AMYLOID BETA LOCALISATION, AND INTERACTION WITH BIOMIMETIC MEMBRANES

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**Introduction:** Amyloid beta has been implicated in Alzheimer’s disease. However, the underlying mechanisms remain unknown. The proposed hypotheses include pore formation, disruption of ionic channels, and lipids peroxidation.

**Aims:** In order to advance our understanding, we studied, in real-time, spatio-temporal changes in model membranes induced by the presence of different Ab-peptides.

**Methods:** Using confocal and phase contrast microscopy, we observed localization of labeled Ab-peptides, and its effect on membrane dynamics.

**Results:** Oligomeric, but not fibrillar species localized on the membrane surface. Oligomers induced membrane transformations that increased effective membrane surface area (Fig. 1). Interestingly, mature fibrils, often considered inert species, also induced membrane transformations.

![Fig. 1 Membrane dynamics induced by amyloid beta](image)

**Conclusions:** Previously we hypothesized that this increase was due to either A\textbeta inserting into the membrane bilayer, and/or membrane fusion aided by the presence of peptides. We have now confirmed the membrane-fusion hypothesis. Studies using gramicidin A, a pore-forming peptide, did not induce membrane transformations. We propose that Ab-induced membrane transformation may be a separate and/or additional toxicity-mechanism from that induced simply by formation of pores. The observed real-time morphological transformations, often missed in discretized analysis, may unlock mechanisms of Alzheimer’s A\textbeta-induced neurodegeneration.