~~Amended c~~Claims

1. A method for isolating an endothelial cell or endothelial progenitor cell and a hematogenic progenitor cell, comprising:

(a) plating an umbilical cord blood sample on a surface;

(b) allowing adhesion of cells in said cord blood sample to said surface for about 5 minutes, about 10 minutes, about 15 minutes, about 20 minutes, about 25 minutes, about 30 minutes, about 35 minutes, about 40 minutes, about 45 minutes, about 50 minutes, about 55 minutes, or about 60 minutes, wherein said adherent cells comprise said endothelial cell or endothelial progenitor cell, and

(c) separating non-adherent cells from said adherent cells, wherein said non-adherent cells comprise said hematogenic progenitor cell, thereby isolating said endothelial cells or endothelial progenitor cells,

wherein the surface comprises ligands for binding or attachment of said endothelial cells or endothelial progenitor cells,

and wherein the umbilical cord blood sample is plated at a temperature greater than 0°C.

2. The method of claim 1, further comprising processing the non-adherent cells separated in step (c).

3. The method of claim 1 or 2, wherein step (c) does not cause significant detachment of said adherent cells from the surface.

4. The method of claim 1 or 2, wherein at least about 10%, about 20%, about 30%, about 40%, about 50%, about 60%, about 70%, about 80%, or about 90% of said adherent cells remain attached to the surface following step (c).

5. The method of any one of claims 1-4, wherein said umbilical cord blood sample is from a human.

6. The method of any one of claims 1-5, wherein said umbilical cord blood sample is freshly harvested.

7. The method of any one of claims 1-5, wherein said umbilical cord blood sample is frozen.

8. The method of any one of claims 1-7, wherein said umbilical cord blood sample is processed for mononuclear cell enrichment.

9. The method of any one of claims 1-7, wherein said umbilical cord blood sample is not processed for mononuclear cell enrichment.

10. The method of any one of claims 1-9, wherein said umbilical cord blood sample is processed for hematopoietic progenitor and/or hematopoietic stem cell enrichment.

11. The method of any one of claims 1-9, wherein said umbilical cord blood sample is not processed for hematopoietic progenitor and/or hematopoietic stem cell enrichment.

12. The method of any one of claims 1-11, wherein the said umbilical cord blood sample is plated at a temperature between about 0°C and about 37°C.

13. The method of any one of claims 1-12, wherein the surface is coated with collagen I, or gelatin, or a similar extracellular matrix component, or any combination thereof.

14. The method of any one of claims 1-13, further comprising maintaining hematopoietic cell viability, primitivity and/or repopulating ability.

15. The method of any one of claims 1-14, further comprising maintaining endothelial cell viability and/or primitivity.

16. The method of any one of claims 1-15, further comprising reprogramming the isolated endothelial cell to a stem cell or progenitor cell.

17. The method of any one of claims 2-16, further comprising expanding the hematogenic progenitor cell, and optionally: (1) isolating a more primitive cell from said expanded hematogenic progenitor cell population, or (2) reprogramming said hematogenic progenitor cell to a stem cell or progenitor cell.

18. The method of any one of claims 1-17, further comprising:

(a) reprogramming the isolated endothelial cell to a stem cell or progenitor cell, and differentiating said stem cell or progenitor cell to a somatic cell; or

(b) reprogramming the isolated endothelial cell to a somatic cell directly.

19. The method of any one of claims 1-15, wherein a dual vessel device is used for isolating cells from the umbilical cord blood sample, the dual vessel device comprising two vessels and a sterile tubing with stopcock flow regulation for the transfer of cells in suspension between the vessels, and

wherein one of the vessels is pre-coated for endothelial cell attachment, and the other vessel is a hematopoietic cell collection vessel.

20. The method of claim 19, wherein the dual vessel device further comprises a media chamber attached in a closed system with stopcock flow regulation to facilitate wash steps and cell transfer to the vessels.

21. The method of claim 19 or 20, wherein the dual vessel device further comprises one or more auxiliary chambers to facilitate the administration of a cryoprotectant to the vessels.

22. The method of any one of claims 19-21, wherein the dual vessel device is prefilled with a hypoxic, normoxic, or hyperoxic gas.