**What is claimed is:**

1. Use of $CD271^+$ mesenchymal stem cell (MSC) precursor cells in the manufacture of a medicament for preventing or treating cardiovascular diseases or disorders, wherein said $CD271^+$ mesenchymal stem cell (MSC) precursor cells are isolated from bone marrow of a subject and cultured under non-adherent conditions; and said isolated and cultured cells are to be administered to a patient, wherein the $CD271^+$ MSC precursor cells are capable of engrafting in a heart in vivo in infarct and border zones.

2. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are isolated from bone marrow cells having a low affinity nerve growth receptor (NGFR; CD271).

3. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are isolated from donors comprising: autologous, syngeneic, allogeneic, or xenogeneic.

4. The use of claim 1, wherein the $CD271^+$ MSC precursor cells differentiate into at least one lineage comprising: myocardial, vascular, or endothelial lineages.

5. The use of claim 1, wherein the $CD271^+$ MSC precursor cells differentiate into lineages comprising: myocardial, vascular, or endothelial lineages.

6. The use of claim 4 or 5, wherein the myocardial cells are identified by markers comprising: GATA-4, Nkx2.5 or α-sarcomeric actin.

7. The use of claim 4 or 5, wherein the vascular cells are identified by markers comprising: α- smooth muscle actin or SMA22.

8. The use of claim 4 or 5, wherein the endothelial cells are identified by markers comprising: CD31 or vimentin.

9. The use of claims 1-8, wherein one or more agents are administered to the patient, the agents comprising at least one of: cytokines, chemotactic factors, growth factors, or differentiation factors.

10. The use of claims 1-9, wherein the cardiovascular diseases or disorders comprise: heart failure, atherosclerosis, ischemia, myocardial infarction, transplantation, hypertension, restenosis, angina pectoris, rheumatic heart disease, or congenital cardiovascular defect.

11. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are administered to a patient in varying concentrations over a period of time.

12. The use of claims 1-11, wherein the $CD271^+$ MSC precursor cells are conditioned with media conditioned by heart derived stromal cells.

**What is claimed is:**

1. Use of isolated CD271+ mesenchymal stem cell (MSC) precursor cells in the manufacture of a medicament for preventing or treating cardiovascular diseases or disorders, wherein the $CD271^+$ mesenchymal stem cell (MSC) precursor cells isolated from the bone marrow of a subject are to be administered to a patient.

2. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are isolated from bone marrow cells having a low affinity nerve growth receptor (NGFR; CD271).

3. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are isolated from donors comprising: autologous, syngeneic, allogeneic, or xenogeneic.

4. The use of claim 1, wherein the $CD271^+$ MSC precursor cells differentiate into at least one lineage comprising: myocardial, vascular, or endothelial lineages.

5. The use of claim 1, wherein the $CD271^+$ MSC precursor cells differentiate into lineages comprising: myocardial, vascular, or endothelial lineages.

6. The use of claim 4, wherein the cardiomyocytes are identified by markers comprising: GATA-4, Nkx2.5 or a-sarcomeric actin.

7. The use of claim 4, wherein the vascular cells are identified by markers comprising: a- smooth muscle actin or SMA22.

8. The use of claim 4, wherein the endothelial cells are identified by markers comprising: CD31 or vimentin.

9. The use of claim 1, wherein one or more agents are to be optionally administered to the patient, the agents comprising at least one of: cytokines, chemotactic factors, growth factors, or differentiation factors.

10. The use of claim 1, wherein the cardiovascular diseases or disorders comprise: heart failure, atherosclerosis, ischemia, myocardial infarction, transplantation, hypertension, restenosis, angina pectoris, rheumatic heart disease, or congenital cardiovascular defect.

11. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are to be optionally administered to a patient in varying concentrations over a period of time.

12. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are engrafted in a heart *in vivo* in infarct and border zones.

13. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are optionally conditioned with media conditioned by heart derived stromal cells.

14. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are optionally cultured *ex vivo* and non-adherent precursor mesenchymal stem cells (NA-MSCs) are to be isolated, expanded and to be administered to a patient.

15. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are freshly isolated.

16. The use of claim 1, wherein the $CD271^+$ MSC precursor cells are cultured under non-adherent conditions.