Abstract Submitted
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Regulation of muscle contraction by Drebrin-like protein 1 probed by atomic force microscopy. RENATA GARCES, EUGENIA BUTKEVICH, MITJA PLATEN, CHRISTOPH F. SCHMIDT, Third Institute of Physics - Biophysics, Georg August University, Gttingen, BIOPHYSICS TEAM — Sarcomeres are the fundamental contractile units of striated muscle cells. They are composed of a variety of structural and regulatory proteins functioning in a precisely orchestrated fashion to enable coordinated force generation in striated muscles. Recently, we have identified a *C. elegans* drebrin-like protein 1 (DBN-1) as a novel sarcomere component, which stabilizes actin filaments during muscle contraction. To further characterize the function of DBN-1 in muscle cells, we generated a new *dbn-1* loss-of-function allele. Absence of DBN-1 resulted in a unique worm movement phenotype, characterized by hyper-bending. It is not clear yet if DBN-1 acts to enhance or reduce the capacity for contraction. We present here an experimental mechanical study on *C. elegans* muscle mechanics. We measured the stiffness of the worm by indenting living *C. elegans* with a micron-sized sphere adhered to the cantilever of an atomic force microscope (AFM). Modeling the worm as a pressurized elastic shell allows us to monitor the axial tension in the muscle through the measured stiffness. We compared responses of wild-type and mutant *C. elegans* in which DBN-1 is not expressed..

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