Claims

1. A method of generating mammalian multilineage potential cells, said method comprising establishing an *in vitro* cell culture which proportionally comprises:

   (i) 10%-20% v/v, or functionally equivalent proportion thereof, of a $CD14^+$ mononuclear cell suspension;
   (ii) 10%-20% v/v, or functionally equivalent proportion thereof, of an approximately 5%-85% albumin solution; and
   (iii) 60%-80% v/v, or functionally equivalent proportion thereof, of a cell culture medium

   wherein said cell culture is maintained for a time and under conditions sufficient to induce the transition of said mononuclear cells to a cell exhibiting multilineage differentiative potential.

2. The method according to claim 1 where said 10%-20% v/v is 15% v/v and said 60%-80% v/v is 70% v/v.

3. The method according to claim 1 or 2 wherein said $CD14^+$ mononuclear cell suspension is a $CD14^+$ monocyte cell suspension.

4. The method according to claim 3 wherein said $CD14^+$ monocyte cell suspension is derived from the peripheral blood.

5. The method according to any one of claims 1-4 wherein said multilineage potential cell exhibits haematopoietic and/or mesenchymal potential.

6. The method according to any one of claims 1-5 wherein said multilineage potential cell is $CD14^+$, $CD34^+$, $CD105^+$, $CD44^+$ and $CD45^+$.

7. The method according to claim 6 wherein said multilineage potential cell is additionally ~~$CD14^+$~~, $CD31^+$ and $CD59^+$.

8. The method according to claim 5 wherein said haematopoietic potentiality is the

potentiality to differentiate to a lymphocyte, monocyte, neutrophil, basophil, eosinophil, red blood cell or platelet.

9. The method according to claim 5 wherein said mesenchymal potentiality is the potentiality to differentiate to a cell of the bone, cartilage, smooth muscle, tendon, ligament, stroma, marrow, dermis or fat.

10. The method according to any one of claims 1-9 wherein said albumin solution is at a concentration of 5%-85%, 5%-80%, 5%-75%, 5%-70%, 5%-65%, 5%-60%, 5%-50%, 5%-45%, 5%-40%, 5%-35%, 5%-30%, 5%-25%, 5%-20%, 5%-15%, 5%-10%.

11. The method according to any one of claims 1-9 wherein said albumin concentration is 5%-20%.

12. The method according to any one of claims 1-9 wherein said albumin concentration is 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14%, 15%, 16%, 17%, 18%, 19% or 20%.

13. The method according to any one of claims 1-12 wherein said cell culture additionally includes 10mg/L insulin or functional fragment or equivalent thereof.

14. The method according to any one of claims 1-13 wherein said cells are cultured for 4-7 days.

15. The method according to any one of claims 1-14 wherein said cells are human cells.

16. The method according to any one of claims 1-15 wherein said method comprises the additional step of contacting the cell exhibiting multilineage differentative potential (MLPC) with a stimulus to direct the differentiation of said MLPC to a MLPC-derived phenotype.

17. The method according to claim 16 wherein said MLPC-derived phenotype is a haematopoietic or mesenchymal phenotype.

18. The method according to claim 17 wherein said haematopoietic stem cell-derived cell is a red blood cell, platelet, lymphocyte, monocyte, neutrophil, basophil or

eosinophil.

19. The method according to claim 17 wherein said mesenchymal stem cell-derived cell is a connective tissue cell such as a cell of the bone, cartilage, smooth muscle, tendon, ligament, stroma, marrow, dermis or fat.

~~20. A method of therapeutically and/or prophylactically treating a condition in a mammal, said method comprising administering to said mammal an effective number of MLPCs or partially or fully differentiated MLPC-derived cells which have been generated according to the method of any one of claims 1-19.~~

~~21.~~20. Use of a population of MLPCs or MLPC-derived cells which cells have been generated in accordance with the method of any one of claims 1-19, in the manufacture of a medicament for the treatment of a condition in a mammal;~~,~~ wherein said condition is characterised by aberrant haematopoietic or mesenchymal functioning.

~~22. The method or use according to claim 20 or 21 wherein said condition is characterised by aberrant haematopoietic or mesenchymal functioning.~~

~~23.~~21. The method or use according to claim 20~~2~~ wherein said condition is a haematopoietic disorder, a circulatory disorder, stroke, myocardial infarction, hypertension a bone disorder, type II diabetes damaged or morphologically abnormal cartilage or other tissue, hernia, pelvic floor prolapse surgery, a musculoskeletal disorder or replacement of defective supporting tissue in the context of aging, surgery or trauma.

~~24.~~22. A population of MLPCs or MLPC-derived cells generated in accordance with the method according to any one of claims 1-19.

