Quantitative Imaging of Membrane Shape Transformation and Pearling

STEPHEN ANTHONY, University of Illinois, YAN YU, UC Berkeley, STEVE GRANICK, University of Illinois — Experiments show, in areas from vesicle budding, to pearling and even stochastic fluctuation of shape, the ubiquity of non-spherical shape in phospholipid assemblies. Here we focus on pearling and the massive stochastic fluctuations which precede it when nanoparticles induce this transformation by adsorption to the inner leaflet of a giant unilamellar vesicle (GUV). Novel methods to quantify non-spherical contours in movies with massive numbers of frames allow us to imagine membrane fluctuations frame-by-frame, even in the case of low signal-to-noise.

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