What is claimed:

1. Use of a peptide in the manufacture of a composition ~~A method~~ for preventing atherosclerosis in a subject, wherein the ~~comprising administering to the subject in need thereof, a therapeutically effective amount of a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~that affects the interaction of CD40 with CD154/CD40 ligand~~.
2. ~~The method of claim 1, wherein the peptide binds to CD40.~~
3. ~~The method of any of the prior claims, wherein said peptide binds to a CD40 protein with a Kd of greater than 10^{-6}.~~
4. ~~The method of any of the prior claims, wherein said peptide affects the interaction of CD40 and CD154.~~
5. ~~The method of any of the prior claims, wherein said peptide inhibits the binding of CD40 to CD154.~~
6. ~~The method of any of the prior claims, wherein said peptide binds CD40 at the site where CD40 interacts with CD154.~~
7. ~~The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as to prevent the expansion of Th40 cells.~~
8. ~~The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as to reduce the number of Th40 cells.~~
9. ~~The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as alter the cytokine expression profile of a cell population treated with said peptide.~~
10. ~~The method of any of the prior claims, wherein said peptide comprises an amino acid sequence selected from the group of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID: 7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, and SEQ ID NO:30.~~
11. ~~The method of any of the prior claims, wherein said peptide is an amino acid sequence selected from the group of SEQ ID NO:4, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, and SEQ ID NO:30.~~

~~12. The method of any of the prior claims, wherein said peptide is an amino acid sequence selected from the group of SEQ ID NO:3-9, 24-30, and 32.~~

~~13. The method of any of the prior claims, wherein the subject does not produce autoantibodies responsive to the peptide and/or CD154.~~

~~14. The method of any of the prior claims, wherein the subject's T cells do not elicit T cell antigen recall.~~

~~15. The method of any of the prior claims, wherein said peptide binds to multiple bone marrow derived cell types which express CD40 of approximately 45kDa, including splenic CD4hi cells, CD8 cells, and other antigen presenting cells.~~

~~16. The method of any of the prior claims, wherein said peptide is obtained from natural sources or it is synthesized.~~

~~17.~~2. The use ~~method~~ of any of the preceding ~~prior~~ claims, wherein the subject suffers from dyslipidemia, hyperlipidemia, hypercholesterolemia, atherosclerosis, cardiovascular disease, and/or coronary heart disease.

~~18. The method of any of the prior claims, further comprising administering a statin.~~

~~19.~~3. Use of a peptide in the manufacture of a composition for treating ~~A method to modulate~~ atherosclerosis in a subject, wherein the ~~comprising contacting a CD40 protein with a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~that binds said CD40 protein at the CD154 binding site in such a manner as to modulate atherosclerosis~~.

~~20. A method of modulating atherosclerosis in a patient comprising administering to a patient a peptide that binds to a CD40 protein at the CD154 binding site and thereby modulates atherosclerosis.~~

~~21.~~4. Use of a peptide in the manufacture of a composition for ~~A method of~~ treating cardiovascular disease in a subject ~~patient~~ in need of such treatment, wherein the ~~comprising administering to a patient a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~that binds to a CD40 protein at the CD154 binding site and thereby modulates cardiovascular disease~~.

~~22. The method of any of the prior claims, further comprising reducing the number of Th40 cells in a patient by administering a compound that inhibits the interaction of~~

~~CD40 and CD154, wherein said compound binds the CD40 protein at the CD154-binding site.~~

~~23.~~5. Use of a peptide in the manufacture of a composition for ~~A method of~~ reversing atherosclerosis in a subject ~~an animal~~, wherein the ~~comprising administering to a patient a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~that binds to CD40 protein at the CD154-binding site and thereby modulates inflammation~~.

