CLAIMS:

1. A method of producing a reprogrammed cell, said method comprising exposing Stro-1^+ multipotential cells and/or progeny cells thereof to one or more potency-determining factors under conditions sufficient to reprogram the cells.

2. A method of producing a reprogrammed cell, said method comprising exposing a population of cells enriched for Stro-1^+ multipotential cells and/or progeny cells thereof to one or more potency-determining factors under conditions sufficient to reprogram the cells.

3. The method according to claim 1 or 2, wherein the Stro-1^+ multipotential cells and/or progeny cells thereof, or cell populations enriched for Stro-1^+ multipotential cells and/or progeny cells thereof, are derived from adipose tissue, dental pulp tissue, or bone marrow.

4. The method according to claim 1 or 2 additionally comprising culturing the exposed cells to produce reprogrammed cells.

5. The method according to claim 1 or 2 additionally comprising isolating the reprogrammed cells.

6. The method according to any one of claims 1 to 5 comprising culturing the exposed cells to obtain reprogrammed cells having broader differentiation potential than the Stro-1^+ multipotential cells and/or progeny cells thereof.

7. The method according to any one of claims 1 to 6, wherein the one or more potency-determining factors are individually or collectively selected from the group consisting of Oct4, Sox2, Klf4, Nanog, Lin28, c-Myc, bFGF, SCF, TERT, SV40 large T antigen, HPV16E6, HPV16E7, Bmil, Fbx15, Eras, ECAT15-2, Tcl1, β-catenin, ECAT1, ESG1, Dnmt3L, ECAT8, Gdf3, Sox15, ECAT15-1, Fthl17, Sal14, Rex1, UTF1, Stella, Stat3 and Grb2 or a compound having the same or similar activity to one or more of said factors.

8. The method according to any one of claims 1 to 7, wherein one or more potency determining factor(s) is a chemical, a peptide, a siRNA, a short hairpin RNA or a microRNA.

9. The method according to any one of claims 1 to 7, wherein the one or more potency-determining factors are individually or collectively selected from the group consisting of:

(i) Oct4;

(ii) a combination of Oct4 and Sox2;

(iii) a combination of Oct4, Sox2 and at least one of Nanog and Lin28;

(iv) a combination of Oct4, Klf4 and c-Myc;

(v) a combination of Oct4, Sox2 and Klf4;

(vi) a combination of OCT4, Sox2, Klf4 and c-Myc;

(vii) a combination of Oct4, Sox2, Nanog and Lin28;

(viii) a combination of Oct4, Sox2, Klf4, c-Myc, Nanog and Lin28; and

(ix) any one of (i) to (x) additionally in combination with a chemical, a peptide, a siRNA, a shRNA or a microRNA.

10. The method according to any one of claims 1 to 9, wherein the Stro-1^+ multipotential cells and/or progeny cells thereof are obtained from a post-natal mammal.

11. The method according to claim 10, wherein the mammal is human.

12. The method according to claim 1 or 2, wherein exposing the Stro-1^+ multipotential cells and/or progeny cells thereof to one or more potency-determining factors comprises introducing nucleic acid comprising a sequence encoding one or more potency-determining factors operably linked to a promoter into the Stro-1^+ multipotential cells and/or progeny cells thereof.

13. The method according to claim 12, comprising administering a plurality of nucleic acids each comprising a sequence encoding a distinct potency-determining factor operably linked to a promoter.

14. The method according to claim 12 or 13, wherein the nucleic acid(s) are within one or more vector(s).

15. The method according to claim 14, wherein the vector(s) is(are) a viral vector(s).

16. The method according to claim 12, wherein the nucleic acid(s) do(es) not integrate into the genome of the Stro-1^+ multipotential cells and/or progeny cells thereof.

17. The method according to claim 1 or 2, wherein the reprogrammed cells are pluripotent.

18. The method according to claim 1 or 2, wherein the reprogrammed cells (i) express a cell marker selected from the group consisting of Oct-4, Nanog, SSEA3, SSEA4, Tra-1-60 and Tra-1-81; (ii) exhibit morphology characteristic of pluripotent cells; and/or (iii) form teratomas when introduced into an immunocompromised animal.

19. A cell produced by performing the method according to any one of claims 1 to 18.

20. A cell population enriched for pluripotent cells produced by performing the method according to the method of any one of claims 1 to 18.

