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New Crafting Method for Constructing Asymmetric Vesicles URSULA PEREZ-SALAS, MICHAEL STANFIELD, University of Illinois at Chicago — We measured the diffusion between of dipalmitoyl-phosphocholine (DPPC) and dimyristoyl-phosphocholine (DMPC) 100nm in diameter unilamellar vesicles using calorimetry to detect the formation of asymmetric membranes. From previous measurements on the transfer of pure DMPC between vesicles done by time resolved small angle neutron scattering (TR-SANS) it was inferred that lipids move slowly across the lipid bilayer, and that this flop-flop motion within the lipid bilayer is slower than the time it takes the lipids to exchange between different vesicles. DPPC, being similar to DMPC, but with longer hydrophobic tails, behaves similarly though the process of exchange and flip-flop is also slower than in DMPC. Using calorimetry we observed signatures of asymmetry in DPPC vesicles as this population exchanged lipids with DMPC vesicles. The fact that asymmetry is detected DPPC vesicles shows that the counter-intuitive flip-flop rate (found to be slower than the exchange rate) inferred.

Michael Stanfield
University of Illinois at Chicago

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