~~24. A method to identify a patient at risk for developing atherosclerosis, said method comprising (a) obtaining a population of T-cells from a patient; and (b) determining the number of cells that are CD40+ in the T-cell population, wherein if the percentage of CD40+ T-cells in the T-cell population is greater than 25%, said patient is at risk for developing atherosclerosis.~~

~~25. A method for preventing progression of atherosclerosis comprising reducing the number of Th40 cells in a patient.~~

~~26. The method of any of the prior claims, further comprising administering a compound that inhibits the interaction of CD40 and CD154, wherein the said compound binds the CD protein at the CD154 binding site.~~

~~27. A method to modulate and/or reduce atherosclerosis in an animal, the method comprising administering to the animal, a peptide that interacts with a CD40 protein in such a manner as to modulate INFγ.~~

~~28. A method to identify a patient at risk for developing cardiovascular disease and/or atherosclerosis, the method comprising obtaining a sample containing T cells from a patient to be tested, contacting the sample with a peptide that binds the CD40 protein, detecting the CD-40 bound peptide, and determining the level of Th40 cells from the amount of CD40 bound, wherein a level of Th40 cells greater than 25% of the total T-cell population indicates the patient is at risk for developing cardiovascular disease and/or developing atherosclerosis.~~

~~29.~~6. Use of a peptide in the manufacture of a composition ~~A method~~ to prevent, modulate, or reduce calcification of vessel walls in a subject, wherein the ~~method comprising administering to the subject in need thereof, a therapeutically effective amount~~

~~of a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~which specifically binds to a CD40 presenting cells at the CD154 binding site~~.

~~30. The method of any of the prior claims, wherein the peptide binds to CD40.~~

~~31. The method of any of the prior claims, wherein said peptide binds to a CD40 protein with a Kd of greater than 10^{-6}.~~

~~32. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 and CD154.~~

~~33. The method of any of the prior claims, wherein said peptide inhibits the binding of CD40 to CD154.~~

~~34. The method of any of the prior claims, wherein said peptide binds CD40 at the site where CD40 interacts with CD154.~~

~~35. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as to prevent the expansion of Th40 cells.~~

~~36. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as to reduce the number of Th40 cells.~~

~~37. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as alter the cytokine expression profile of a cell population treated with said peptide.~~

~~38. The method of any of the prior claims, wherein said peptide comprises an amino acid sequence selected from the group of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, and SEQ ID NO:9.~~

~~39. The method of any of the prior claims, wherein said peptide comprises an amino acid sequence selected from the group of SEQ ID NO:3-9 and 24-30.~~

~~40. The method of any of the prior claims, wherein said peptide is an amino acid sequence selected from the group of SEQ ID NO:4, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO: 24, SEQ ID NO: 25, SEQ ID NO: 26, SEQ ID NO: 27, SEQ ID NO: 28, SEQ ID NO:29, SEQ ID NO: 30, and SEQ ID NO:32.~~

~~41. A method to administer a CD40-binding peptide to prevent, modulate, and/or reduce atherosclerosis, comprising selecting a peptide that interacts with a CD40 protein and CD154 binding site, selecting a delivery method selected from the group comprising~~

~~intramuscular (IM) delivery, intravenous (IV) delivery, subcutaneous (SC) delivery, oral delivery, gavage delivery, emollient/skin delivery, or transdermal patch.~~

~~42. A method to administer a peptide that affects the CD40 CD154 to prevent, modulate, and/or reduce atherosclerosis in an animal, comprising selecting a peptide that interacts with a CD40 protein and CD154 binding site and using an extended delivery method selected from the group comprising an implantable device, a hydrophilic polymer formulation, a permeable polymeric membrane, injectable gel implants, solvent extraction system, phase inversion system, thermosensitive gels, pH dependent *in situ* gels, microparticles, microspheres, nanoparticles, nanospheres, bio-degradable implants, or photoactivated depot.~~

~~43.~~7. Use of a peptide in the manufacture of a composition for lowering ~~A method to lower~~ LDL cholesterol in a subject, wherein the ~~the method comprising administering to the subject in need thereof, a therapeutically effective amount of a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~which specifically binds to a CD40 presenting cells at the CD154 binding site~~.

