CLAIMS

1. A peptide immunogen construct represented by the following formulae:

$(A)_n$-(Target antigenic site)-$(B)_o$-$(Th)_m$-$(A)_n$-X

or

$(A)_n$-$(Th)_m$-$(B)_o$-(Target antigenic site)-$(A)_n$-X

or

$(A)_n$-$(Th)_m$-$(B)_o$-(Target antigenic site)-$(B)_o$-$(Th)_m$-$(A)_n$-X

or

$\{(A)_n$-$(Th)_p$-$(B)_o$-(Target antigenic site)-$(B)_o$-$(Th)_p$-$(A)_n$-$X\}_m$

wherein:

each A is independently an amino acid;

each B is independently a heterologous spacer;

each Th is independently a promiscuous artificial Th epitope selected from the group consisting of SEQ ID NOs:34, 36-38, and 41-50;

the Target antigenic site is an Aβ peptide having the amino acid sequence selected from the group consisting of SEQ ID Nos: 56, 57, 58, 59, and 60;

X is an amino acid, α-COOH, or α-$CONH_2$;

n is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;

m is 1, 2, 3, or 4; and

o is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; and

p is 0, 1, 2, 3, or 4.

2. The peptide immunogen construct of claim 1, wherein the heterologous spacer of component B is selected from the group consisting of an amino acid, Lys-, Gly-, Lys-Lys-Lys-, (α, ε-N)Lys, ε-N-Lys-Lys-Lys-Lys (SEQ ID NO: 53), Lys-Lys-Lys-εNLys (SEQ ID NO: 54), Gly-Gly, Pro-Pro-Xaa-Pro-Xaa-Pro (SEQ ID NO: 55), and any combination thereof, wherein Xaa is any amino acid.

3. A pharmaceutical composition comprising the peptide immunogen construct according to claim 1.