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**Shapes of biological membranes due to curvature-inducing proteins** KIYOTAKA AKABORI, CHRISTIAN SANTANGELO, Department of Physics, University of Massachusetts, Amherst — In biological cells, lipid membranes are shaped by a variety of proteins. We develop a theoretical model for a class of anisotropic proteins that induce curvature along their backbone. Due to the interplay between rotational entropy and membrane bending energy, these proteins can locally induce either positive (spherical) or negative (saddle-splay) Gaussian curvature. When added to a lamellar phase, protein-induced saddle-splay favors the formation of bicontinuous structures by inducing screw dislocations in the lamellar order. We also study the effect of an additional transverse coupling to make contact with previous theoretical models of anisotropic, curvature-inducing proteins.

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