What is claimed is:

1. A method of inducing or improving wound healing properties of a mesenchymal stem cell population, the method comprising cultivating the mesenchymal stem cell population in a culture medium comprising DMEM (Dulbecco's modified eagle medium), F12 (Ham's F12 Medium), M171 (Medium 171) and FBS (Fetal Bovine Serum).

2. The method of claim 1, 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, a mesenchymal stem cell population of the cord blood, a mesenchymal stem cell population of the bone marrow, and an adipose-tissue derived mesenchymal stem cell population.

3. The method of claim 2, 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).

4. The method of any of claims 1 to 3, wherein the culture medium comprises DMEM in a final concentration of about 55 to 65 % (v/v), F12 in a final concentration of about 5 to 15 % (v/v), M171 in a final concentration of about 15 to 30 % (v/v) and FBS in a final concentration of about 1 to 8 % (v/v).

5. The method of claim 4, wherein the culture medium comprises DMEM in a final concentration of about 57.5 to 62.5 % (v/v), F12 in a final concentration of about 7.5 to 12.5 % (v/v), M171 in a final concentration of about 17.5 to 25.0 % (v/v) and FBS in a final concentration of about 1.75 to 3.5 % (v/v).

6. The method of claim 5, wherein the culture medium comprises DMEM in a final concentration of about 61.8 % (v/v), F12 in a final concentration of about 11.8 % (v/v) , M171

in a final concentration of about 23.6 % (v/v) and FBS in a final concentration of about 2.5 % (v/v).

~~7. The method of any of claims 1 to 6, wherein the culture medium further comprises Epidermal Growth Factor (EGF) in a final concentration of about 1 ng/ml to about 20 ng/ml.~~

~~8. The method of claim 7, wherein the culture medium comprises EGF in a final concentration of about 10ng/ml.~~

~~9. The method of any of claims 1 to 8, wherein the culture medium comprises Insulin in a final concentration of about 1 µg/ml to 10 µg/ml.~~

~~10. The method of claim 9, wherein the culture medium comprises Insulin in a final concentration of about 5µg/ml.~~

~~11. The method of any of claims 1 to 10, wherein the culture medium further comprises at least one of the following supplements: adenine, hydrocortisone, and 3,3′,5-Triiodo-L-thyronine sodium salt (T3).~~

~~12. The method of any of claims 1 to 11, wherein the culture medium comprises all three of adenine, hydrocortisone, and 3,3′,5-Triiodo-L-thyronine sodium salt (T3).~~

7~~13~~. The method of any of claims 1 to 6~~12 or 13~~, wherein the culture medium comprises adenine in a final concentration of about 0.01 to about 0.1 µg/ml adenine, hydrocortisone in a final concentration of about 0.1 to about 10 µg/ml hydrocortisone and/or 3, 3′, 5-Triiodo-L-thyronine sodium salt (T3) in a final concentration of about 0.5 to about 5 ng/ml.

8~~14~~. The method of any of claims 1 to 7~~13~~, wherein cultivating the mesenchymal stem cell population in the culture medium as defined in any of the foregoing claims 1 to 1~~3~~ results in an increase of the expression and/or secretion of at least one of Angiopoietin 1 (Ang-1), TGF-β (in particular TGF-β1), VEGF, and HGF by the mesenchymal stem cell population relative to a reference culture 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).

9~~15~~. The method of claim 8~~14~~, wherein the reference medium consists of 90% (v/v) CMRL1066, and 10% (v/v) FBS.

10~~16~~. The method of any of the foregoing claims, wherein the mesenchymal stem cell population has been isolated from its natural environment prior to cultivation in the culture medium as defined in any of the foregoing claims 1 to 7~~13~~.

11~~7~~. The method of any of claims 1 to 9~~15~~, comprising isolating the mesenchymal stem cell population from a natural tissue environment by cultivating the natural tissue in the cell culture medium as defined in any of the foregoing claims 1 to 7~~13~~.

12~~8~~. The method of claim 11~~7~~, wherein the tissue is an umbilical cord tissue.

13~~9~~. The method of claim 12~~8~~, wherein the umbilical cord tissue is selected from the group consisting of tissue of the entire umbilical cord, tissue comprising the amniotic membrane of umbilical cord, tissue comprising Wharton's jelly, tissue comprising the amniotic membrane, the amnion and Wharton's jelly, the isolated umbilical cord blood vessels, Wharton's jelly separated from the other components of umbilical cord tissue, and isolated amniotic membrane of the umbilical cord.

14~~20~~. The method of claim 11~~7~~, wherein the tissue comprises or is amniotic membrane tissue of placenta.

15~~21~~. The method of any of the foregoing claims 11~~7~~ to 14~~20~~, wherein the umbilical cord tissue is a piece of the entire umbilical cord, a piece of the amniotic membrane of the umbilical cord or a piece of the amniotic membrane of placenta.

~~22. The method of any of claims 19 to 21, comprising culturing the umbilical cord tissue or the amniotic membrane tissue of the placenta till the cell outgrowth of the mesenchymal stem cell population of the amniotic membrane reaches about 70-80% confluency.~~

~~23. The method of claim 22, comprising removing the mesenchymal stem cell population from a cultivation container used for the cultivation.~~

~~24. The method of claim 23, wherein removing the mesenchymal stem cell population from the cultivation container is carried out by enzymatic treatment.~~

~~25. The method of claim 24, wherein the enzymatic treatment comprises trypsination.~~

~~26. The method of any of claims 23 to 25, wherein the mesenchymal stem cell population is transferred for subculturing to a cultivation container for subculturing.~~

16~~27~~. The method of any of claims 1 to 1~~0~~6, wherein the mesenchymal stem cell population is transferred for culturing to a cultivation container for subculturing.

