CLAIMS

1. An *in vitro* method of producing induced pluripotent stem cells from mammalian non-pluripotent cells, the method comprising:

(a) introducing into the mammalian non-pluripotent cells one or more expression cassettes comprising a polynucleotide encoding at least one reprogramming factor polypeptide; and

(b) contacting the cells having one or more expression cassettes with a MEK inhibitor;

wherein the at least one reprogramming factor polypeptide comprises an Oct polypeptide, and optionally one or more of a Klf polypeptide and a Sox polypeptide.

2. The method of claim 1, wherein the mammalian non-pluripotent cells are somatic cells or are fibroblast cells.

3. The method of any one of claims 1 or 2, further comprising,

(c) selecting cells that exhibit pluripotent stem cell characteristics.

4. The method of any one of claims 1 to 3, wherein the mammalian non-pluripotent cells are obtained from an animal; and

the induced pluripotent stem cells are differentiated into a desired cell type.

5. The method of any one of claims 1 to 4, wherein the mammalian non-pluripotent cells are human cells, and/or are progenitor cells.

6. The method of claim 5, wherein the progenitor cells are neural progenitor cells, skin progenitor cells or hair follicle progenitor cells.

7. The method of any one of claims 1 to 6, wherein the at least one reprogramming factor polypeptide is an Oct polypeptide and a UTF1 polypeptide.

8. An *in vitro* method of inducing endogenous Oct4 expression in a cell, the method comprising,

(a) introducing one or more expression cassettes comprising a polynucleotide encoding one or more reprogramming factor polypeptides into the cell; and

(b) contacting the cell having one or more expression cassettes with a MEK inhibitor, thereby inducing Oct4 expression in the cell,

wherein the one or more reprogramming factor polypeptides comprise an Oct polypeptide, and optionally one or more of a Klf polypeptide and a Sox polypeptide.

9. The method of claim 8, wherein the cell does not endogenously express Oct4 immediately prior to the contacting step.

10. The method of claim 8 or claim 9, wherein the one or more expression cassettes are introduced into a cell that is not a pluripotent cell.

11. The method of any one of claims 8 to 10, wherein the cell is induced to pluripotency after the introducing step.

12. A mixture of mammalian cells and a MEK inhibitor, wherein one or more expression cassettes comprising a polynucleotide encoding at least one reprogramming factor polypeptide selected from the group consisting of: an Oct polypeptide, a Klf polypeptide, and a Sox polypeptide, are introduced into the cells *in vitro*.

13. The mixture of claim 12, wherein the cells are human cells or comprise progenitor cells.

14. The mixture of claim 13, wherein the progenitor cells are neural progenitor cells, skin progenitor cells or hair follicle progenitor cells.

15. The mixture of any one of claims 12 to 14, wherein the cells are non-pluripotent cells or are fibroblast cells.

16. The method of any one of claims 1 to 11 or the mixture of any one of claims 12 to 15, wherein the Klf polypeptide is Klf4.

17. The method of any one of claims 1 to 11 and 16, or the mixture of any one of claims 12 to 16, wherein the Oct polypeptide is Oct4.

18. The method of any one of claims 1 to 11, 16, and 17 or the mixture of any one of claims 12 to 17, wherein the Sox polypeptide is Sox2.

19. The method of claim 1, wherein step (b) further comprises contacting the cells having one or more expression cassettes with a GSK3 inhibitor.

20. The method of claim 8, further comprising contacting the cell having one or more expression cassettes with a GSK3 inhibitor.

21. The mixture of claim 12, wherein the mixture comprises a GSK3 inhibitor.