What is claimed is:

1. A method of treating or ameliorating tissue damage in a subject in need thereof, said tissue damage resulting from a disease or condition, wherein said method comprises intravenously administering stem cells expressing or a composition comprising an isolated mutant form of stromal cell derived factor-1 (SDF-1) peptide comprising the formula of a mutant SDF-1 (mSDF-1), mSDF-1-Y_z, X_p-mSDF-1, or X_p-mSDF-1-Y_z, wherein said SDF-1 is a peptide comprising the amino acid sequence of at least amino acids 1-8 of SEQ ID NO:53 and which is optionally extended at the C-terminus by all or any portion of the remaining sequence of SEQ ID NO:53, said SEQ ID NO:53 comprising the amino acid sequence:

K P X_3 X_4 X_5 X_6 Y R C P C R F F E S H V A R A N V K H L K I L N T P N C A L Q I V A R L K N N N R Q V C I D P K L K W I Q E Y L E K A L N K (SEQ ID NO:53), wherein X_3, X_4, X_5, and X_6 are any amino acid, and wherein

a) X_p is a proteinogenic amino acid(s) or a protease protective organic group and p is any integer from 1 to 4;

b) Y_z is a proteinogenic amino acid(s) or protease protective organic group and z is any integer from 1 to 4;

c) said mSDF-1 or said mSDF-1-Y_z maintains chemoattractant activity for T cells and is inactivated by matrix metalloproteinase-2 (MMP-2), matrix metalloproteinase-9 (MMP-9), leukocyte elastase, and/or cathepsin G at a rate that is at least 50% less than the rate of inactivation of native SDF-1; and

d) said X_p-mSDF-1 or said X_p-mSDF-1-Y_z maintains chemoattractant activity for T cells, is inactivated by dipeptidyl peptidase IV (DPPIV) at a rate that is at least 50% less than the rate at which native SDF-1 is inactivated, and is inactivated by MMP-2, MMP-9, leukocyte elastase, and/or cathepsin G at a rate that is at least 50% less than the rate of inactivation of native SDF-1;

wherein said isolated mutant form of SDF-1 is administered intravenously in an amount sufficient to treat or ameliorate said tissue damage in said subject.

2. The method of claim 1, wherein said mutant form of SDF-1 peptide does not comprise the amino acid sequence of at least amino acids 1-8 of SEQ ID NO:52.

3. The method of claim 1 or 2, wherein said X_3 is valine, histidine, or cysteine.

4. The method of any one of claims 1-2, wherein said X_4 is serine or valine.

5. The method of any one of claims 1-4, wherein said X_5 is leucine, proline, threonine, or valine.

6. The method of any one of claims 1-5, wherein said X_6 is serine, cysteine, or glycine.

7. The method of any one of claims 1-6, wherein said peptide is an X_p-mSDF-1 peptide or X_p-mSDF-1-Y_z peptide and wherein X is a serine and p is 1.

8. The method of any one of claims 1-6, wherein said peptide is an mSDF-1-Y_z peptide or X_p-mSDF-1-Y_z peptide and wherein Y is a serine and z is 1.

9. The method of any one of claims 1-8, wherein said mutant form of SDF-1 is a fusion protein comprising the formula A-$(L)_n$-Fc, wherein: A is the isolated mutant form of SDF-1; n is an integer from 0-3; L is a linker sequence of 3-9 amino acids; and Fc is an Fc peptide from an Fc region of an immunoglobulin.

10. The method of claim 9, wherein n=1 and L is GGGGS (SEQ ID NO:66).

11. The method of any of claims 1-10, wherein the stem cells expressing the mutant form of SDF-1 are mesenchymal stem cells or mesenchymal precursor cells.

12. The method of any of claims 1-11, wherein the method further comprises administering exogenous stem cells.

13. The method of claim 12, wherein the exogenous stem cells are mesenchymal stem cells or mesenchymal precursor cells.

14. The method of any one of claims 1-13, wherein said disease or condition is selected from the group consisting of stroke, limb ischemia, tissue damage due to trauma, myocardial infarction, peripheral vascular disease, chronic heart failure, diabetes, diabetic wound healing, organ disease or injury, CNS disease or injury, and inflammatory conditions .

15. The method of claim 14, wherein said disease or condition is myocardial infarction.

16. The method of claim 14, wherein said disease or condition is peripheral vascular disease.

17. The method of claim 14, wherein said disease or condition is diabetes.

18. The method of claim 14, wherein said disease or condition is diabetic wound healing.

19. The method of claim 14, wherein the organ disease or injury is kidney or liver disease or injury.

20. The method of claim 14, wherein the inflammatory condition is rheumatoid arthritis, Crohn's disease, or graft-versus-host disease.

21. The method of any one of claims 1-20, wherein said stem cells or composition is administered to a peripheral or central vein.

22. The method of any one of claims 1-21, wherein said stem cells or composition is administered within minutes after onset of said disease, condition, or tissue damage.

