

The synaptic protein neuroligin-1 interacts with the amyloid  $\beta$ -peptide. is there a role in Alzheimer's disease?

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Amyloid  $\beta$ -peptide (A $\beta$ ) is the main component of the amyloid plaques associated with Alzheimer's disease (AD). In the early steps of the disease soluble A $\beta$  oligomers are produced. According to the current "amyloid hypothesis" these oligomers can accumulate over time, leading progressively to the loss of synaptic function and the cognitive failure characteristic of AD. To understand the role of oligomeric A $\beta$  species in AD pathology, it is important to understand the mechanism by which A $\beta$  oligomers are targeted to synaptic junction. We report here the interaction between A $\beta$  with neuroligin-1 (NL-1), a postsynaptic cell-adhesion protein specific for excitatory synapses, which shares a high degree of similarity with acetylcholinesterase, the first synaptic protein described to interact with A $\beta$ . Using intrinsic fluorescence and surface plasmon resonance, we found that A $\beta$  binds to the extracellular domain of NL-1 with a  $K_d$  in the nanomolar range. In the case of NL-2, a postsynaptic cell-adhe