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**Fluorescence spectroscopic and microscopic study of beta-amyloid peptide interaction with lipid bilayers** JOHN COMO, LIMING QIU, ANTHONY LEWIS, JACOB AJIMO, J. HUANG, K. CHENG, Texas Tech University — Beta-amyloid is a short peptide with only 39 to 42 amino acids. Aggregated beta-amyloid on neuronal membrane surface has been implicated with the pathogenesis of Alzheimer disease. The detailed mechanism of interactions of this peptide with neuronal membranes is still not clear. Using a model bilayer system, the association of this peptide with lipid bilayer containing charged headgroup and varying amount of cholesterol has been studied using fluorescence spectroscopy and microscopy. Fluorescence anisotropy of a cholesterol analog, DHE, energy transfer from peptide to DHE, and the surface binding of labeled peptide with membrane surface were measured systematically as a function of the cholesterol content in the lipid bilayer. Our results revealed an interesting biphasic behavior of peptide/lipid interaction. We conclude that cholesterol strongly regulates the binding of beta-amyloid to cholesterol containing membranes.

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