

Abstract Submitted
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Specific Adhesion of Lipid Membranes Can Simultaneously Produce Two Types of Lipid and Protein Heterogeneities ORRIN SHINDELL, NATALIE MICAH, Univ of Texas, Austin, MAX RITZER, None, VERNITA GORDON, Univ of Texas, Austin — Living cells adhere to one another and their environment. Adhesion is associated with re-organization of the lipid and protein components of the cell membrane. The resulting heterogeneities are functional structures involved in biological processes. We use artificial lipid membranes that contain a single type of binding protein. Before adhesion, the lipid, protein, and dye components in the membrane are well-mixed and constitute a single disordered-liquid phase (L_d). After adhesion, two distinct types of heterogeneities coexist in the adhesion zone: a central domain of ordered lipid phase that excludes both binding proteins and membrane dye, and a peripheral domain of disordered lipid phase that is densely packed with adhesion proteins and enriched in membrane dye relative to the non-adhered portion of the vesicle. Thus, we show that adhesion that is mediated by only one type of protein can organize the lipid and protein components of the membranes into heterogeneities that resemble those found in biology, for example the immune synapse.

Orrin Shindell
Univ of Texas, Austin

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