

Abstract Submitted  
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**Membrane fluidity in the presence of membrane-binding peptides**

BEATRIZ BURROLA GABILONDO, WOLFGANG LOSERT, University of Maryland, PAUL RANDAZZO, National Cancer Institute — Arf proteins are GTP-ases that participate in vesicle trafficking inside cells. They are able to interact with membranes through their N-terminus when they are bound to GTP, and they detach from the membrane when GTP is hydrolyzed. The N-terminus of Arf1 (amino acids 2-17) folds into an amphipathic helix that can insert into lipid bilayers. Arf1 is also myristoylated; it has myristic acid, a 14-carbon fatty acid ‘tail’, attached to it. We set out to test the hypothesis that the binding of the myristoylated N-terminus of Arf1 to lipid membranes changes the mechanical properties of the membrane, in ways that myristic acid alone or amphipathic peptides alone do not. We use three reporter molecules embedded in vesicles, whose fluorescence emission spectrum depends on the properties of the environment in which they are found, to measure three distinct aspects of membrane fluidity: Bispyrene is sensitive to lateral motion along the membrane, Prodan’s emission gives a measure of the packing of the head groups, and DPH polarization reflects the packing of the hydrophobic tails. We will present effects found for four molecules (myristic acid, myristoylated and non-myristoylated N-terminus of Arf1, and the ALPS domain of KES) in a concentration-dependent manner, and discuss the importance of these results in the vesicle-trafficking picture.

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