Claims

1. A method for increasing homogeneity of an induced pluripotent stem (iPS) cell population, the method comprising:

(a) obtaining a population of reprogrammed mammalian cells, wherein the population of reprogrammed cells comprises an iPS cell and at least one non-iPS cell; and

(b) culturing the cell population of step (a) in a medium comprising a MAPK/ERK kinase (MEK) inhibitor, wherein the culturing promotes growth of iPS cells;

thereby increasing the homogeneity of the iPS cell population in comparison to the cell population of step (a).

2. The method of claim 1, wherein the method inhibits growth of the non-iPS cells.

3. The method of claim 1, wherein the cell population of step (a) is obtained by introducing one or more expression cassettes comprising a polynucleotide encoding an Oct3/4 polypeptide and a polynucleotide encoding a Klf polypeptide into non-pluripotent mammalian cells, thereby initiating reprogramming of the non-pluripotent cells.

4. The method of claim 3, wherein the non-pluripotent mammalian cells are somatic cells.

5. The method of claim 4, wherein the non-pluripotent mammalian cells are progenitor cells.

6. The method of claim 1, further comprising:

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

7. The method of claim 1, wherein the MEK inhibitor is PD0325901.

8. The method of claim 3, further comprising introducing one or more expression cassettes comprising a polynucleotide encoding a Sox polypeptide or a polynucleotide encoding a c-Myc polypeptide into the mammalian non-pluripotent cells.

9. A composition comprising:

(a) a population of reprogrammed mammalian cells, wherein the population comprises iPS cells comprising a recombinant polynucleotide encoding a transcription factor that induces pluripotency; and

(b) a medium comprising a MAPK/ERK kinase (MEK) inhibitor.

10. The composition of claim 9, wherein the cell population comprises at least one non-pluripotent mammalian cell.

11. The composition of claim 9, wherein the MEK inhibitor is PD0325901.

12. The composition of claim 9, wherein the cell population is obtained by introducing one or more expression cassettes comprising a polynucleotide encoding an Oct3/4 polypeptide and a polynucleotide encoding a Klf polypeptide into non-pluripotent mammalian cells, thereby initiating reprogramming of the non-pluripotent cells.

13. The composition of claim 12, wherein the one or more expression cassettes further comprise a polynucleotide encoding a Sox polypeptide or a polynucleotide encoding a c-Myc polypeptide.

14. The composition of claim 10, wherein the non-pluripotent mammalian cells are somatic cells.

15. The composition of claim 10, wherein the non-pluripotent mammalian cells are progenitor cells.