CLAIMS

What is claimed is:

1. Use of a composition comprising nanoparticles comprising a macrolide and an albumin in the manufacture of a medicament for inhibiting negative remodeling in a blood vessel in an individual in need thereof, wherein the medicament is to be injected into the blood vessel wall or tissue surrounding the blood vessel wall.
2. Use of a composition comprising nanoparticles comprising a macrolide and an albumin in the manufacture of a medicament for inhibiting vascular fibrosis in a blood vessel in an individual in need thereof, wherein the medicament is to be injected into the blood vessel wall or tissue surrounding the blood vessel wall.
3. The use of claim 2, wherein the vascular fibrosis is medial vascular fibrosis or adventitia fibrosis.
4. Use of a composition comprising nanoparticles comprising a macrolide and an albumin in the manufacture of a medicament for promoting positive remodeling in a blood vessel in an individual in need thereof, wherein the medicament is to be injected into the blood vessel wall or tissue surrounding the blood vessel wall.
5. The use of any one of claims 1-4, wherein the blood vessel is an artery.
6. The use of claim 5, wherein the artery is a coronary artery or a peripheral artery.
7. The use of claim 6, wherein the artery is selected from the group consisting of renal artery, cerebral artery, pulmonary artery, and artery in the leg.
8. The use of any one of claims 1-4, wherein the blood vessel is a vein.
9. The use of any one of claims 1-8, wherein the nanoparticle composition is to be injected into the blood vessel wall.
10. The use of any one of claims 1-8, wherein the nanoparticle composition is to be injected into the tissue surrounding the blood vessel wall.
11. The use of claim 10, wherein the nanoparticle composition is to be injected into the adventitial tissue of the blood vessel.
12. The use of any one of claims 1-11, wherein the nanoparticle composition is to be injected at a dose of about 0.001mg to about 100 mg.
13. The use of claim 12, where the nanoparticle composition is to be injected at a dose of about 0.05 mg to about 5 mg.
14. The use of any one of claims 1-13, wherein the injection volume of the nanoparticle composition is about 0.01ml to about 50ml.

15. The use of claim 14, wherein the injection volume of the nanoparticle composition is about 0.5 ml to about 5ml.

16. The use of any one of claims 1-15, wherein the nanoparticle composition is to be injected though a catheter with a needle.

17. The use of any one of claims 1-16, wherein the nanoparticle composition is to be injected at least once a year.

18. The use of any one of claims 1-17, wherein the nanoparticle composition is to be injected distal or proximal to the disease site.

19. The use of any one of claims 1-17, wherein the nanoparticle composition is to be injected at least about 2 cm away from the disease site.

20. The use of any one of claims 1-17, wherein the nanoparticle composition is to be injected at or adjacent to the disease site.

21. The use of any one of claims 1-20, wherein the individual has any one of: angina, myocardial infarction, congestive heart failure, cardiac arrhythmia, peripheral artery disease, claudication, or chronic limb ischemia.

22. A method of delivering a composition comprising nanoparticles comprising albumin and a macrolide to a blood vessel, wherein the method comprises injecting into the blood vessel wall or tissue surrounding the blood vessel wall an effective amount of a composition comprising nanoparticles comprising a macrolide and an albumin.

23. The method of claim 22, wherein the nanoparticle composition is injected into the tissue surrounding the blood vessel wall.

24. The method of claim 22, wherein the nanoparticle composition is injected into the adventitial tissue of the blood vessel.

25. The method of any one of claims 22-24, wherein the injection is via a catheter with a needle.

26. The use of any one of claims 1-21 or the method of any one of claims 22-25, wherein the macrolide is rapamycin.

27. The use of any one of claims 1-21 and 26, or the method of any one of claims 22-26, wherein the nanoparticles in the composition have an average diameter of no greater than about 200 nm.

28. The use or method of claim 27, wherein the nanoparticles in the composition have an average diameter of no greater than about 100 nm.

29. The use or method of claim 28, wherein the nanoparticles in the composition have an average diameter of no less than about 70 nm.

30. The use or method of any one of claims 1-29, wherein the macrolide in the nanoparticles are coated with albumin.

31. The use or method of any one of claims 1-30, wherein the individual is human.

32. The use or method of any one of claims 1-31, wherein the use or method is to be carried out during the vascular interventional procedure.

33. The use or method of any one of claims 1-31, wherein the use or method is to be carried out after a vascular interventional procedure.

34. The use or method of claims 32 or 33, wherein the interventional procedure is angioplasty, stenting, or atherectomy.

35. A catheter with a needle, wherein the needle contains a composition comprising nanoparticles comprising a macrolide and an albumin.