~~28. The method of claim 26 or 27, wherein the mesenchymal cell population is suspended for culturing or subculturing at a concentration 1.0 x 10^6 cells/ml.~~

~~29. The method of claim 28, wherein the mesenchymal stem cell population is subcultured in a culture medium as defined in any of the claims 1 to 13.~~

~~30. The method of claim 29, wherein the mesenchymal stem cell population is subcultured till the mesenchymal stem cells reach about 70-80% confluency.~~

~~31. The method of any of claims 26 to 30, wherein the culturing or subculturing is carried out in a self-contained bioreactor.~~

~~32. The method of claim 31, wherein the bioreactor is selected from the group consisting of a parallel-plate bioreactor, a hollow-fiber bioreactor and and a micro-fluidic bioreactor.~~

~~33. The method of any of the foregoing claims wherein cultivation is carried out in a CO_2 cell culture incubator at a temperature of 37°C.~~

~~34. The method of claim 33, comprising removing the mesenchymal stem cell population from the cultivation container used for the (sub)cultivation.~~

~~35. The method of claim 34, wherein removing the mesenchymal stem cell population from the cultivation container is carried out by enzymatic treatment.~~

~~36. The method of claim 35, wherein the enzymatic treatment comprises trypsination.~~

~~37. The method of claim 36, further comprising collecting the isolated mesenchymal stem cell population.~~

1738. The method of any of the foregoing claims, wherein at least about 90 % or more, 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 of the isolated mesenchymal stem cells express the following markers: CD73, CD90 and CD105.

1839. The method of any of the foregoing claims, wherein at least about 90 % or more, 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 of the isolated mesenchymal stem cells lack expression of the following markers: CD34, CD45 and HLA-DR (Human Leukocyte Antigen – antigen D Related).

1940. The method of any of claims 1738 or 1839, wherein about 97 % or more, about 98 % or more about 99 % or more of the isolated mesenchymal stem cells express CD73, CD90 and CD105 and lack expression of CD34, CD45 and HLA-DR.

2041. The method of any of the foregoing claims, further comprising preserving the isolated stem/progenitor cell population for further use.

2142. The method of claim 2041, wherein preserving is carried out by cryo-preservation.

2243. An isolated mesenchymal stem population, wherein at least 97 % or more cells of the stem cell population express each of the following markers: CD73, CD90 and CD105 and lack expression of each of CD34, CD45 and HLA-DR and;
wherein the mesenchymal stem cell population is selected from the group consisting of a mesenchymal stem cell population of the umbilical cord, wherein the mesenchymal stem cell population of the umbilical cord is selected from the group consisting of a perivascular (PV)

mesenchymal stem cell population, a mesenchymal stem cell population of Wharton's jelly (WJ), and a mixed mesenchymal stem cell population of the umbilical cord (MC), a placental mesenchymal stem cell population, a mesenchymal stem cell population of the cord-placenta junction, and an adipose-tissue derived mesenchymal stem cell population.

2344. The mesenchymal stem cell population of claim 2243, wherein the population is obtainable by the method as defined in any of claims 1 to 2142.

2445. The mesenchymal stem cell population of claim 2243, wherein the population is obtained by the method as defined in any of claims 1 to 2142.

2546. A pharmaceutical composition comprising an isolated mesenchymal stem cell population as defined in any of claims 2243 to 2445.

2647. The pharmaceutical composition of claim 2546, wherein the pharmaceutical composition is adapted for systemic or topical application.

2748. The pharmaceutical composition of claim 2546 or 2647, further comprising a pharmaceutically acceptable excipient.

2849. The use of a cell culture medium comprising:
- DMEM in a concentration of about 55 to 65 % (v/v),
- F12 in a concentration of about 5 to 15 % (v/v),
- M171 in a concentration of about 15 to 30 % (v/v) and
- FBS in a concentration of about 1 to 8 % (v/v)

Ffor inducing or improving wound healing properties of a mesenchymal stem cell population.

2950. The use of claim 2849, wherein the culture medium comprises DMEM in a concentration of about 57.5 to 62.5 % (v/v), F12 in a concentration of about 7.5 to 12.5 % (v/v), M171 in a concentration of about 17.5 to 25.0 % (v/v) and FBS in a concentration of about 1.75 to 3.5 % (v/v).

3051. The use of claim 2950, wherein the culture medium comprises DMEM in concentration of about 61.8 % (v/v), F12 in a concentration of about 11.8 % (v/v) , M171 in a concentration of about 23.6 % (v/v) and FBS in a concentration of about 2.5 % (v/v).

3152. The use of a cell culture medium as defined in any of claims 2849 to 3051 for isolation of a mesenchymal stem cell population, 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).

~~53. The use of any of claims 49 to 52, 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 blood, a mesenchymal stem cell population of the bone marrow, and an adipose tissue derived mesenchymal stem cell population.~~

~~54. The use of claim 53, 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).~~