CLAIMS

What is Claimed is:

1. A method of treating a patient having a peripheral vascular disease, comprising administering a pharmaceutical composition comprising a fibrin glue and an isolated homogenous population of cells obtained from human umbilical cord tissue in an amount effective to treat the disease, wherein the umbilical cord tissue is substantially free of blood, and wherein said isolated homogenous population of the cells is capable of self-renewal and expansion in culture, has the potential to differentiate and does not express CD117 and/or telomerase.

2. The method of claim 1, wherein the isolated population of cells has one or more of the following characteristics:

(a) expresses oxidized low density lipoprotein receptor 1, reticulon, chemokine receptor ligand 3, and/or granulocyte chemotactic protein;

(b) does not express CD31, CD34 or CD45;

(c) expresses, relative to a human fibroblast, mesenchymal stem cell, or iliac crest bone marrow cell, increased levels of interleukin 8 or reticulon 1;

(d) has the potential to differentiate into cells of at least a skeletal muscle, vascular smooth muscle, pericyte or vascular endothelium phenotype; and

(e) expresses CD10, CD13, CD44, CD73, and CD90.

3. The method of claim 1, wherein the peripheral vascular disease is peripheral ischemia.

4. The method of claim 3, wherein the pharmaceutical composition is administered at the sites of peripheral ischemia.

5. The method of claim 4, wherein the pharmaceutical composition is administered by intramuscular injection or injection into adipose depots in muscle.

6. The method of claim of claim 1, wherein the pharmaceutical composition is administered locally.

7. The method of claim 1, wherein the pharmaceutical composition is administered by injection, infusion, a device implanted in a patient, or by implantation of a matrix or scaffold containing the pharmaceutical composition.

8. The method of claim 1, wherein the isolated population of cells is induced *in vitro* to differentiate into a skeletal muscle, vascular muscle, pericty or vascular endothelium lineage prior to administration.

9. The method of claim 1, wherein the population of cells is genetically engineered to produce a gene product that promotes treatment of peripheral vascular disease.

10. The method of claim 1, wherein the composition further comprises an agent selected from the group consisting of an antithrombogenic agent, an immunosuppressive agent, an immunomodulatory agent, a pro-angiogenic, an antiapoptotic agent and mixtures thereof.

11. The method of claim 1, wherein the composition further comprises at least one other cell type.

12. The method of claim 11, wherein the other cell type is a skeletal muscle cell, a skeletal muscle progenitor cell, a vascular smooth muscle cell, a vascular smooth muscle progenitor cell, a pericyte, a vascular endothelial cell, a vascular endothelium progenitor cell or other multipotent or pluripotent stem cell.

13. The method of claim 1, wherein the pharmaceutical composition exerts a trophic effect.

14. The method of claim 13, wherein the trophic effect is proliferation of vascular endothelial cells.

15. The method of claim 1, wherein the pharmaceutical composition induces migration of vascular endothelial cells and/or vascular endothelium progenitor cells to the sites of the peripheral disease.

16. The method of claim 1, wherein the pharmaceutical composition induces migration of vascular smooth muscle cells and/or vascular smooth muscle progenitor cells to the sites of the peripheral disease.

17. The method of claim 1, wherein the pharmaceutical composition induces migration of pericytes to the sites of the peripheral vascular disease.

18. The method of claim 1, wherein the fibrin glue comprises fibrinogen and thrombin.

19. The method of claim 18, wherein the fibrin glue comprises from about 16 to about 24 IU/ml of thrombin and from about 39.3 to about 60.7 mg/ml of fibrinogen.

20. A method of treating a patient having a peripheral vascular disease, comprising administering a fibrin glue and an isolated homogenous population of cells obtained from human umbilical cord tissue in an amount effective to treat the disease, wherein the umbilical cord tissue is substantially free of blood, and wherein said isolated homogenous population of the cells is capable of self-renewal and expansion in culture, has the potential to differentiate and do not express CD117 and/or telomerase.

21. The method of claim 20, wherein the isolated population of cells has one or more of the following characteristics:

(a) expresses oxidized low density lipoprotein receptor 1, reticulon, chemokine receptor ligand 3, and/or granulocyte chemotactic protein;

(b) does not express CD31, CD34 or CD45;

(c) expresses, relative to a human fibroblast, mesenchymal stem cell, or iliac crest bone marrow cell, increased levels of interleukin 8 or reticulon 1;

(d) has the potential to differentiate into cells of at least a skeletal muscle, vascular smooth muscle, pericyte or vascular endothelium phenotype; and

(e) expresses CD10, CD13, CD44, CD73, and CD90.

