

Abstract Submitted
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Evidence for condensed lipid/cholesterol complexes in lipid membranes. MARIA K. RATAJCZAK, SHELLI L. FREY, EVA CHI, CANAY EGE, THEODORE L. STECK, University of Chicago, YVONNE LANGE, Rush University, JAREK MAJEWSKI, Los Alamos National Laboratory, KRISTIAN KJAER, Riso National Laboratory, KA YEE C. LEE, University of Chicago — Certain binary mixtures of phospholipids and cholesterol exhibit phase diagrams with two immiscibility regions with a sharp cusp in between. The cusp has been suggested to represent the stoichiometry of phospholipid/cholesterol complexes, and cholesterol is thought to exist in two states: a bound, low activity state, and an unbound, high activity state. To better understand the interaction between phospholipids and cholesterol, we have studied the effect of a possible displacing agent, hexadecanol, on the behavior of the binary mixture. Our cholesterol desorption assays indicate that hexadecanol can displace cholesterol from its association with phospholipids, thereby activating it. Phospholipid/cholesterol/hexadecanol systems in which a fraction of cholesterol is replaced by the alcohol have phase diagrams that mimic those of binary systems with the same apparent molar stoichiometry. X-ray data show a broad Bragg peak in these binary systems, indicating that order in these complexes extend over only several molecular dimensions.

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