

Claims**What is claimed is:**

1. A method of assessing the wound healing potency of a mesenchymal stem cell population, wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction, wherein the method comprises determining in a medium the level of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) secreted into the medium by the mesenchymal stem cell population.
2. A method of identifying a tissue suitable as starting material for producing a mesenchymal stem cell population for pharmaceutical use, wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction, wherein the method comprises determining in a medium the level of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) secreted into the medium by a sample of the tissue or a cell isolated from the tissue.
3. A method of selecting a mesenchymal stem cell population for producing a stem cell population under cGMP conditions, wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction, wherein the method comprises determining in a medium the level of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) secreted into the medium by the mesenchymal stem cell population.

4. A method of selecting a mesenchymal stem cell population for producing a stem cell population for subsequent pharmaceutical administration, wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction, wherein the method comprises determining in a medium the level of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) secreted into the medium by the mesenchymal stem cell population.
5. A method of selecting a mesenchymal stem cell population for generating a master cell bank, wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction, wherein the method comprises determining in a medium the level of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) secreted into the medium by the mesenchymal stem cell population.
6. The method of any one of the claims 1 to 5, wherein the method comprises determining in the medium the level of at least three or all four proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) secreted into the medium by the mesenchymal stem cell population.
7. The method of any one of the claims 1 to 6, wherein a secretion level equaling or exceeding a threshold value indicates
 - (i) potency for wound healing of the mesenchymal stem cell population; or
 - (ii) a tissue or an isolated cell suitable as starting material for producing a mesenchymal stem cell population.
8. The method of claim 7, wherein for Angiopoietin 1 (Ang-1) the threshold value is about 400 pg/ml or about 500 pg/ml.

9. The method of claims 7 or 8, wherein for Transforming Growth Factor beta (TGF- β) the threshold value is about 400 pg/ml or about 500 pg/ml.
10. The method of any one of the claims 7 to 9, wherein for Vascular Endothelial Growth Factor (VEGF) the threshold value is about 80 mg/ml or about 100 pg/ml.
11. The method of any one of the claims 7 to 10, wherein for Hepatocyte Growth Factor (HGF) the threshold value is about 80 pg/ml or about 100 pg/ml.
12. The method of any of claims 8 to 11, wherein the secretion level of all four proteins equal or exceed their respective threshold value, and wherein the threshold value is
 - a threshold value of about 400 pg/ml for Angiopoietin 1 (Ang-1),
 - a threshold value of about 400 pg/ml for Transforming Growth Factor beta (TGF- β),
 - a threshold value of about 80 pg/ml for Vascular Endothelial Growth Factor (VEGF), and
 - a threshold value of about 80 pg/ml for Hepatocyte Growth Factor (HGF).
13. The method of any of claims 8 to 11, wherein the secretion level of all four proteins equal or exceed their respective threshold value, and wherein the threshold value is
 - a threshold value of about 500 pg/ml for Angiopoietin 1 (Ang-1),
 - a threshold value of about 500 pg/ml for Transforming Growth Factor beta (TGF- β),
 - a threshold value of about 100 pg/ml for Vascular Endothelial Growth Factor (VEGF), and
 - a threshold value of about 100 pg/ml for Hepatocyte Growth Factor (HGF).
14. The method of any of the foregoing claims, wherein the mesenchymal stem cell population of the umbilical cord is selected from the group consisting of a mesenchymal stem cell population of the amnion (AM), a perivascular (PV) mesenchymal stem cell population, a mesenchymal stem cell population of Wharton's jelly (WJ), a mesenchymal stem cell population of the amniotic membrane of umbilical cord and a mixed mesenchymal stem cell population of the umbilical cord (MC).

15. The method of claim 2, wherein the tissue is an umbilical cord or the amniotic membrane of the umbilical cord and the mesenchymal stem cell population is a stem cell population of the amniotic membrane of umbilical cord.
16. The method of claims 14 or 15, wherein the mesenchymal stem cell population of the amniotic membrane of the umbilical cord is a mesenchymal stem cell population, wherein at least about 90 % or more cells of the stem cell population express each of the following markers: CD73, CD90 and CD105.
17. The method of claim 16, wherein at least about 90 % or more cells of the mesenchymal stem cell population lack expression of the following markers: CD34, CD45 and HLA-DR.
18. The method of claim 16 or 17, wherein at least about 91 % or more, about 92 % or more, about 93 % or more, about 94 % or more, about 95 % or more, about 96 % or more, about 97 % or more, about 98 % or more about 99 % or more cells of the mesenchymal stem cell population express each of CD73, CD90 and CD105 and lack expression of each of CD34, CD45 and HLA-DR.
19. The method of any of the foregoing claims, wherein the medium is a cell culture medium or a storage medium.
20. The method of claim 19, wherein the storage medium is Hypothermosol or Plasmalyte.
21. The method of any one of the claims 1 to 18, wherein the medium comprises Dulbecco's Modified Eagle's Medium (DMEM) in a final concentration of about 55 to 65 % (v/v), Ham's F12 Medium (F12) in a final concentration of about 5 to 15 % (v/v), a serum free basal medium in a final concentration of about 15 to 30 % (v/v) and Fetal Bovine Serum (FBS) in a final concentration of about 1 to 8 % (v/v).
22. The method of claim 21, wherein the medium comprises Dulbecco's Modified Eagle's Medium (DMEM) in a final concentration of about 57.5 to 62.5 % (v/v), Ham's F12 Medium (F12) in a final concentration of about 7.5 to 12.5 % (v/v), a serum free basal

