CLAIMS

1. An immunogen comprising at least one antigenic PCSK9 peptide linked to an immunogenic carrier, wherein the antigenic PCSK9 peptide consists of an amino acid sequence selected from the group consisting of SEQ ID NOs 182 – 226, 317, and 401-403.

2. An immunogen according to claim 1 wherein said immunogenic carrier is selected from Diphtheria Toxoid, CRM197 or a VLP selected from HBcAg, HBsAg, Qbeta, PP7, PPV or Norwalk Virus VLP.

3. An immunogen according to claim 1 wherein said immunogenic carrier is selected from CRM197 or Qbeta VLP.

4. An immunogen according to any one of claims 1 to 3, wherein the antigenic PCSK9 peptide is selected from the group consisting of SEQ ID Nos: 182, 183, 184, 185, 186, 187, 188, 189, and 190.

5. An immunogen according to claim 4 wherein the antigenic PCSK9 peptide is selected from the group consisting of SEQ ID Nos: 184, 185, 186, 187, and 188

6. An immunogen according to any one of claims 1 to 3 wherein the antigenic PCSK9 peptide is selected from the group consisting of SEQ ID Nos: 317, 401, 402, and 403.

7. An immunogen according to claim 5, wherein the antigenic PCSK9 peptide is selected from the group consisting of SEQ ID Nos: 184 and 188.

8. An immunogen according to claim 6, wherein the antigenic PCSK9 peptide is selected from the group consisting of SEQ ID Nos: 317 and 403.

9. The immunogen according to any one of claim 1 to 3, wherein said immunogen further comprises:

(i) a linker at the C-terminus of the PSCK9 peptide and having the formula $(G)_nC$, $(G)_nSC$ or $(G)_nK$ wherein n is an integer chosen in the group consisting of 0, 1, 2, 3, 4, 5,6, 7, 8, 9 and 10;

(ii) a linker at the N-terminus of the PSCK9 peptide and having the formula $C(G)_n$, $CS(G)_n$ or $K(G)_n$ wherein n is an integer chosen in the group consisting of 0, 1, 2, 3, 4, 5,6, 7, 8, 9 and 10; or

(iii) a linker at the C-terminus of the PCSK9 peptide and having the formula $(G)_nC$, $(G)_nSC$ or $(G)_nK$ wherein n is an integer chosen in the group consisting of 0, 1, 2, 3, 4, 5,6, 7, 8, 9 and 10, and a linker at the N-terminus of the OCSK9 peptide and having the formula $C(G)_n$, $CS(G)_n$ or $K(G)_n$ wherein n is an integer chosen in the group consisting of 0, 1, 2, 3, 4, 5,6, 7, 8, 9 and 10.

10. The immunogen according to claim 9 wherein said immunogen further comprises:

(i) a linker at the C-terminus of the PSCK9 peptide and having the formula $(G)_nC$, $(G)_nSC$ or $(G)_nK$ wherein n is an integer chosen in the group consisting of 0, 1 or 2;

(ii a linker at the N-terminus the PSCK9 peptide and having the formula $C(G)_n$, $CS(G)_n$ or $K(G)_n$ wherein n is an integer chosen in the group consisting of 0, 1 or 2; or

(iii) a linker at the C-terminus of the PSCK9 peptide and having the formula $(G)_nC$, $(G)_nSC$ or $(G)_nK$ wherein n is an integer chosen in the group consisting of 0, 1 or 2, and at the N-terminus of the PSCK9 peptide and having the formula $C(G)_n$, $CS(G)_n$ or $K(G)_n$ wherein n is an integer chosen in the group consisting of 0, 1 or 2.

11. The immunogen according to claim 9, wherein said immunogen further comprises a cysteine at the C-terminus of the PCSK9 peptide.

12. The immunogen according to claim 9 wherein said immunogen further comprises a CG group or a cysteine at the N-terminus of the PCSK9 peptide.

13. The immunogen according to claim 9, wherein said immunogen further comprises a CGG at the N-terminus of the PCSK9 peptide.

14. The immunogen according to any one of claim 1 to 8 wherein said antigenic PCSK9 peptide further comprises a GGC at the C-terminus of the PCSK9 peptide.

15. The immunogen according to claim 9 wherein said antigenic PCSK9 peptide is cyclised.

16. The immunogen according to claim 9 wherein said antigenic PCSK9 peptide is cyclised and comprises a cysteine, a GC or a CG fragment.

17. The immunogen according to claim 9, wherein said immunogen further comprises a KG or a KGG at the N-terminus of the PCSK9 peptide.

18. An immunogen according to any one of claims 1 to 3 wherein the antigenic PCSK9 peptide is conformationally constrained.

19. An immunogen according to claim 18 wherein the antigenic PCSK9 peptide is selected from the group consisting of SEQ ID NOs: 317, 401, 402, and 403.

20. The immunogen according to any one of claims 1 to 3, wherein said immunogen is able, when administered to a subject, to lower the LDL-cholesterol level in blood of said subject by at least 2 percent, 5 percent, 10 percent, 20 percent, 30 percent or 50 percent.

21. The immunogen according to claim 20, wherein said immunogen is able, when administered to a subject, to lower the LDL-cholesterol level in blood of said subject by at least 10 percent.

22. A composition comprising at least two immunogens according to any one of claim 1 to 3.

23. An immunogenic composition comprising an immunogen of claim 1 and at least one adjuvant.

24. An immunogenic composition according to claim 23 wherein said adjuvant is selected from alum, CpG ODN, QS21, and Iscomatrix.

25. An immunogenic composition according to claim 23 wherein said adjuvant is selected from QS21, alum in combination with CpG ODN, or Iscomatrix in combination with CpG ODN.

26. An immunogenic composition according to claim 23 wherein said adjuvant is a combination of alum and CpG ODN.

27. An immunogenic composition according to claim 24, wherein the CpG ODN is selected from 5' TCGTCGTTTTTCGGTGCTTTT 3', or 5' TCGTCGTTTTTCGGTCGTTTT 3', or 5' TCGTCGTTTTGTCGTTTTGTCGTT 3'.

28. A pharmaceutical composition comprising:

(i) an immunogen of claim 1 or an immunogenic composition of claim 23, and

(ii) a pharmaceutically acceptable excipient.

29. Use of the immunogen of claim 1, or a composition of claim 22, or the immunogenic composition of claim 23, or the pharmaceutical composition of claim 28, in the manufacture of a medicament for preventing, alleviating, or treating a PCSK9-related disorder.

30. The use of claim 29, wherein said PCSK9-related disorder is elevated LDL-cholesterol or a condition associated with elevated LDL- cholesterol.

31. The use of claim 29, wherein said PCSK9-related disorder is selected from a lipid disorder such as hyperlipidemia, type I, type II, type III, type IV, or type V hyperlipidemia, secondary hypertriglyceridemia, hypercholesterolemia, familial hypercholesterolemia, xanthomatosis, cholesterol acetyltransferase deficiency; an ateriosclerotic conditions (e.g., atherosclerosis), a coronary artery disease, and a cardiovascular disease.

32. The use according to claim 29 wherein said PCSK9-related disorder is Alzheimer's disease.

33. A nucleic acid encoding the immunogen of any one of claims 1 to 3.

34. An expression vector comprising the nucleic acid of claim 33.

35. A host cell comprising the expression vector of claim 34.

CLAIMS

1. An invention not claimed in any divisional application.