~~44. The method of any of the prior claims, wherein the peptide binds to CD40.~~

~~45. The method of any of the prior claims, wherein said peptide binds to a CD40 protein with a Kd of greater than 10^{-6}.~~

~~46. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 and CD154.~~

~~47. The method of any of the prior claims, wherein said peptide inhibits the binding of CD40 to CD154.~~

~~48. The method of any of the prior claims, wherein said peptide binds CD40 at the site where CD40 interacts with CD154.~~

~~49. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as alter the cytokine expression profile of a cell population treated with said peptide.~~

~~50. The method of any of the prior claims, wherein said peptide comprises an amino acid sequence selected from the group of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, and SEQ ID NO:9.~~

~~51. The method of any of the prior claims, wherein said peptide is an amino acid sequence selected from the group of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO: 24, SEQ ID NO: 25, SEQ ID NO: 26, SEQ ID NO: 27, SEQ ID NO: 28, SEQ ID NO:29, and SEQ ID NO: 30.~~

~~52.~~8. Use of a peptide in the manufacture of a composition ~~A method~~ for preventing, modulating, reducing, treating, and/or reversing type 2 diabetes in a subject, wherein the ~~comprising administering to the subject having type 2 diabetes, a therapeutically effective amount of a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~that affects the interaction of CD40 with CD154/CD40 ligand~~.

~~53. The method of any of the prior claims, wherein the peptide binds to CD40.~~

~~54. The method of any of the prior claims, wherein said peptide binds to a CD40 protein with a Kd of greater than 10^{-6}.~~

~~55. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 and CD154.~~

~~56. The method of any of the prior claims, wherein said peptide inhibits the binding of CD40 to CD154.~~

~~57. The method of any of the prior claims, wherein said peptide binds CD40 at the site where CD40 interacts with CD154.~~

~~58. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as to prevent the expansion of Th40 cells.~~

~~59. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as to reduce the number of Th40 cells.~~

~~60. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as to alter the cytokine expression profile of a cell population treated with said peptide.~~

~~61. The method of any of the prior claims, wherein said peptide comprises an amino acid sequence selected from the group of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:9 and SEQ ID NO:27.~~

~~62. The method of any of the prior claims, wherein said peptide is an amino acid sequence selected from the group of SEQ ID NO:4, SEQ ID NO:8, SEQ ID NO:9 and SEQ ID NO:27.~~

~~63. The method of any of the prior claims, wherein said peptide is an amino acid sequence selected from the group of SEQ ID NO:4-9 and 24-30.~~

~~64.~~9. Use of a peptide in the manufacture of a composition ~~A method~~ for modulating and/or increasing glucose transport protein 4 (GLUT4) in a subject, wherein the ~~the method comprising administering to a patient a therapeutically sufficient dose of a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~selected from SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:9 and SEQ ID NO:27~~.

~~65. A method for modulating and/or increasing glucose transport protein 4 (GLUT4), the method comprising administering to a patient a therapeutically sufficient dose of a peptide selected from the group of SEQ ID NO:4-9 and 24-30.~~

~~66. A method for preventing, modulating, reducing, treating, and/or reversing type 2 diabetes in a subject, the method comprising administering to the animal, a peptide that interacts with the CD40 protein in such a manner as to modulate GLUT-4.~~

~~67. The method of any of the prior claims, wherein the subject does not produce autoantibodies responsive to the peptide and/or CD154 and/or GLUT-4.~~

~~68. The method of any of the prior claims, wherein the subject's T cells do not elicit T cell antigen recall.~~

~~69. The method of any of the prior claims, wherein said peptide binds to multiple bone marrow derived cell types which express CD40 of approximately 45kDa, including splenic CD4hi cells, CD8 cells, and other antigen presenting cells.~~