21. The enriched population of cells according to claim 20, wherein the pluripotent cells account for at least 60% of the population.

22. A cell or population of cells differentiated from the cell or population according to any one of claims 18 to 21.

23. A Stro-1^+ multipotential cell and/or progeny cell thereof comprising a nucleic acid encoding a potency determining factor operably linked to a heterologous promoter.

24. Use of the cell or population according to any one of claims 19 to 23 in medicine.

25. A method of treating or preventing a disease or disorder, the method comprising administering the cell or population according to any one of claims 19 to 23 to a subject in need thereof.

26. A method of screening for compounds useful in the treatment or prevention of a disease or disorder, the method comprising exposing the cell or population according to any one of claims 19 to 23 to said compounds.

CLAIMS

1. A method of producing a reprogrammed cell, said method comprising exposing a population of human cells enriched for Stro-1^{bright} multipotential cells and/or progeny cells thereof to one or more potency-determining factors under conditions sufficient to reprogram the cells , in which the one or more potency-determining factors are proteins, functional fragments of the proteins, or nucleic acids encoding either the proteins or functional fragments of the proteins; and in which the cell population is derived from adipose tissue or dental pulp.

2. A method according to Claim 1 additionally comprising culturing the exposed cell population to produce reprogrammed cells.

3. A method according to Claim 1 or 2 additionally comprising isolating the reprogrammed cells.

4. A method according to any preceding claim, in which the one or more potency-determining factors are individually or collectively selected from the group consisting of Oct4, Sox2, Klf4, Nanog, Lin28, c-Myc, bFGF, SCF, TERT, SV40 large T antigen, HPV16E6, HPV16E7, Bmil, Fbx15, Eras, ECAT15-2, Tcl1, β-catenin, ECAT1, ESG1, Dnmt3L, ECAT8, Gdf3, Sox15, ECAT15-1, Fthl17, Sal14, Rex1, UTF1, Stella, Stat3 and Grb2.

5. A method according to any preceding claim, in which the one or more potency-determining factors are individually or collectively selected from the group consisting of:

(i) Oct4;

(ii) a combination of Oct4 and Sox2;

(iii) a combination of Oct4, Sox2 and at least one of Nanog and Lin28;

(iv) a combination of Oct4, Klf4 and c-Myc;

(v) a combination of Oct4, Sox2 and Klf4;

(vi) a combination of OCT4, Sox2, Klf4 and c-Myc;

(vii) a combination of Oct4, Sox2, Nanog and Lin28; and

(viii) a combination of Oct4, Sox2, Klf4, c-Myc, Nanog and Lin28.

6. A method according to Claim 1, comprising introducing into the cell population one or more nucleic acids comprising a sequence encoding one or more of the potency-determining factors operably linked to a promoter.

7. A method according to Claim 6, comprising administering a plurality of nucleic acids each comprising a sequence encoding a distinct potency-determining factor operably linked to a promoter.

8. A method according to Claim 6 or 7, in which the nucleic acid(s) are within one or more vector(s).

9. A method according to Claim 8, in which the vector(s) is(are) a viral vector(s).

10. A method according to Claim 6, in which the nucleic acid(s) do(es) not integrate into the genome of the Stro-1^{+} multipotential cells and/or progeny cells thereof.

11. A method according to Claim 1 or 2, in which the reprogrammed cells comprise pluripotent cells.

12. A method according to Claim 1 or 2, in which the reprogrammed cells (i) express a cell marker selected from the group consisting of Oct-4, Nanog, SSEA3, SSEA4, Tra-1-60 and Tra-1-81; (ii) exhibit morphology characteristic of pluripotent cells; and/or (iii) form teratomas when introduced into an immunocompromised animal.

13. A human Stro-1^{bright} multipotential cell comprising one or more nucleic acids encoding factors that increase stem cell potency, in which the human Stro-1^{bright} multipotential cell is derived from adipose tissue or dental pulp.

14. A method according to Claim 1 or 2, in which the factors consist of OCT4, SOX2, KLF4, and cMYC, or nucleic acids encoding the factors.

15. A method according to Claim 1 or 2, further comprising differentiating the reprogrammed cells into cells with less potency than the reprogrammed cells.