36. The catheter of claim 35, wherein the macrolide is rapamycin.

37. The catheter of claim 35 or 36, wherein the nanoparticles in the composition have an average diameter of no greater than about 200 nm.

38. The catheter of claim 37, wherein the nanoparticles in the composition have an average diameter of no greater than about 100 nm.

39. The catheter of claim 38, wherein the nanoparticles in the composition have an average diameter of no less than about 70 nm.

40. The catheter of any one of claims 35-39, wherein the nanoparticles comprise the macrolide coated with albumin.

41. The catheter of any one of claims 35-40, wherein the needle is deployable.

CLAIMS

What is claimed is:

1. Use of a composition comprising nanoparticles comprising rapamycin or a derivative thereof and an albumin in the manufacture of a medicament for treating a disease associated with negative remodeling in a blood vessel in an individual in need thereof, wherein the medicament is to be injected into the blood vessel wall or tissue surrounding the blood vessel wall.

2. Use of a composition comprising nanoparticles comprising rapamycin or a derivative thereof and an albumin in the manufacture of a medicament for treating a disease associated with vascular fibrosis in a blood vessel in an individual in need thereof, wherein the medicament is to be injected into the blood vessel wall or tissue surrounding the blood vessel wall.

3. The use of claim 2, wherein the vascular fibrosis is medial vascular fibrosis or adventitial fibrosis.

4. The use of any one of claims 1-3, wherein the blood vessel is an artery.

5. The use of claim 4, wherein the artery is a coronary artery or a peripheral artery.

6. The use of claim 5, wherein the artery is selected from the group consisting of renal artery, cerebral artery, pulmonary artery, and artery in the leg.

7. The use of any one of claims 1-3, wherein the blood vessel is a vein.

8. The use of any one of claims 1-7, wherein the nanoparticle composition is to be injected into the blood vessel wall.

9. The use of any one of claims 1-7, wherein the nanoparticle composition is to be injected into the tissue surrounding the blood vessel wall.

10. The use of claim 9, wherein the nanoparticle composition is to be injected into the adventitial tissue of the blood vessel.

11. The use of any one of claims 1--10, wherein the nanoparticle composition is to be injected at a dose of about 0.001mg to about 100 mg.

12. The use of claim 11, where the nanoparticle composition is to be injected at a dose of about 0.05 mg to about 5 mg.

13. The use of any one of claims 1-12, wherein the injection volume of the nanoparticle composition is about 0.0lml to about 50ml.

14. The use of claim 13, wherein the injection volume of the nanoparticle composition is about 0.5 ml to about 5ml.

15. The use of any one of claims 1-14, wherein the nanoparticle composition is to be injected through a catheter with a needle.

16. The use of any one of claims 1-15, wherein the nanoparticle composition is to be injected at least once a year.

17. The use of any one of claims 1-16, wherein the nanoparticle composition is to be injected distal or proximal to the disease site.

18. The use of any one of claims 1-16, wherein the nanoparticle composition is to be injected at least about 2 cm away from the disease site.

19. The use of any one of claims 1-16, wherein the nanoparticle composition is to be injected at or adjacent to the disease site.

20. The use of any one of claims 1-19, wherein the individual has any one of: angina, myocardial infarction, congestive heart failure, cardiac arrhythmia, peripheral artery disease, claudication, or chronic limb ischemia.

21. The use of any one of claims 1- 20 wherein the nanoparticles in the composition have an average diameter of no greater than about 200 nm.

22. The use of claim 21, wherein the nanoparticles in the composition have an average diameter of no greater than about 100 nm.

23. The use of claim 22, wherein the nanoparticles in the composition have an average diameter of no less than about 70 nm.

24. The use of any one of claims 1-23, wherein the rapamycin or derivative thereof in the nanoparticles is coated with albumin.

25. The use of any one of claims 1-24, wherein the individual is human.

26. The use of any one of claims 1-25, wherein the use is to be carried out during a vascular interventional procedure.

27. The use of any one of claims 1-25, wherein the use is to be carried out after a vascular interventional procedure.

28. The use of claims 26 or 27, wherein the interventional procedure is angioplasty, stenting, or atherectomy.

29. A catheter with a needle, wherein the needle contains a composition comprising nanoparticles comprising rapamycin or a derivative thereof and an albumin.

30. The catheter of claim 29, wherein the nanoparticles in the composition have an average diameter of no greater than about 200 nm.

31. The catheter of claim 30, wherein the nanoparticles in the composition have an average diameter of no greater than about 100 nm.

32. The catheter of claim 31, wherein the nanoparticles in the composition have an average diameter of no less than about 70 nm.

33. The catheter of any one of claims 29-32, wherein the nanoparticles comprise rapamycin or a derivative thereof coated with albumin.

34. The catheter of any one of claims 29-33, wherein the needle is deployable.