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 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.

5. The MSC of any one of claims 2 to 4, 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.

6. The MSC of claim 5, 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.

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

8. The MSC of claim 7, 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.

9. The MSC of claim 7 or 8, 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.

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

11. The MSC of claim 9 or 10, 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.

12. The MSC of any one of claims 5 to 11, wherein the first and/or second exogenous nucleic acid(s) is/are comprised in a vector or plasmid.

13. The MSC of any one of claims 1 to 12, for use as a medicament.

14. The MSC of any one of claims 1 to 12, 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.

15. The MSC for use according to claim 14, wherein the MSC are allogenic with respect to the subject.