22. The method of claim 20, wherein the peripheral vascular disease is peripheral ischemia.

23. The method of claim 20, wherein the cells and fibrin glue are administered at the sites of peripheral ischemia.

24. The method of claim 20, wherein the fibrin glue and the population of cells are administered locally.

25. The method of claim 20, wherein the population of cells and fibrin glue are administered by injection, infusion, a device implanted in a patient, or by implantation of a matrix or scaffold containing the population of cells.

26. The method of claim 20, wherein the isolated population of cells is induced *in vitro* to differentiate into a skeletal muscle, vascular muscle, pericyte or vascular endothelium lineage prior to administration.

27. The method of claim 20, wherein the population of cells is genetically engineered to produce a gene product that promotes treatment of peripheral vascular disease.

28. The method of claim 20, further comprising administration of an agent selected from the group consisting of an antithrombogenic agent, an immunosuppressive agent, an immunomodulatory agent, a pro-angiogenic, an antiapoptotic agent and mixtures thereof.

29. The method of claim 20 further comprising administration of at least one other cell type.

30. The method of claim 29, wherein the other cell type is a skeletal muscle cell, a skeletal muscle progenitor cell, a vascular smooth muscle cell, a vascular smooth muscle progenitor cell, a pericyte, a vascular endothelial cell, a vascular endothelium progenitor cell or other multipotent or pluripotent stem cell.

31. The method of claim 20, wherein the population of cells exerts a trophic effect.

32. The method of claim 30, wherein the trophic effect is proliferation of vascular endothelial cells.

33. The method of claim 20, wherein the population of cells induces migration of vascular endothelial cells and/or vascular endothelium progenitor cells to the sites of the peripheral disease.

34. The method of claim 20, wherein the population of cells induces migration of vascular smooth muscle cells and/or vascular smooth muscle progenitor cells to the sites of the peripheral disease.

35. The method of claim 20, wherein the population of cells induces migration of pericytes to the sites of the peripheral vascular disease.

36. The method of claim 20, wherein the fibrin glue comprises fibrinogen and thrombin.

37. The method of claim 36, wherein the fibrin glue comprises from about 16 to about 24 IU/ml of thrombin and from about 39.3 to about 60.7 mg/ml of fibrinogen.

38. The method of claim 20, wherein the fibrin glue is administered simultaneously with, or before, or after, the isolated homogenous population of cells obtained from human umbilical cord tissue.

39. A kit for treating a patient having a peripheral vascular disease comprising fibrinogen, thrombin and an isolated homogenous population of cells obtained from human umbilical cord tissue in an amount effective to treat the disease, wherein the umbilical cord tissue is substantially free of blood, and wherein said isolated homogenous population of the cells is capable of self-renewal and expansion in culture, has the potential to differentiate and do not express CD117 and/or telomerase.

40. The kit of claim 39 further comprising instructions for use.

41. The kit of claim 39, wherein fibrinogen and the isolated homogenous population of cells are in a composition.

42. The kit of claim 40, wherein thrombin is added to the composition immediately prior to use.

43. The kit of claim 39, wherein the kit comprises from about 16 to about 24 IU/ml of thrombin and from about 39.3 to about 60.7 mg/ml of fibrinogen.

44. The kit of claim 39, wherein the isolated population of cells has one or more of the following characteristics:

(a) expresses oxidized low density lipoprotein receptor 1, reticulon, chemokine receptor ligand 3, and/or granulocyte chemotactic protein;

(b) does not express CD31, CD34 or CD45;

(c) expresses, relative to a human fibroblast, mesenchymal stem cell, or iliac crest bone marrow cell, increased levels of interleukin 8 or reticulon 1;

(d) has the potential to differentiate into cells of at least a skeletal muscle, vascular smooth muscle, pericyte or vascular endothelium phenotype; and

(e) expresses CD10, CD13, CD44, CD73, and CD90.

What is claimed is:

1. Use of fibrin glue and an isolated homogenous population of cells obtained from human umbilical cord tissue in the manufacture of a medicament for the treatment of a peripheral vascular disease, wherein the umbilical cord tissue is substantially free of blood, and wherein said isolated homogenous population of the cells is capable of self-renewal and expansion in culture, has the potential to differentiate and does not express CD117 and/or telomerase.