~~70. The method of any of the prior claims, wherein said peptide is obtained from natural sources or it is synthesized.~~

~~71. A method of modulating type 2 diabetes in a patient comprising administering to a patient a peptide that binds to a CD40 protein at the CD154-binding site and thereby modulates type 2 diabetes.~~

~~72. A method to administer a CD40-binding peptide to prevent, modulate, reduce, treat, and/or reverse type 2 diabetes in a subject, comprising selecting a peptide that interacts with a CD40 protein and CD154 binding site, selecting a delivery method from the group comprising intramuscular (IM) delivery, intravenous (IV) delivery, subcutanerous (SC) delivery, oral delivery, gavage delivery, emolument/skin delivery, or transdermal patch.~~

~~73. A method to administer a CD40-binding peptide to prevent, modulate, reduce, treat and/or reverse type 2 diabetes in a subject, comprising selecting a peptide that interacts with a CD40 protein and CD154 binding site, using an extended delivery method selected from the group comprising an implantable device, a hydrophilic polymer formulation, a permeable polymeric membrane, injectable gel implants, solvent extraction system, phase inversion system, thermosensitive gels, pH dependent *in situ* gels, microparticles, microspheres, nanoparticles, nanospheres, bio-degradable implants, or photoactivated depot.~~

~~74. A method to modulate and/or reduce type 2 diabetes in a subject, the method comprising administering to the subject, a peptide that interacts with a CD40 protein in such a manner as to modulate INFγ.~~

~~75.~~10. Use of a peptide in the manufacture of a composition for modulating and/or reducing IFN-γ ~~A method to modulate and/or reduce INF γ~~ in a cell or a subject, wherein the ~~comprising administering a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~selected from SEQ ID NOs 3-9 and 27-30, in an amount sufficient to reduce or inhibit IFN-γ signaling, wherein, the INF-γ signaling is associated with type 2 diabetes~~.

~~76.~~11. Use of a peptide in the manufacture of a composition for modulating ~~A method to modulate~~ and/or ~~reduce~~ reducing interleukin-2 signaling in a cell or a subject, wherein the ~~comprising administering a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~selected from SEQ ID NOs 3-9 and 27-30, in an amount sufficient to reduce or inhibit interleukin-2 signaling, wherein, the interleukin-2 signaling is associated with type 2 diabetes~~.

~~77.~~12. Use of a peptide in the manufacture of a composition for modulating and/or reducing ~~A method to modulate and/or reduce~~ interleukin 17 (IL-17) in a cell or a subject, wherein the ~~comprising administering a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~selected from SEQ ID NOs 3-9 and 27-30, in an amount sufficient to reduce or inhibit interleukin-17 (IL-17) signaling, wherein, the IL-17 is associated with type 2 diabetes~~.

~~78.~~13. Use of a peptide in the manufacture of a composition for modulating and/or reducing ~~A method to modulate and/or reduce~~ interleukin 17 (IL-17) in a cell or a subject,

wherein the ~~comprising administering a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29, ~~selected from SEQ ID NOs 3-9 and 27-30, in an amount sufficient to reduce or inhibit interleukin 17 (IL-17) signaling,~~ wherein, the subject suffers from ~~IL-17 signaling is associated with~~ a condition selected from the group comprising type I diabetes, type 2 diabetes, multiple sclerosis, systemic lupus erythematosa, rheumatoid arthritis, Crohn's disease, inflammatory bowel disease, chronic obstructive pulmonary disease, asthma, atherosclerosis, vasculitis, hypertension, thyroiditis, primary biliary cirrhosis, Paget's disease, Addison's disease, acute respiratory distress syndrome, acute lung injury, and/or aseptic chronic inflammation~~, more generally~~.

