

Abstract Submitted
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Study of Native Type I Collagen Fibrils AUGUST HEIM, University of South Florida — Presented in this work is direct imaging and force microscopy of native, intact type I collagen fibrils extracted from the sea cucumber *Cucumaria frondosa* dermis with affiliated proteoglycan molecules. The prototypical collagen fibril structure is well conserved through higher mammalian species and presents a model for study of the mechanical properties of the primary individual components of the dermis and skeletal ligature. Common practice is to use reconstituted fibrils which lack the precise conformal structure and affiliated proteoglycans. We have performed force microscopy to probe the mechanical properties of native fibrils and extract the elastic modulus under natural conditions. This knowledge is combined transmission and atomic force imaging, in conjunction with applied computation models, to demonstrate an inherent semitubular structure of these fibrils.

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