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Thermal Stress of Supported Lipid Bilayer Induces Formation and Collapse of Uniform Radius Tubules KIMBERLY WEIRICH, DEBORAH FYGENSON, University of California, Santa Barbara — Supported lipid bilayer (SLB) provides a model system in which to quantitatively investigate fluid bilayer transitions from planar to tubular and tubular to spherical morphologies. Following a small increase in temperature, flexible filaments extrude from a fluid SLB. Individual filaments can reach hundreds of microns in length before spontaneously collapsing into discs. We demonstrate that the filaments are tubular and report the effects of lipid composition and flow-induced tension on their properties. At high ionic strength, the sub-resolution tubules are adsorbed to the SLB, enabling the measurement of their radius to within ± 5 nm using fluorescence microscopy.

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