~~79. A method to identify a patient at risk for developing type 2 diabetes, the method comprising obtaining a sample containing T-cells from a patient to be tested, contacting the sample with a peptide that binds the CD40 protein, detecting the CD-40 bound peptide, and determining the level of Th40 cells from the amount of CD40 bound, wherein a level of Th40 cells greater than 25% of the total T-cell population indicates the patient is at risk for developing type 2 diabetes.~~

~~80. A method to identify a patient at risk for developing autoimmune disease and/or type 2 diabetes, the method comprising obtaining a sample containing T-cells from a patient to be tested, contacting the sample with a peptide that binds the CD40 protein, detecting the CD-40 bound peptide, and determining the level of Th40 cells from the amount of CD40 bound, wherein a level of Th40 cells greater than 25% of the total T-cell population indicates the patient is at risk for developing autoimmune disease and/or developing type 2 diabetes.~~

~~81.~~14. Use of a peptide in the manufacture of a composition for preventing, modulating, or reducing ~~A method to prevent, modulate, or reduce~~ autoimmune disease ~~and/or type 2 diabetes~~, wherein the ~~method comprising administering to the subject in need thereof, a therapeutically effective amount of a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~which specifically binds to a CD40 presenting cells at the CD154 binding site~~.

~~82. The method of any of the prior claims, wherein the peptide binds to CD40.~~

~~83. The method of any of the prior claims, wherein said peptide binds to a CD40 protein with a Kd of greater than 10^{-6}.~~

~~84. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 and CD154.~~

~~85. The method of any of the prior claims, wherein said peptide inhibits the binding of CD40 to CD154.~~

~~86. The method of any of the prior claims, wherein said peptide binds CD40 at the site where CD40 interacts with CD154.~~

~~87. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as to prevent the expansion of Th40 cells.~~

~~88. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as to reduce the number of Th40 cells.~~

~~89. The method of any of the prior claims, wherein said peptide affects the interaction of CD40 with CD154 in such a manner as alter the cytokine expression profile of a cell population treated with said peptide.~~

~~90. The method of any of the prior claims, wherein said peptide comprises an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, and SEQ ID NO:30.~~

~~91. The method of any of the prior claims, wherein said peptide is an amino acid sequence selected from the group of SEQ ID NO:4, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, and SEQ ID NO:30.~~

~~92. The method of any of the prior claims, wherein said peptide is an amino acid sequences selected from the group of SEQ ID NOs:3-9, 24-30 and 32.~~

~~93.~~15. Use of a peptide in the manufacture of a composition ~~A method~~ for preventing, modulating, reducing, treating, and/or reversing autoimmune and/or auto-inflammatory disease in a subject, wherein the ~~comprising administering to the subject having type 2 diabetes, a therapeutically effective amount of a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~that affects the interaction of CD40 with CD154/CD40 ligand~~.

~~94.~~16. Use of a peptide in the manufacture of a composition ~~A method~~ for preventing, modulating, reducing, treating, and/or reversing an autoimmune and/or auto-inflammatory disease in a subject, wherein the ~~comprising administering a therapeutically effective~~

~~amount of a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~that affects the interaction of CD40 with CD154/CD40 ligand~~, wherein the subject suffers from a condition selected from the group comprising type I diabetes, multiple sclerosis, systemic lupus erythematosa, rheumatoid arthritis, Crohn's disease, inflammatory bowel disease, chronic obstructive pulmonary disease, asthma, atherosclerosis, vasculitis, hypertension, thyroiditis, primary biliary cirrhosis, Paget's disease, Addison's disease, acute respiratory distress syndrome, acute lung injury, type 2 diabetes, and/or aseptic chronic inflammation~~, more generally~~.

~~95.~~17. Use of a peptide in the manufacture of a composition ~~A method~~ for preventing, modulating, reducing, treating, and/or reversing autoimmune and/or autoinflammatory disease in a subject, wherein the ~~comprising administering to the subject having autoimmune and/or autoinflammatory disease, a~~ peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 ~~that interacts with the CD40 protein in such a manner as to modulate GLUT 4~~.

