Claims

1. A method of culturing adherent cells from a placenta tissue, the method comprising culturing the adherent cells from the placenta tissue under 3 dimensional (3D) culturing conditions which allow cell expansion, said conditions comprising
perfusion, wherein said perfusion is adjusted according to the glucose concentration of the culture medium,

and

wherein said 3D culturing conditions

(i) comprise a 3D bioreactor;

(ii) comprise an adherent material selected from the group consisting of glass, plastic, polyester, polypropylene, polystyrene, dextran and collagen; and

(iii) are effected for at least 3 days; and

wherein culturing of said cells is effected until at least 10% of said cells are proliferating.

2. The method of claim 1, wherein said culture medium is changed at said glucose concentration of about 550 mg/L.

3. The method of claims 1 or 2, wherein said 3D culturing conditions are effected for 4-12 days.

WHAT IS CLAIMED IS:

1. A method of culturing adherent cells from a placenta or adipose tissue, the method comprising culturing the adherent cells from the placenta or adipose tissue under 3 dimensional (3D) culturing conditions which allow cell expansion, said conditions comprising perfusion.

2. The method of claim 1, wherein said perfusion is adjusted according to the glucose concentration of the culture medium.

3. The method of claim 2, wherein said culture medium is changed at said glucose concentration of about 550 mg/L.

4. The method of claim 1, wherein said 3D culturing conditions comprise a 3D bioreactor.

5. The method of claim 1, wherein said 3D culturing conditions comprise an adherent material selected from the group consisting of glass, plastic, polyester, and polypropylene, polystyrene, dextran and collagen.

6. The method of claim 1, wherein said 3D culturing conditions are effected for at least 3 days.

7. The method of claim 1, wherein said culturing of said cells is effected until at least 10 % of said cells are proliferating.

8. A population of cells generated according to any one of claims 1-7 (Claim 1).

9. The population of cells of claim 8, wherein at least 10 % of said adherent cells are at a proliferative phase.

10. The population of cells of claim 8, wherein said adherent cells are capable of suppressing an immune reaction.

11. The population of cells of claim 8, wherein said adherent cells comprise a positive marker expression selected from the group consisting of CD73, CD90, CD29, CD105 and D7-fib.

12. The population of cells of claim 8, wherein said adherent cells comprise a negative marker expression selected from the group consisting of CD11b, CD34, HLA-DR, CD14, CD19, CD45, CD31, CD200 and KDR.

13. The population of cells of claim 8, wherein said adherent cells comprise a gene expression profile essentially as described herein.

14. The population of cells of claim 8, wherein said adherent cells are less committed to an osteogenic lineage as compared to adherent cells from bone marrow grown and allowed to differentiate under the same conditions.

15. The population of cells of claim 8, wherein said adherent cells are less committed to an adipogenic lineage as compared to adherent cells from bone marrow grown and allowed to differentiate under the same conditions.

16. A population of cells comprising a gene expression profile essentially as described herein.

17. Use of the population of cells any one of claims 1-16claim2, for the manufacture of a medicament identified for treating a condition which can benefit from cell or organ transplantation.

18. The use of claim 17, wherein the condition is selected from the group consisting of ischemia, peripheral arterial disease (PAD), critical limb ischemia (CLI), lower extremity ischemia, ischemic vascular disease, vascular disease of the kidney,

ischemic heart disease, myocardial ischemia, coronary artery disease (CAD), atherosclerotic cardiovascular disease, left main coronary artery disease, arterial occlusive disease, peripheral ischemia, peripheral vascular disease, arteriosclerosis, ischemic brain disease, stroke, cerebral ischemia, cerebro vascular disease, retinopathy, retinal repair, remodeling disorder, von Hippel-Lindau syndrome, hereditary hemorrhagic telengiectasiaischemic vascular disease, Buerger's disease, ischemic renal disease, ischemic placenta, reproduction associated disorders, graft-versus-host disease, solid organ transplantation, hematopoietic stem cell transplantation, diabetes, connective tissue damage, cancer, pre-cancer, bone cancer, osteosarcoma, bone metastases, bone fracture, burn wound, articular cartilage defect, wound healing, deep wound, delayed wound-healing, delayed ulcer healing, subchondral-bone cyst, osteoporosis, osteoarthritis, degenerated bone, cartilage damage, articular cartilage defect, injured tendons, autoimmune disease and inflammatory disease.

19. The use of claim 17, wherein the condition is selected from the group consisting of inflammatory bowel disease (IBD) and Crohn's disease.

20. A method of inducing tolerance and/or immunosuppression in a subject in need thereof, the method comprising administering to the subject a therapeutically effective amount of the adherent cells of claims 1-16, thereby inducing tolerance and/or immunosuppression in the subject.