region comprises a nucleotide sequence having at least 70% identity with nucleotides 7 to 1503 of SEQ ID NO:3, preferably comprises the nucleotide sequence of nucleotides 7 to 1503 of SEQ ID NO:3.

22. The MSC of claim 21, wherein the ANGPT1 polypeptide-encoding region comprises a nucleotide sequence having at least 90% identity with nucleotides 7 to 1503 of SEQ ID NO:3.

23. The MSC of claim 22, wherein the AOAH polypeptide-encoding region comprises the nucleotide sequence of nucleotides 7 to 1503 of SEQ ID NO:3.

24.12. The MSC of any one of claims 57 to 1123, wherein the first and/or second exogenous nucleic acid(s) is/are comprised in a vector or plasmid.

25. The MSC of claim 24, wherein the first and second exogenous nucleic acids are comprised in the same vector or plasmid.

26.13. The MSC of any one of claims 1 to 1225, for use as a medicament.

27.14. The MSC of any one of claims 1 to 12for use according to claim 26, wherein said medicament is for use for the prevention or treatment of systemic inflammatory response syndrome (SIRS) in a subject, preferably wherein the SIRS is caused by sepsis and/or preferably wherein the subject is human.

28. The MSC for use according to claim 27, wherein the SIRS is caused by sepsis.

29. The MSC for use according to claim 27 or 28, wherein the subject is human.

30.15. The MSC for use according to any one of claims 1427 to 29, wherein the MSC are allogenic with respect to the subject.

31. The MSC for use according to any one of claims 27 to 29, wherein the MSC are autologous with respect to the subject.

~~32. A method for preventing or treating systemic inflammatory response syndrome (SIRS) comprising administering to a subject in need thereof an effective amount of the MSC of any one of claims 1 to 25.~~

~~33. The method of claim 32, wherein the SIRS is caused by sepsis.~~

~~34. The method according to claim 32 or 33, wherein the subject is human.~~

~~35. The method according to any one of claims 32 to 34, wherein the MSC are allogenic with respect to the subject.~~

~~36. The method according to any one of claims 32 to 34, wherein the MSC are autologous with respect to the subject.~~

~~37. Use of the MSC of any one of claims 1 to 25 for preventing or treating systemic inflammatory response syndrome (SIRS) in a subject.~~

~~38. Use of the MSC of any one of claims 1 to 25 for the manufacture of a medicament for preventing or treating systemic inflammatory response syndrome (SIRS) in a subject.~~

~~39. The use according to claim 37 or 38, wherein the SIRS is caused by sepsis.~~

~~40. The use according to any one of claims 37 to 39, wherein the subject is human.~~

~~41. The use according to any one of claims 37 to 40, wherein the MSC are allogenic with respect to the subject.~~

~~42. The use according to any one of claims 37 to 40, wherein the MSC are autologous with respect to the subject.~~