~~95. A method for preventing, modulating, reducing, treating, and/or reversing autoimmune and/or autoinflammatory disease in a subject, comprising administering to the subject having autoimmune and/or autoinflammatory disease, a peptide that interacts with a CD40 protein in such a manner as to modulate INFγ.~~

~~99. A method for preventing, modulating, reducing, treating, and/or reversing autoimmune and/or autoinflammatory disease in a subject, comprising administering to the subject having autoimmune and/or autoinflammatory disease, a peptide that interacts with a CD40 protein in such a manner as to modulate interleukin-2 (IL-2).~~

~~100. A method for preventing, modulating, reducing, treating, and/or reversing autoimmune and/or autoinflammatory disease in a subject, comprising administering to the subject having autoimmune and/or autoinflammatory disease, a peptide that interacts with a CD40 protein in such a manner as to modulate interleukin-17 (IL-17).~~

18. Use of a peptide in the manufacture of a composition for preventing, modulating, reducing, treating, and/or reversing glucose intolerance and/or insulin insensitivity in a subject, wherein the peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29.

~~101.~~19. A use method of any of the preceding ~~prior~~ claims, wherein the peptide binds to CD40.

~~102.~~20. The use ~~method~~ of any of the preceding ~~prior~~ claims, wherein said peptide binds to a CD40 protein with a Kd of greater than 10^{-6}.

~~103.~~21. The use ~~method~~ of any of the preceding ~~prior~~ claims, wherein said peptide affects the interaction of CD40 and CD154.

~~104.~~22. The use ~~method~~ of any of the preceding ~~prior~~ claims, wherein said peptide inhibits the binding of CD40 to CD154.

~~105.~~23. The use ~~method~~ of any of the preceding ~~prior~~ claims, wherein said peptide binds CD40 at the site where CD40 interacts with CD154.

~~106.~~24. The use ~~method~~ of any of the preceding ~~prior~~ claims, wherein said peptide ~~affects the interaction of CD40 with CD154 in such a manner as to prevent~~ inhibits the expansion of Th40 cells.

~~107.~~25. The use method of any of the preceding ~~prior~~ claims, wherein said peptide ~~affects the interaction of CD40 with CD154 in such a manner as to reduce~~ reduces the number of Th40 cells.

~~108.~~26. The use method of any of the preceding ~~prior~~ claims, wherein said peptide ~~affects the interaction of CD40 with CD154 in such a manner as to alter~~ alters the cytokine expression profile of a cell population treated with said peptide.

~~108. The method of any of the prior claims, wherein said peptide comprises an amino acid sequence selected from the group of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO: 29, and SEQ ID NO:30.~~

~~108. The method of any of the prior claims, wherein said peptide is an amino acid sequence selected from the group of SEQ ID NO:4, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO: 29, and SEQ ID NO:30.~~

27. The use of any of the preceding claims, wherein the subject does not produce autoantibodies responsive to the peptide.

28. The use of any of the preceding claims, wherein the subject does not produce autoantibodies responsive to CD154.

29. The use of any of the preceding claims, wherein the subject does not produce autoantibodies responsive to GLUT 4.

30. The use of any of the preceding claims, wherein the subject's T cells do not elicit T cell antigen recall.

31. The use of any of the preceding claims, wherein the peptide modulates glucose transport protein 4 (GLUT 4).

32. The use of any of the preceding claims, wherein the peptide modulates expression and/or activity of IL-2 or IL-17A.

33. The use of any of the preceding claims, wherein the peptide modulates expression and/or activity of IFN-γ.

34. The use of any of the preceding claims, wherein the peptide reduces or inhibits interleukin-2 signaling.

35. The use of any of the preceding claims, wherein the peptide reduces or inhibits interleukin 17 (IL-17) signaling.

~~109. The method of any of the prior claims, wherein said peptide binds to multiple bone marrow derived cell types which express CD40 of approximately 45kDa, including splenic CD4hi cells, CD8 cells, and other antigen presenting cells.~~