23. The method of any of claims 1-21, wherein said stem cells or composition is administered within 12 hours of onset of said disease, condition, or tissue damage.

24. The method of any one of claims 1-21, wherein said stem cells or composition is administered at 24 hours or more after onset or diagnosis of said disease, condition, or tissue damage.

25. The method of any one of claims 1-21, wherein said stem cells or composition is administered 48 hours or more after onset or diagnosis of said disease, condition, or tissue damage.

26. The method of any one of claims 1-21, wherein said stem cells or composition is administered 7 days or more after onset or diagnosis of said disease, condition, or tissue damage.

27. The method of any one of claims 1-21, wherein said stem cells or composition is administered one month or more after onset or diagnosis of said disease, condition, or tissue damage.

28. The method of any one of claims 1-21, wherein said stem cells or composition is administered six months or more after onset or diagnosis of said disease, condition, or tissue damage.

29. The method of any one of claims 1-28, wherein said method is combined with an intra-arterial administration of SDF-1 or a mutant SDF-1 peptide or stem cells expressing SDF-1 or a mutant SDF-1 peptide.

30. The method of claim 29, wherein said intra-arterial administration occurs prior to the intravenous administration.

31. The method of any one of claims 22-30, wherein said disease or condition is tissue damage due to trauma, organ disease, inflammatory disease, myocardial infarction, or peripheral vascular disease.

32. The method of any one of claims 22-30, wherein said disease or condition is a cardiovascular disease.

33. The method of any one of claims 1-32, wherein said stem cells or composition is administered one or more times until said tissue damage is reduced, repaired, or new blood vessel formation occurs.

34. The method of any one of claims 1-32, wherein said stem cells or composition is administered one or more times to ameliorate one or more symptoms of said disease or condition.

35. The method of any one of claims 1-34, wherein said tissue is a cardiac tissue.

36. The method of any one of claims 1-34, wherein said tissue is a vascular tissue.

37. The method of any one of claims 1-34, wherein said tissue is organ tissue.

38. The method of claim 37, wherein said organ is kidney or liver.

39. The method of any one of claims 1-38, wherein said mutant form of SDF-1 comprises the sequence of SEQ ID NO: 67.

40. The method of any one of claims 1-38, wherein said SDF-1 comprises the sequence of SEQ ID NO: 69.

What is claimed is:

1. The use of stem cells expressing or a composition comprising an isolated mutant form of stromal cell derived factor-1 (SDF-1) peptide comprising the formula of a mutant SDF-1 (mSDF-1), mSDF-1-Y_z, X_p-mSDF-1, or X_p-mSDF-1-Y_z, in the manufacture of a medicament for intravenous administration for the treatment or amelioration of tissue damage in a subject in need thereof, said tissue damage resulting from a disease or condition, wherein said SDF-1 is a peptide comprising the amino acid sequence of at least amino acids 1-8 of SEQ ID NO:53 and which is optionally extended at the C-terminus by all or any portion of the remaining sequence of SEQ ID NO:53, said SEQ ID NO:53 comprising the amino acid sequence:

K P X_3 X_4 X_5 X_6 Y R C P C R F F E S H V A R A N V K H L K I L N T P N C A L Q I V A R L K N N N R Q V C I D P K L K W I Q E Y L E K A L N K (SEQ ID NO:53), wherein X_3, X_4, X_5, and X_6 are any amino acid, and wherein

a) X_p is a proteinogenic amino acid(s) or a protease protective organic group and p is any integer from 1 to 4;

b) Y_z is a proteinogenic amino acid(s) or protease protective organic group and z is any integer from 1 to 4;

c) said mSDF-1 or said mSDF-1-Y_z maintains chemoattractant activity for T cells and is inactivated by matrix metalloproteinase-2 (MMP-2), matrix metalloproteinase-9 (MMP-9), leukocyte elastase, and/or cathepsin G at a rate that is at least 50% less than the rate of inactivation of native SDF-1; and

d) said X_p-mSDF-1 or said X_p-mSDF-1-Y_z maintains chemoattractant activity for T cells, is inactivated by dipeptidyl peptidase IV (DPPIV) at a rate that is at least 50% less than the rate at which native SDF-1 is inactivated, and is inactivated by MMP-2, MMP-9, leukocyte elastase, and/or cathepsin G at a rate that is at least 50% less than the rate of inactivation of native SDF-1;

wherein said medicament is to be administered intravenously in an amount sufficient to treat or ameliorate said tissue damage in said subject.

2. The use according to claim 1, wherein said mutant form of SDF-1 peptide does not comprise the amino acid sequence of at least amino acids 1-8 of SEQ ID NO:52.

3. The use according to claim 1 or 2, wherein said X_3 is valine, histidine, or cysteine.

4. The use according to any one of claims 1-2, wherein said X_4 is serine or valine.

5. The use according to any one of claims 1-4, wherein said X_5 is leucine, proline, threonine, or valine.

6. The use according to any one of claims 1-5, wherein said X_6 is serine, cysteine, or glycine.

7. The use according to any one of claims 1-6, wherein said peptide is an X_p-mSDF-1 peptide or X_p-mSDF-1-Y_z peptide and wherein X is a serine and p is 1.

