

**Inter-leaflet coupling of lipid domains: phase behavior, lipid correlations,
and the role of transmembrane proteins**

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Abstract

We discuss how micro- and macroscopic fluid domains in mixed lipid membranes interact across their two apposed leaflets. First, a mean-field model and ensuing phase diagrams are presented. Second, for membranes composed of lipids with different chain lengths we study the influence of individual lipid-lipid correlations across the membrane using the quasi-chemical approximation and compare the predictions to Monte Carlo simulations. Third, we propose a mean-field model that investigates the interplay between transmembrane protein-mediated versus lipid-mediated domain coupling across a bilayer.

References:

Modeling Lipid-Lipid Correlations across a Bilayer Membrane Using the Quasi-chemical Approximation, GV Bossa, J Roth, S May, Langmuir 31 (36), 9924-9932, 2015