

DIRECT OBSERVATION OF LIPID/PROTEIN INTERACTIONS USING ATOMIC FORCE MICROSCOPY ON SUPPORTED BILAYERS

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Lipid bilayers have long been used as a model for cell membrane either as planar supported bilayers or as free membranes in lipid vesicles. With the advent of atomic force microscopy (AFM) the change in nanometer scale morphology of the bilayers can be imaged. The PSB is a good tool for studying the lipid-protein interaction. By injecting a protein solution in the AFM fluid cell after the PSB (Planar Supported Bilayer) is formed one can directly observe the interaction of the protein with the lipid bilayer. We used this model system to study the interaction of A β peptides with bilayers composed of various lipids. By changing the composition of the PSB it is possible to observe the specific interaction of A β peptide with lipids having various head groups. Phospholipid vesicles that have been incubated with A β peptides are ruptured on mica surface to form a PSB and the surface topography of the outer leaflet was imaged using AFM. By imaging the sample at different times after the incubation process began we were able to monitor how the lipid-A β interaction affects the surface topography of the PSB.