

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Correlation of Force Production with Apoptosis in Tissue Dynamics YUSUKE TOYAMA, XOMALIN PERALTA, Physics Department, Duke Univ., STEPHANOS VENAKIDES, Mathematics Department, Duke Univ., DANIEL KIEHART, Department of Biology, Duke University, GLENN EDWARDS, Physics Department, Duke Univ. — To understand embryo morphogenesis, it is necessary to know the force distribution in the various tissues. Since cells are largely inaccessible to mechanical probes *in vivo*, measurements of the net forces exerted by cells are challenging. The combination of experimental and theoretical approaches has proven to improve our understanding of these forces. A steerable UV-laser microbeam was used to probe the forces and the resulting kinematics were monitored with confocal microscopy. Dorsal closure is a developmental stage in *Drosophila* embryogenesis, where the dynamics are a consequence of four biological processes [1]. During this stage, cells that have outlived their usefulness undergo apoptosis, a biological process also known as programmed cell death for cells. Apoptotic events were decreased with genetic techniques or increased by irradiation with a UV-C lamp. We present experimental evidence for force generation correlating with apoptosis. This research has been supported by the NIH (GM33830 and GM61240). [1] M. S. Hutson, et al. *Science*, **300**, 145 (2003).

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Date submitted: 20 Nov 2006

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