

Abstract Submitted  
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**Adhesion induces and localizes phase separation in lipid membranes** MARKUS DESERNO, Carnegie Mellon University, VERNITA GORDON, University of Illinois, Urbana-Champaign, CAROLINE ANDREW, University of Edinburgh, STEFAN EGELHAAF, Heinrich-Heine University, Duesseldorf, WILSON POON, University of Edinburgh — We study, using confocal microscopy, model membranes in the form of giant unilamellar vesicles (GUVs) consisting of a mixture of two lipids. We demonstrate that, near a demixing transition, adhesion can favor phase separation, and thus induce the formation of well-defined, localized heterogeneities in a variety of lipid systems. We outline a theoretical framework in which this may be understood as the result of suppressing thermal fluctuations in the adhering areas and consequently favoring demixing. Our findings have important implications for the mechanisms by which biomembranes may create and stabilize functional heterogeneities, such as rafts and focal adhesion sites.

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