**CLAIMS**

1. Use of mesenchymal lineage progenitor or stem cells (MLPSCs), exosomes derived therefrom, or conditioned media derived from culture of a plurality of MLPSCs, in the preparation of a medicament for enhancing partial reprogramming of target cells in a subject in need thereof, in which the subject expresses or will express one or more reprogramming factors in a population of target cells, whereby a plurality of the target cells in the subject become partially reprogrammed.

2. Use of one or more reprogramming factors or one or more nucleic acids encoding one or more reprogramming factors in the manufacture of a medicament for enhancing partial reprogramming of target cells in a subject in need thereof, in which the subject was administered or is to be administered mesenchymal lineage progenitor or stem cells (MLPSCs), exosomes derived therefrom, or conditioned media derived from culture of a plurality of MLPSCs, whereby a plurality of the target cells in the subject become partially reprogrammed.

3. Use according to Claim 1, in which the population of target cells comprises one or more exogenous nucleic acids encoding the one or more reprogramming factors.

4. Use according to Claim 1, in which the population of target cells comprises one or more exogenous nucleic acids encoding one or more targeted transactivators for inducing expression of endogenous genes encoding the one or more reprogramming factors.

5. Use according to any preceding claim, in which the MLPSCs are culture expanded from a population of STRO-$1^+$ mesenchymal progenitor cells (MPCs) or mesenchymal stem cells (MSCs).

6. Use according to any preceding claim , in which the MLPSCs are pre-licensed MLPSCs.

7. Use according to Claim 6, in which the MLPSCs are MLPSCs that were culture expanded in media containing:

IFN-gamma and/or TNF-alpha; and

one or more pro-inflammatory cytokines selected from the group consisting of IL-6, IL-8, IL-17A, MCP-1-alpha, MIP-1-beta, and IP-10.

8. Use according to any preceding claim, in which the MLPSCs are MLPSCs genetically modified to overexpress indoleamine 2,3-dioxygenase (IDO) and/or cyclooxygenase-2 (COX-2).

9. Use according to any preceding claim, in which the subject is suffering from or at risk of a health condition selected from the group consisting of: cardiovascular diseases, vascular endothelial conditions, low back pain, inflammatory diseases, osteoarthritis, metabolic diseases, kidney diseases, liver diseases, and neurological disorders.

10. Use according to any preceding claim, in which the one or more reprogramming factors are selected from the group consisting of: OCT4, SOX2, KLF4, c-MYC, LIN28, and NANOG.

11. Use according to any preceding claim, in which the one or more reprogramming factors comprise:

(i) OCT4, SOX2, and KLF4;

(ii) OCT4, SOX2, KLF4, and c-MYC; or

(iii) OCT4, SOX2, and KLF4, but not c-MYC.

12. Use according to any of Claims 3 to 11, in which the one or exogenous nucleic acids comprise one or more synthetic mRNAs encoding the one or more reprogramming factors or encoding the one or more targeted transactivators.

13. Use according to any of Claims 3 to 12, in which the one or more exogenous nucleic acids comprise one or more non-integrated expression cassettes for expression of the one or more encoded reprogramming factors or targeted transactivators in mammalian cells.

14. Use according to any preceding claim, in which expression of the one or more reprogramming factors is inducible and reversible.

15. Use according to any preceding claim, in which the MLPSCs are modified MLPSCs comprising at least one of: an exogenous anti-inflammatory: miRNA, antagomiR, siRNA, RNAi, antisense oligonucleotide, or an antisense RNA.

16. A composition for enhancing partial reprogramming of target cells, comprising a plurality of modified mesenchymal lineage progenitor or stem cells (MLPSCs) comprising

one or more exogenous nucleic acids encoding one or more: (a) reprogramming factors; or (b) targeted transactivators that induce expression of one or more endogenous reprogramming factors, in which:

(i) the modified MLPSCs, when in the presence of one or more target cells, deliver the one or more exogenous nucleic acids to the one more target cells;

(ii) the one or more encoded reprogramming factors are expressed in the one or more target cells at a level sufficient to partially reprogram the one or more target cells; and

(iii) the one or more encoded reprogramming factors or targeted transactivators are substantially inoperable to expression in the modified MLPSCs prior to the delivery in (i).

17. A composition for enhanced partial reprogramming of target cells, comprising:

(i) a culture-expanded population of human mesenchymal stem cells (hMSCs);

(ii) a conditionally-replicating helper virus; and

(iii) one or more helper-dependent viruses that: (a) comprise one or more expression cassettes for one or more reprogramming factors or targeted transactivators that induce expression of one or more endogenous reprogramming factors; and (b) substantially free of viral coding sequences.

18. A composition according to Claim 17, in which the hMSCs are transduced with (ii), (iii), or both (ii) and (iii).

19. A composition according to Claim 16 or 18, in which the one or more expression cassettes are inducible and reversible expression cassettes.

20. A composition according to Claim 19, in which the conditionally replicating helper virus or the one or more helper-dependent viruses encode a regulatable transactivator that controls expression from the one or more inducible and reversible expression cassettes.