Abstract Submitted
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**Force Regulation in Living Tissue** YUSUKE TOYAMA, XOMALIN G. PERALTA, Physics Department, Duke University, STEPHANOS VENAKIDES, Mathematics Department, Duke University, DANIEL P. KIEHART, Department of Biology, Duke University, GLENN S. EDWARDS, Physics Department, Duke University — Forces within tissue are involved in the shaping of an embryo. Measuring the net forces exerted by groups of cells and tissues in live organisms is a challenging endeavor. Quantitative physical modeling based on experimental results has the potential for increasing our understanding of this question. We use a developmental stage in Drosophila embryo known as dorsal closure, which to a large extent occurs in two dimensions and is a consequence of four biological processes that are synchronized in time and coordinated in space [1]. To reveal the interaction of forces and tensions within the components of these tissues, we use a steerable UV-laser microbeam to cut them and monitor the resulting behavior with confocal microscopy. We present experimental evidence for an increase in the force that could be a consequence of the laser cut supported by a quantitative model and a biological mutant. [1] M. S. Hutson, et al. Science, 300, 145 (2003).

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