CLAIMS

1. An isolated multipotent adult cell, which (a) is isolated from non-osteochondral mesenchymal tissue, (b) expresses CD9<+>, CD10<+>, CD13<+>, CD29<+>, CD44<+>, CD49A<+>, CD51<+>, CD54<+>, CD55<+>, CD58<+>, CD59<+>, CD90<+> and CD105<+>; and (c) lacks expression of CD11b, CD14, CD15, CD16, CD31, CD34, CD45, CD49f, CD102, CD104, CD106 and CD133.

2. An isolated multipotent adult cell according to claim 1, which is isolated by a method that comprises:

(a) collecting a non-osteochondral mesenchymal tissue;

(b) obtaining a cell suspension by enzymatic digestion;

(c) sedimenting and resuspending the cells in a culture medium; and

(d) culturing the cells on a solid surface, and eliminating cells that show no adhesion to said solid surface.

3. The isolated multipotent adult cell according to claim 1 or 2, wherein the non-osteochondral mesenchymal tissue is connective tissue.

4. The isolated multipotent adult cell according to claim 3, wherein said connective tissue is adipose tissue.

5. The isolated multipotent adult cell according to any of claims 1 to 4, wherein the cell is a genetically modified cell.

6. A cell that expresses at least one characteristic of a specialized cell, wherein the cell is derived from an isolated multipotent adult cell according to any of claims 1 to 5.

7. The cell according to claim 6, wherein the at least one characteristic is that of a cell selected from the group consisting of an epithelial cell, an endothelial cell, an adipocyte, a myocyte, a chondrocyte, an osteocyte, a

neuron, an astrocyte, an oligodendrocyte, a hepatocyte, a cardiomyocyte, and a pancreatic cell.

8. An isolated cell population that comprises cells according to any of claims 1 to 7.

9. The isolated cell population according to claim 8, wherein said cell population is nearly homogeneous.

10. A method for identifying a population of multipotent adult cells, wherein said population comprises isolated cells according to claim 1, the method comprising: (a) incubating the cells with labelled specific binding compounds for one or more characteristic markers for said population; and (b) detecting the presence or absence of binding by the cells to these specific binding compounds.

11. The method according to claim 10, wherein the specific binding compound is an antibody.

12. A method for isolating a population of multipotent adult cells according to claim 1, which comprises:

(a) collecting a non-osteochondral mesenchymal tissue;

(b) obtaining a cell suspension from the tissue by enzymatic digestion;

(c) incubating the cell suspension with a labelled compound that binds specifically to one or more of the surface makers of said multipotent adult cells; and

(d) selecting those cells that have the desired profile of expression of markers.

13. The method according to claim 12, wherein a negative selection is performed, whereby cells are excluded that show binding to labelled compounds that bind specifically to a marker selected from the group consisting of CD11b, CD14, CD15, CD16, CD31, CD34, CD45, CD49f, CD102, CD104,

CD106 and CD133.

14. The method according to claim 12 or 13, wherein a positive selection is performed, whereby cells are selected that bind to labelled compounds that bind specifically to a marker selected from the group consisting of CD9, CD10, CD13, CD29, CD44, CD49a, CD51, CD54, CD55, CD58, CD59, CD90, and CD105.

15. The method according to any of claims 12 to 14, wherein the labelled compound of specific binding is an antibody.

16. A substantially homogeneous cell composition which comprises a multipotent adult cell according to any of claims 1 to 5 or a cell population according to claims 8 or 9.

17. A pharmaceutical composition that comprises a multipotent adult cell according to any of claims 1 to 5, or a cell population according to claim 8 or 9, or obtained according to the method of any of claims 12 to 15, and a pharmaceutically acceptable carrier.

18. An isolated multipotent adult cell according to any of claims 1 to 5, or cell population according to claim 8 or 9, or obtained according to the method of any of claims 12 to 15, for use in therapy.

19. An isolated multipotent adult cell according to any of claims 1 to 5, or a cell population according to claim 8 or 9, or obtained according to the method of any of claims 12 to 15, for use in the repair and regeneration of tissues.

20. Use of an isolated multipotent adult cell according to any of claims 1 to 5, or a cell population according to claim 8 or 9, or obtained according to the method of any of claims 12 to 15, for the manufacture of a pharmaceutical composition for the repair and regeneration of tissues.

21. A therapeutic method comprising administering a pharmaceutical composition according to claim 17 to a patient in need thereof.

22. Method according to claim 21, wherein said therapeutic method is for tissue repair or regeneration.

23. A method for assessing *in vitro* cell response to a biological or pharmacological agent, or to a combinatorial library of said agents, the method comprising:

a) isolating a cell population according to claims 8 or 9, or obtained according to the method of any of claims 12 to 15,

b) expanding the cell population via culturing, and

c) applying a biological agent or pharmacological agent or a combinatorial library of said agents to the cell population, and assessing effects of said agents on the cultured cells.

24. Method according to claim 23, wherein prior to step (c) the cells are allowed to differentiate into a specific type of cells.

CLAIMS

1. A substantially homogeneous consecutively passaged isolated cell population comprising multipotent adult cells, which (a) are isolated from adipose tissue, (b) express CD9, CD10, CD13, CD29, CD44, CD49A, CD51, CD54, CD55, CD58, CD59, CD90 and CD105; and (c) lack expression of CD11b, CD14, CD15, CD16, CD31, CD34, CD45, CD49f, CD102, CD104, CD106 and CD133.

2. A multipotent adult cell population according to claim 1, which is isolated by a method that comprises:

(a) collecting adipose tissue;

(b) obtaining a cell suspension by enzymatic digestion;

(c) sedimenting and resuspending the cells in a culture medium; and

(d) culturing the cells on a solid surface, and eliminating cells that show no adhesion to said solid surface

(e) expanding by consecutively passaging the cells.

3. A pharmaceutical composition that comprises a cell population according to claims 1 or 2, and a pharmaceutically acceptable carrier.

4. An isolated cell population according to claims 1 or 2, for use in therapy.