~~25.~~23. A method of assessing the effect of a treatment or culture regime on the phenotypic or functional state of a MLPC or MLPC-derived cell said method comprising subjecting said MLPC or MLPC-derived cell, which cell has been generated in accordance with the method according to any one of claims 1-19, to said treatment regime and screening for an altered functional or phenotypic state.

Claims

1. A method of generating mammalian multilineage potential cells, said method comprising establishing an *in vitro* cell culture which proportionally comprises:

   (i) 10%-20% v/v, or functionally equivalent proportion thereof, of a $CD14^+$ mononuclear cell suspension;
   (ii) 10%-20% v/v, or functionally equivalent proportion thereof, of an approximately 5%-85% albumin solution; and
   (iii) 60%-80% v/v, or functionally equivalent proportion thereof, of a cell culture medium

   wherein said cell culture is maintained for a time and under conditions sufficient to induce the transition of said mononuclear cells to a cell exhibiting multilineage differentiative potential.

2. The method according to claim 1 where said 10%-20% v/v is 15% v/v and said 60%-80% v/v is 70% v/v.

3. The method according to claim 1 or 2 wherein said $CD14^+$ mononuclear cell suspension is a $CD14^+$ monocyte cell suspension.

4. The method according to claim 3 wherein said $CD14^+$ monocyte cell suspension is derived from the peripheral blood.

5. The method according to any one of claims 1-4 wherein said multilineage potential cell exhibits haematopoietic and/or mesenchymal potential.

6. The method according to any one of claims 1-5 wherein said multilineage potential cell is $CD14^+$, $CD34^+$, $CD105^+$, $CD44^+$ and $CD45^+$.

7. The method according to claim 6 wherein said multilineage potential cell is additionally $CD31^+$ and $CD59^+$.

8. The method according to claim 5 wherein said haematopoietic potentiality is the

potentiality to differentiate to a lymphocyte, monocyte, neutrophil, basophil, eosinophil, red blood cell or platelet.

9. The method according to claim 5 wherein said mesenchymal potentiality is the potentiality to differentiate to a cell of the bone, cartilage, smooth muscle, tendon, ligament, stroma, marrow, dermis or fat.

10. The method according to any one of claims 1-9 wherein said albumin solution is at a concentration of 5%-85%, 5%-80%, 5%-75%, 5%-70%, 5%-65%, 5%-60%, 5%-50%, 5%-45%, 5%-40%, 5%-35%, 5%-30%, 5%-25%, 5%-20%, 5%-15%, 5%-10%.

11. The method according to any one of claims 1-9 wherein said albumin concentration is 5%-20%.

12. The method according to any one of claims 1-9 wherein said albumin concentration is 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14%, 15%, 16%, 17%, 18%, 19% or 20%.

13. The method according to any one of claims 1-12 wherein said cell culture additionally includes 10mg/L insulin or functional fragment or equivalent thereof.

14. The method according to any one of claims 1-13 wherein said cells are cultured for 4-7 days.

15. The method according to any one of claims 1-14 wherein said cells are human cells.

16. The method according to any one of claims 1-15 wherein said method comprises the additional step of contacting the cell exhibiting multilineage differentative potential (MLPC) with a stimulus to direct the differentiation of said MLPC to a MLPC-derived phenotype.

17. The method according to claim 16 wherein said MLPC-derived phenotype is a haematopoietic or mesenchymal phenotype.

18. The method according to claim 17 wherein said haematopoietic stem cell-derived cell is a red blood cell, platelet, lymphocyte, monocyte, neutrophil, basophil or

eosinophil.

19. The method according to claim 17 wherein said mesenchymal stem cell-derived cell is a connective tissue cell such as a cell of the bone, cartilage, smooth muscle, tendon, ligament, stroma, marrow, dermis or fat.

20. Use of a population of MLPCs or MLPC-derived cells which cells have been generated in accordance with the method of any one of claims 1-19, in the manufacture of a medicament for the treatment of a condition in a mammal; wherein said condition is characterised by aberrant haematopoietic or mesenchymal functioning.

21. The method or use according to claim 20 wherein said condition is a haematopoietic disorder, a circulatory disorder, stroke, myocardial infarction, hypertension a bone disorder, type II diabetes damaged or morphologically abnormal cartilage or other tissue, hernia, pelvic floor prolapse surgery, a musculoskeletal disorder or replacement of defective supporting tissue in the context of aging, surgery or trauma.

22. A population of MLPCs or MLPC-derived cells generated in accordance with the method according to any one of claims 1-19.

23. A method of assessing the effect of a treatment or culture regime on the phenotypic or functional state of a MLPC or MLPC-derived cell said method comprising subjecting said MLPC or MLPC-derived cell, which cell has been generated in accordance with the method according to any one of claims 1-19, to said treatment regime and screening for an altered functional or phenotypic state.