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**Structural Transitions of F-Actin:Espin Bundles** KIRSTIN PURDY, University of Illinois at Urbana Champaign, JAMES BARTLES, Northwestern University, GERARD WONG, University of Illinois at Urbana Champaign — Espin is an actin bundling protein involved in the formation of the parallel bundles of filamentous actin in hair cell stereocilia. Mutations in espin are implicated in deafness phenotypes in mice and humans. We present measurements of the F-actin structures induced by wild type and by mutated espin obtained via small angle x-ray scattering and fluorescence microscopy. We found that wild type espin induced a paracrystalline hexagonal array of twisted F-actin, whereas the mutated espin only condensed the F-actin into a nematic-like phase. The possibility of coexisting nematic and bundled actin in mixtures containing both mutant and wild type espins was also investigated.

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