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Temperature and Composition Dependent Phase Behavior in Two "Raft-Like" Ternary Membrane Mixtures: DPPC/DLPC/Cholesterol and DPPC/DOPC/Cholesterol JEFFREY BUBOLTZ, Colgate University, GEOFFREY SIEGEL, MATTHEW SCHUTZER, KRYSTLE WILLIAMS, CHARLES BWALYA, SANTIAGO REYES — For the last several years, so-called "lipid-raft" membrane domains have been the subject of intense research activity. As part of this effort, we have been carrying out experiments based on Probe-Partitioning FRET, a technique specifically designed to map out both phase boundaries and tie lines in artificial membrane mixtures. Specifically, we have studied two cholesterol-rich ternary mixtures, DPPC/DLPC/Cholesterol and DPPC/DOPC/Cholesterol, that mimic lipid-raft phase behavior. By studying more than 3000 independently prepared samples, we have gained insight into the general features (i.e., both temperature and composition dependence) that characterize the phase behavior in these two ternary systems. As we work toward extending our studies to other raft-like ternary mixtures, we are also adapting a different, purely thermodynamic technique (Equilibrium Surface Pressure Analysis) for the purpose of corroborating tie line patterns inferred from PP-FRET.

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