

Phospholipids Motility at the Surface of Model Lipid Droplet

Shima Asfia¹, Ralf Seemann¹ and Jean-Baptiste Fleury¹

¹ Department of Experimental Physics and Center for Biophysics, Saarland University, Germany

Abstract

The dynamic partitioning of certain proteins between a bilayer and lipid (triolein) droplets is key to understand the function of these cellular sub-organelles. As a model for the surface of a lipid droplet that is covered with a bilayer leaflet, we use a triolein-water interface covered by a phospholipid monolayer. The motility of the phospholipids is investigated using fluorescence recovery after photobleaching (FRAP) method on such labelled phospholipids. For that we provide a quick bleaching in a certain area of the phospholipid monolayer and record the fluorescent recovery due the diffusive lateral movements of the phospholipid monolayer. The recovery analysis reveals the diffusion constant of the bleached phospholipids as function of the LD molecular composition. Thus, these findings proves the important ability of surface LDs motility as they need to contact and communicate with other organelles in the cell.