2. The use of claim 1, wherein the isolated population of cells has one or more of the following characteristics:

(a) expresses oxidized low density lipoprotein receptor 1, reticulon, chemokine receptor ligand 3, and/or granulocyte chemotactic protein;

(b) does not express CD31, CD34 or CD45;

(c) expresses, relative to a human fibroblast, mesenchymal stem cell, or iliac crest bone marrow cell, increased levels of interleukin 8 or reticulon 1;

(d) has the potential to differentiate into cells of at least a skeletal muscle, vascular smooth muscle, pericyte or vascular endothelium phenotype; and

(e) expresses CD10, CD13, CD44, CD73, and CD90.

3. The use of claims 1 or 2, wherein the peripheral vascular disease is peripheral ischemia.

4. The use of claim 3, wherein the use comprises administration at the sites of peripheral ischemia.

5. The use of claim 3, wherein the use comprises administration by intramuscular injection, intravascular injection or injection into adipose depots in muscle.

6. The use of claims 1 or 2, wherein the use comprises local administration.

7. The use of claims 1 or 2, wherein the use comprises administration by injection, infusion, a device implanted in a patient, or by implantation of a matrix or scaffold containing the medicament.

8. The use of claims 1 or 2, wherein the isolated population of cells is induced *in vitro* to differentiate into a skeletal muscle, vascular muscle, perictye or vascular endothelium lineage prior to administration.

9. The use of any of claims 1 to 7, wherein the population of cells is genetically engineered to produce a gene product that promotes treatment of peripheral vascular disease.

10. The use of any of claims 1 to 9, wherein the medicament further comprises an agent selected from the group consisting of an antithrombogenic agent, an immunosuppressive agent, an immunomodulatory agent, a pro-angiogenic, an antiapoptotic agent and mixtures thereof.

11. The use of any of claims 1 to 10, wherein the medicament further comprises at least one other cell type.

12. The use of claim 11, wherein the other cell type is a skeletal muscle cell, a skeletal muscle progenitor cell, a vascular smooth muscle cell, a vascular smooth muscle progenitor cell, a pericyte, a vascular endothelial cell, a vascular endothelium progenitor cell or other multipotent or pluripotent stem cell.

13. The use of any of claims 1 to 12, wherein the use comprises exertion of a trophic effect.

14. The use of claim 14, wherein the trophic effect is proliferation of vascular endothelial cells.

15. The use of any of claims 1 to 14, wherein the use induces migration of vascular endothelial cells and/or vascular endothelium progenitor cells to the sites of the peripheral disease.

16. The use of any of claims 1 to 15, wherein the use induces migration of vascular smooth muscle cells and/or vascular smooth muscle progenitor cells to the sites of the peripheral disease.

17. The use of any of claims 1 to 16, wherein the use induces migration of pericytes to the sites of the peripheral vascular disease.

18. The use of any of claims 1 to 17, wherein the fibrin glue comprises fibrinogen and thrombin.

19. The use of claim 18, wherein the fibrin glue comprises from about 16 to about 24 IU/ml of thrombin and from about 39.3 to about 60.7 mg/ml of fibrinogen.

20. A kit for treating a patient having a peripheral vascular disease comprising fibrinogen, thrombin and an isolated homogenous population of cells obtained from human umbilical cord tissue in an amount effective to treat the disease, wherein the umbilical cord tissue is substantially free of blood, and wherein said isolated homogenous population of the cells is capable of self-renewal and expansion in culture, has the potential to differentiate and do not express CD117 and/or telomerase.

21. The kit of claim 20 further comprising instructions for use.

22. The kit of claims 20 or 21, wherein fibrinogen and the isolated homogenous population of cells are in a composition.

23. The kit of claim 22, wherein thrombin is added to the composition immediately prior to use.

24. The kit of claim 20, wherein the kit comprises from about 16 to about 24 IU/ml of thrombin and from about 39.3 to about 60.7 mg/ml of fibrinogen.

25. The kit of any of claims 20 to 24, wherein the isolated population of cells has one or more of the following characteristics:

(a) expresses oxidized low density lipoprotein receptor 1, reticulon, chemokine receptor ligand 3, and/or granulocyte chemotactic protein;

(b) does not express CD31, CD34 or CD45;

(c) expresses, relative to a human fibroblast, mesenchymal stem cell, or iliac crest bone marrow cell, increased levels of interleukin 8 or reticulon 1;

(d) has the potential to differentiate into cells of at least a skeletal muscle, vascular smooth muscle, pericyte or vascular endothelium phenotype; and

(e) expresses CD10, CD13, CD44, CD73, and CD90.