

Abstract Submitted
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Stabilization of concentration fluctuations in mixed membranes by hybrid lipids BENOIT PALMIERI, SAMUEL SAFRAN, Weizmann Institute of Science — Finite-size domains have been observed at the surface of cells. These lipids “rafts” are stable nanodomains enriched in saturated lipids and cholesterol. While line tension favors macrodomains, one explanation for raft stabilization suggests that the membrane composition is tuned close to a spinodal temperature. From this point of view, rafts are long-lived concentration fluctuations in the mixed phase. We propose a ternary mixture model for the cell membrane that includes hybrid lipids which have one saturated and one unsaturated hydrocarbon chain. Finite amount of hybrid lipids reduces the packing incompatibility at the saturated/unsaturated lipid interface and stabilizes the concentration fluctuations. Hybrid-Hybrid interactions are included in the model and further increase the life-time of the rafts and decrease their length-scales. Moreover, the hybrid has extra orientational degrees of freedom that may lead to modulated phases.

Benoit Palmieri
Weizmann Institute of Science

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