Abstract Submitted
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Biophysical investigation of the apoptotic force[1] YUSUKE TOYAMA, XOMALIN PERALTA, Duke University, Physics Department, ADRIENNE WELLS, DANIEL KIEHART, Duke University, Department of Biology, GLENN EDWARDS, Duke University, Physics Department — Understanding tissue dynamics during development requires knowledge of how cells produce and respond to forces. We have experimentally shown that apoptosis (programmed cell death, which remodels tissue by eliminating cells) also contributes a significant tissue force that promotes cell sheet fusion during dorsal closure in Drosophila development [Science, 321, 1683 (2008)]. By genetically suppressing (enhancing) apoptosis, we slow (increase) the rate of dorsal closure. These changes correlate with the forces produced by the amnioserosa tissue and the rate of seam formation (zipping) for two advancing sheets of lateral epidermis. This apoptotic force is used to drive cell sheet movements during development, a role not classically attributed to apoptosis.

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