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Curvature-induced microphase separation and lipid polar localization in cell membranes - II¹ KERWYN HUANG, Princeton University, RANJAN MUKHOPADHYAY, Clark University, NED WINGREEN, Princeton University — In part II of this talk, we discuss how domain sizes in microphase-separated membranes are determined by the physical properties of lipids such as intrinsic curvature in our minimal model for membrane energetics. We then make contact between our model and experiments on the localization of the bacterial phospholipid cardiolipin. We demonstrate that the slight difference in curvature between the poles and midcell region of a micron-sized bacterium is enough to stably localize cardiolipin clusters to the poles, suggesting that cardiolipin clusters could be a target for polarly-localized proteins. We also show that the cardiolipin domain sizes are not sensitive to changes in the membrane composition. Finally, we propose experiments to test our model using inducible expression of cardiolipin in the bacterium *Bacillus subtilis*.

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