CLAIMS

1. Use of HSP-90beta as a marker for the enrichment of multipotential cells.

2. A method of enriching for multipotential cells that express the Hsp90beta marker, the method comprising preparing a cell sample from a tissue source and enriching for cells that express the HSP-90beta marker.

3. A method according to Claim 2, in which enriching for cells that express the HSP-90beta marker comprises:

contacting a cell sample with a HSP-90beta binding agent, and

separating cells bound to the HSP-90beta binding agent from cells that do not bind the HSP-90beta binding agent.

4. A method according to Claim 2 or 3, in which the cell sample is derived from placenta, adipose tissue, teeth, dental pulp, skin, liver, kidney, heart, retina, brain, hair follicles, intestine, lung, spleen, lymph node, thymus, ovary, pancreas, bone, ligament, bone marrow, tendon or skeletal muscle.

5. A method according to any of Claims 2 to 4, in which the method further includes the step of harvesting a source of multipotential cells before the step of preparing a cell sample.

6. A method according to any of Claims 3 to 5, in which the binding agent is an antibody or antigen-binding fragment or derivative thereof.

7. A method according to Claim 6, in which the antibody is a STRO-4 antibody produced by the hybridoma cell line deposited with ATCC on 10 July 2008 under the provisions of the Budapest Treaty under deposit accession number PTA-9362.

8. A method according to Claim 6 or 7, in which the binding agent is an antigen binding fragment of the STRO-4 antibody.

9. An enriched population of multipotential cells that express the Hsp90beta marker obtained by a method according to any of Claims 2 to 8.

10. An expanded cell population obtained by culturing an enriched population of multipotential cells according to Claim 9.

11. A method of generating a tissue specific committed cell population, the method comprising:

culturing a population of multipotential cells according to Claim 9 in the presence of one or more stimulatory factors, and

subjecting said cultured population to conditions biasing differentiation of the multipotential cells to a specific tissue type.

12. A method according to Claim 11, in which the tissue type is selected from the group consisting of placental tissue, cardiac muscle, vascular tissue, bone tissue, cartilage tissue, fat tissue, neural tissue, smooth muscle and endothelial tissue.

13. A method for generating or repairing tissue in a subject, the method comprising administering to the subject an enriched population according to Claim 9 or an expanded population according to Claim 10.

14. Use of an enriched population according to Claim 9 or an expanded population according to Claim 10 for the manufacture of a medicament for generating or repairing tissue in a subject.

15. A STRO-4 hybridoma cell line deposited with ATCC on 10 July 2008 under the provisions of the Budapest Treaty under deposit accession number PTA-9362.

16. A HSP-90beta binding agent or antigen binding fragment or derivative thereof selected from the group consisting of:

(i) a STRO-4 monoclonal antibody;

(ii) a chimeric antibody comprising heavy and light chain variable regions from STRO-4 and human heavy and light chain constant regions; and

(iii) a humanized antibody comprising at least one complementarity determining region (CDR) from STRO-4 and human framework and constant region sequences.

17. A STRO-4 antibody produced by the hybridoma cell line deposited with ATCC on 10 July 2008 under the provisions of the Budapest Treaty under deposit accession number PTA-9362.

18. An isolated monoclonal or recombinant antibody or antigen binding fragment thereof which specifically binds to the same epitope on mesenchymal precursor cells (MPCs) as the STRO-4 antibody produced by the hybridoma cell line deposited with ATCC on 10 July 2008 under the provisions of the Budapest Treaty under deposit accession number PTA-9362.

5

CLAIMS

1. Use of a binding agent which binds to HSP-90beta for the enrichment of multipotential cells.

2. A method of enriching for multipotential cells that express the Hsp90beta marker, the method comprising preparing a cell sample from a tissue source and enriching for cells that express the HSP-90beta marker using a binding agent which binds to HSP-90beta.

3. A method according to Claim 2, in which enriching for cells that express the HSP-90beta marker comprises:

contacting a cell sample with a HSP-90beta binding agent; and

separating cells bound to the HSP-90beta binding agent from cells that do not bind the HSP-90beta binding agent.

4. A method according to Claim 2 or 3, in which the cell sample is derived from placenta, adipose tissue, teeth, dental pulp, skin, liver, kidney, heart, retina, brain, hair follicles, intestine, lung, spleen, lymph node, thymus, ovary, pancreas, bone, ligament, bone marrow, tendon or skeletal muscle.

5. A method according to any of Claims 2 to 4, in which the method further includes the step of harvesting a source of multipotential cells before the step of preparing a cell sample.

6. A method according to any of Claims 3 to 5, in which the binding agent is an antibody or antigen-binding fragment or derivative thereof.

7. A method according to Claim 6, in which the antibody is a STRO-4 antibody produced by the hybridoma cell line deposited with ATCC on 10 July 2008 under the provisions of the Budapest Treaty under deposit accession number PTA-9362.

8. A method according to Claim 6 or 7, in which the binding agent is an antigen binding fragment of the STRO-4 antibody.

9. A STRO-4 hybridoma cell line deposited with ATCC on 10 July 2008 under the provisions of the Budapest Treaty under deposit accession number PTA-9362.

10. A HSP-90beta binding agent or antigen binding fragment or derivative thereof selected from the group consisting of:

(i) a STRO-4 monoclonal antibody;

(ii) a chimeric antibody comprising heavy and light chain variable regions from STRO-4 and human heavy and light chain constant regions; and

(iii) a humanized antibody comprising at least one complementarity determining region (CDR) from STRO-4 and human framework and constant region sequences.

11. A STRO-4 antibody produced by the hybridoma cell line deposited with ATCC on 10 July 2008 under the provisions of the Budapest Treaty under deposit accession number PTA-9362.

12. An isolated monoclonal or recombinant antibody or antigen binding fragment thereof which specifically binds to the same epitope on mesenchymal precursor cells (MPCs) as the STRO-4 antibody produced by the hybridoma cell line deposited with ATCC on 10 July 2008 under the provisions of the Budapest Treaty under deposit accession number PTA-9362.