

CLAIMS:

1. A liposomal vaccine composition comprising:
 - a. A β -amyloid ($A\beta$)-derived peptide antigen displayed on the surface of the liposome
 - b. A peptide comprising a universal T-cell epitope encapsulated within the liposome that is capable of stimulating a helper T-cell response that enhances antibody production by B-cells
 - c. An adjuvant.
2. The liposomal vaccine composition of claim 1 wherein the peptide comprising a universal T-cell epitope comprises at least 30% hydrophobic amino acids.
3. The liposomal vaccine composition of claim 1 or 2 wherein the vaccine composition comprises at least two different universal T-cell epitopes encapsulated within the liposome.
4. The liposomal vaccine composition of any one of claims 1 to 3 wherein each universal T-cell epitope is no more than 30 amino acids in length, no more than 20 amino acids in length, or no more than 10-20 amino acids in length.
5. The liposomal vaccine composition of any one of claims 1 to 4 wherein the vaccine composition comprises two, three or four different universal T-cell epitopes encapsulated within the liposome.
6. The liposomal vaccine composition of any one of claims 1 to 5 wherein the peptide comprising a universal T-cell epitope comprises at least two different universal T-cell epitopes.
7. The liposomal vaccine composition of any one of claims 1 to 6 wherein the peptide comprising a universal T-cell epitope comprises two, three or four universal T-cell epitopes.
8. The liposomal vaccine composition of any one of claims 3 to 7 wherein the at least two universal T-cell epitopes are joined by a linker.
9. The liposomal vaccine composition of claim 8 wherein the linker comprises at least two amino acids, optionally wherein the linker comprises, consists essentially of or consists of the amino acids VVR or PMGAP.
10. The liposomal vaccine composition of any one of claims 1 to 9 wherein the universal T-cell epitopes are selected from:
 - a. A combination of a diphtheria toxin and tetanus toxin universal T-cell epitope
 - b. A combination of an Epstein Barr Virus and tetanus toxin universal T-cell epitope

- c. A combination of an Epstein Barr Virus, tetanus toxin and keyhole limpet hemocyanin universal T-cell epitope; or
 - d. A combination of an influenza hemagglutinin, diphtheria toxin, tetanus toxin and Epstein Barr Virus universal T-cell epitope.
- 5 11. The liposomal vaccine composition of any one of claims 1 to 10 wherein the peptide comprising a universal T-cell epitope comprises, consists essentially of or consists of an amino acid sequence selected from SEQ ID NO: 1 (SAT42), SEQ ID NO: 2 (SAT43), SEQ ID NO: 3 (SAT44), SEQ ID NO: 4 (SAT47).
- 10 12. The liposomal vaccine composition of any one of claims 1 to 10 wherein the universal T-cell epitope comprises, consists essentially of or consists of an amino acid sequence selected from SEQ ID NO: 5 (SAT6), SEQ ID NO: 6 (SAT13), SEQ ID NO: 7 (SAT15), SEQ ID NO: 8 (SAT17).
- 15 13. A liposomal vaccine composition comprising:
 - a. A tetrapalmitoylated β -amyloid (A β)-derived peptide antigen displayed on the surface of the liposome that comprises, consists essentially of or consists of amino acids 1-15 of A β
 - b. A peptide comprising a universal T-cell epitope encapsulated within the liposome wherein the peptide comprising a universal T-cell epitope comprises, consists essentially of or consists of an amino acid sequence selected from SEQ ID NO: 3 (SAT44) and SEQ ID NO: 4 (SAT47)
 - c. An adjuvant.
- 20 14. The liposomal vaccine composition of any one of claims 1 to 13 wherein the adjuvant forms part of the liposome.
- 25 15. The liposomal vaccine composition of any one of claims 1 to 14 wherein the adjuvant is, at least in part, displayed on the surface of the liposome.
- 30 16. The liposomal vaccine composition of any one of claims 1 to 15 wherein the adjuvant comprises monophosphoryl lipid A (MPLA).
- 35 17. The liposomal vaccine composition of any one of claims 1 to 16 wherein the peptide comprising a universal T-cell epitope is between 30 and 60 amino acids in length.
18. A vaccine composition as defined in any one of claims 1 to 17 for use in treating, preventing, inducing a protective immune response against or alleviating the symptoms associated with an amyloid-beta associated disease or condition in a subject.
19. A kit for treating, preventing, inducing a protective immune response against or alleviating the symptoms associated with an amyloid-beta associated disease or

condition in a subject comprising a liposomal vaccine composition as claimed in any one of claims 1 to 17.