medium in a final concentration of about 17.5 to 25.0 % (v/v) and Fetal Bovine Serum (FBS) in a final concentration of about 1.75 to 3.5 % (v/v).

23. The method of claim 22, wherein the medium comprises Dulbecco's Modified Eagle's Medium (DMEM) in a final concentration of about 61.8 % (v/v), Ham's F12 Medium (F12) in a final concentration of about 11.8 % (v/v), a serum free basal medium in a final concentration of about 23.6 % (v/v) and Fetal Bovine Serum (FBS) in a final concentration of about 2.5 % (v/v).
24. The method of claim 22 or 23, wherein the serum free basal medium is M171.
25. The method of any of claims 21 to 24, wherein the medium further comprises Epidermal Growth Factor (EGF) in a final concentration of about 1 ng/ml to about 20 ng/ml.
26. The method of claim 25, wherein the medium comprises Epidermal Growth Factor (EGF) in a final concentration of about 10ng/ml.
27. The method of any of claims 21 to 26, wherein the medium comprises Insulin in a final concentration of about 1 µg/ml to 10 µg/ml.
28. The method of claim 27, wherein the medium comprises Insulin in a final concentration of about 5 µg/ml.
29. The method of any of claims 21 to 28, wherein the medium further comprises at least one of the following supplements: adenine, hydrocortisone, and 3,3',5-Triiodo-L-thyronine sodium salt (T3).
30. The method of any of claims 1 to 29, wherein cultivating the mesenchymal stem cell population in the medium as defined in any of the foregoing claims 21 to 29 results in an increase of the expression and/or secretion of at least one of the proteins selected from a group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF-β; in particular TGF-β1), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) by the mesenchymal stem cell population relative to

a reference medium that does not comprise all of DMEM (Dulbecco's modified eagle medium), F12 (Ham's F12 Medium), M171 (Medium 171) and FBS (Fetal Bovine Serum).

31. The method of any one of the claims 1 to 30, wherein the cell medium is subjected to centrifugation after a suitable period of cultivation.
32. The method of claim 31, wherein the suitable period of cultivation comprises about 12h, about 24h, about 36h, about 46h, about 48h or about 50h, preferably about 48h.
33. The method of claim 31 or 32, wherein the supernatant of the centrifuged cell culture medium is subjected to a multiplex assay.
34. The method of claim 33, wherein the multiplex assay is bead-based.
35. Use of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) for assessing the wound healing potency of a mesenchymal stem cell population, wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction.
36. Use of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) for selecting a mesenchymal stem cell population for producing a stem cell population under cGMP conditions, wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction.
37. Use of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth

Factor (VEGF) and Hepatocyte Growth Factor (HGF) for selecting a mesenchymal stem cell population for producing a stem cell population for subsequent pharmaceutical administration, wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction.

38. Use of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) for selecting a mesenchymal stem cell population for generating a master cell bank, wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction.
39. Use of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) for identifying a tissue suitable as starting material for producing a mesenchymal stem cell population for pharmaceutical use, wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction.
40. The use of claim 39, wherein the tissue is an umbilical cord or the amniotic membrane of the umbilical cord and the mesenchymal stem cell population is a stem cell population of the amniotic membrane of umbilical cord.
41. The use of any of claims 35 to 38, wherein the use comprises determining in the cell culture medium the level of at least three or all four proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) secreted into the cell culture medium by the mesenchymal stem cell population.

42. The use of claim 39 or 40, wherein the use comprises determining in the cell culture medium the level of at least three or all four proteins selected from the group consisting of Angiopoietin 1 (Ang 1), Transforming Growth Factor beta (TGF β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) secreted into the cell culture by a sample of the tissue or a cell isolated from the tissue.
43. A method of identifying a medium suitable for inducing or improving wound healing properties of a mesenchymal stem cell population, wherein the method comprises determining the level of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) secreted into the medium by the mesenchymal stem cell population.
44. Use of at least two proteins selected from the group consisting of Angiopoietin 1 (Ang-1), Transforming Growth Factor beta (TGF- β), Vascular Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF) for identifying a medium suitable for inducing or improving wound healing properties of a mesenchymal stem cell population.
45. The use of claim 44, wherein the use comprises determining in the medium the level of at least three or all four proteins secreted into the medium by the mesenchymal stem cell population.