

Abstract Submitted
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Vesicle Shape Transformations Driven by Active and Spontaneous Lipid Flip-flop THOMAS POWERS, Brown University, ELNAZ BAUMSNOW, University of Connecticut Health Center — The lipid composition of cell membranes is created and maintained in part by flippases, enzymes that translocate lipid molecules from one layer of the bilayer membrane to the other. We study how lipid translocation can affect membrane shape, using a cylindrical vesicle as a simple model system. For a short pulse of flippase activity, in which a fraction of lipids are flipped from one layer to the other, we calculate the fraction of flipped lipids that makes the cylinder unstable to a periodic modulation in its radius, as well as the growth rate of perturbations of different wavenumber. We also study the cases of continuous flippase activity and spontaneous flip-flop.

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