~~110. The method of any of the prior claims, wherein said peptide is obtained from natural sources or it is synthesized.~~

~~111.~~36. The use ~~method~~ of any of the preceding ~~prior~~ claims, wherein the composition is formulated for delivery according to a ~~CD40 binding peptide is administered to the subject via a delivery~~ method selected from the group comprising intramuscular (IM) delivery, intravenous (IV) delivery, subcutanerous (SC) delivery, oral delivery, gavage delivery, emolument/skin delivery, transdermal patch, or nasal administration.

~~112.~~37. The use ~~method~~ of any of the preceding ~~prior~~ claims, wherein the composition is formulated for delivery according to a ~~CD40 binding peptide is administered to the subject via a delivery~~ method selected from the group comprising an implantable device, a hydrophilic polymer formulation, a permeable polymeric membrane, injectable gel implants, solvent extraction system, phase inversion system, thermosensitive gels, pH dependent *in situ* gels, microparticles, microspheres, nanoparticles, nanospheres, bio-degradable implants, or photoactivated depot.

38. Use of a peptide that is 6 amino acids in length, has an amino acid sequence of SEQ ID NO: 28 or 29, and binds CD40 protein in the manufacture of a composition for identification of a subject at risk for developing cardiovascular disease and/or atherosclerosis, the identification comprising obtaining a sample containing T-cells from a subject to be tested, contacting the sample with the peptide, detecting the CD40-bound peptide, and determining the level of Th40 cells from the amount of CD40 bound, wherein a level of Th40 cells greater than 25% of the total T-cell population indicates the subject is at risk for developing cardiovascular disease and/or developing atherosclerosis.

39. Use of a peptide that is 6 amino acids in length, has an amino acid sequence of SEQ ID NO: 28 or 29, and binds CD40 protein in the manufacture of a composition for identification of a subject at risk for developing type 2 diabetes, wherein the identification comprises obtaining a sample containing T-cells from the subject to be tested, contacting the sample with the peptide, detecting the CD40-bound peptide, and determining the level of Th40 cells from the amount of CD40 bound, wherein a level of Th40 cells greater than 25% of the total T-cell population indicates the subject is at risk for developing type 2 diabetes.

40. Use of a peptide that is 6 amino acids in length, has an amino acid sequence of SEQ ID NO: 28 or 29, and binds CD40 protein in the manufacture of a composition for identification of a subject at risk for developing autoimmune disease and/or type 2 diabetes, wherein the identification comprises obtaining a sample containing T-cells from the subject to be tested, contacting the sample with the peptide, detecting the CD40-bound peptide, and determining the level of Th40 cells from the amount of CD40 bound, wherein a level of Th40 cells greater than 25% of the total T-cell population indicates the subject is at risk for developing autoimmune disease and/or developing type 2 diabetes.

41. The use of any of the preceding claims, wherein the peptide binds to multiple bone marrow derived cell types that express CD40 of approximately 45kDa.

42. The use of any of the preceding claims, wherein said peptide binds to multiple bone marrow derived cell types which express CD40 of approximately 45kDa, including splenic CD4hi cells, CD8 cells, and other antigen presenting cells.

43. The use of any of the preceding claims, wherein the peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28.

44. The use of any of the preceding claims, wherein the peptide is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 29.

45. The use of any of the preceding claims, wherein said peptide is obtained from natural sources or is synthesized.

46. The use of any of the preceding claims, wherein the subject is human.

47. The use of any of the preceding claims, wherein the subject is animal.

~~113.~~48. A composition comprising a peptide that is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29~~, method or system as described herein~~.

49. A composition comprising a peptide that is 6 amino acids in length and has an amino acid sequence of SEQ ID NO: 28 or 29 for use as a medicament.