8. The use according to any one of claims 1-6, wherein said peptide is an mSDF-1-Y_z peptide or X_p-mSDF-1-Y_z peptide and wherein Y is a serine and z is 1.

9. The use according to any one of claims 1-8, wherein said mutant form of SDF-1 is a fusion protein comprising the formula A-$(L)_n$-Fc, wherein: A is the isolated mutant form of SDF-1; n is an integer from 0-3; L is a linker sequence of 3-9 amino acids; and Fc is an Fc peptide from an Fc region of an immunoglobulin.

10. The use according to claim 9, wherein n=1 and L is GGGGS (SEQ ID NO:66).

11. The use according to any one of claims 1-10, wherein the stem cells expressing the mutant form of SDF-1 are mesenchymal stem cells or mesenchymal precursor cells.

12. The use according to any one of claims 1-11, wherein exogenous stem cells are also to be administered.

13. The use according to claim 12, wherein the exogenous stem cells are mesenchymal stem cells or mesenchymal precursor cells.

14. The use according to any one of claims 1-13, wherein said disease or condition is selected from the group consisting of stroke, limb ischemia, tissue damage due to trauma, myocardial infarction, peripheral vascular disease, chronic heart failure, diabetes, diabetic wound healing, organ disease or injury, CNS disease or injury, and inflammatory conditions .

15. The use according to claim 14, wherein said disease or condition is myocardial infarction.

16. The use according to claim 14, wherein said disease or condition is peripheral vascular disease.

17. The use according to claim 14, wherein said disease or condition is diabetes.

18. The use according to claim 14, wherein said disease or condition is diabetic wound healing.

19. The use according to claim 14, wherein the organ disease or injury is kidney or liver disease or injury.

20. The use according to claim 14, wherein the inflammatory condition is rheumatoid arthritis, Crohn's disease, or graft-versus-host disease.

21. The use according to any one of claims 1-20, wherein the medicament formed from said stem cells or composition is to be administered to a peripheral or central vein.

22. The use according to any one of claims 1-21, wherein the medicament formed from said stem cells or composition is to be administered within minutes after onset of said disease, condition, or tissue damage.

23. The use according to any one of claims 1-21, wherein the medicament formed from said stem cells or composition is to be administered within 12 hours of onset of said disease, condition, or tissue damage.

24. The use according to any one of claims 1-21, wherein the medicament formed from said stem cells or composition is to be administered at 24 hours or more after onset or diagnosis of said disease, condition, or tissue damage.

25. The use according to any one of claims 1-21, wherein the medicament formed from said stem cells or composition is to be administered 48 hours or more after onset or diagnosis of said disease, condition, or tissue damage.

26. The use according to any one of claims 1-21, wherein the medicament formed from said stem cells or composition is to be administered 7 days or more after onset or diagnosis of said disease, condition, or tissue damage.

27. The use according to any one of claims 1-21, wherein the medicament formed from said stem cells or composition is to be administered one month or more after onset or diagnosis of said disease, condition, or tissue damage.

28. The use according to any one of claims 1-21, wherein the medicament formed from said stem cells or composition is to be administered six months or more after onset or diagnosis of said disease, condition, or tissue damage.

29. The use according to any one of claims 1-28, wherein the medicament is to be combined with an intra-arterial administration of SDF-1 or a mutant SDF-1 peptide or stem cells expressing SDF-1 or a mutant SDF-1 peptide.

30. The use according to claim 29, wherein said intra-arterial administration is to occur prior to the intravenous administration.

31. The use according to any one of claims 22-30, wherein said disease or condition is tissue damage due to trauma, organ disease, inflammatory disease, myocardial infarction, or peripheral vascular disease.

32. The use according to any one of claims 22-30, wherein said disease or condition is a cardiovascular disease.

33. The use according to any one of claims 1-32, wherein the medicament formed from said stem cells or composition is to be administered one or more times until said tissue damage is reduced, repaired, or new blood vessel formation occurs.

34. The use according to any one of claims 1-32, wherein the medicament formed from said stem cells or composition is to be administered one or more times to ameliorate one or more symptoms of said disease or condition.

35. The use according to any one of claims 1-34, wherein said tissue is a cardiac tissue.

36. The use according to any one of claims 1-34, wherein said tissue is a vascular tissue.

37. The use according to any one of claims 1-34, wherein said tissue is organ tissue.

38. The use according to claim 37, wherein said organ is kidney or liver.

39. The use according to any one of claims 1-38, wherein said mutant form of SDF-1 comprises the sequence of SEQ ID NO: 67.

40. The use according to any one of claims 1-38, wherein said SDF-1 comprises the sequence of SEQ ID NO: 69.