Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Tension, cell shape and triple-junction angle anisotropy in the Drosophila germband[1] MONICA LACY, M. SHANE HUTSON, CHRISTIAN MEYER, XENA MCDONALD, Vanderbilt University — In the field of tissue mechanics, the embryonic development of Drosophila melanogaster offers many opportunities for study. One of Drosophila's most crucial morphogenetic stages is the retraction of an epithelial tissue called the germband. During retraction, the segments of the retracting germband, as well as the individual germband cells, elongate in response to forces from a connected tissue, the amnioserosa. Modeling of this elongation, based on tissue responses to laser wounding, has plotted the internal germband tension against the external amnioserosa stress, creating a phase space to determine points and regions corresponding to stable elongation. Although the resulting fits indicate a necessary opposition of internal and external forces, they are inconclusive regarding the exact balance. We will present results testing the model predictions by measuring cell shapes and the correlations between cell-edge directions and triple-junction angles. These measures resolve the ambiguity in pinpointing the internal-external force balance for each germband segment.

[1]Research was supported by NIH Grant Numbers 1R01GM099107 and 1R21AR068933.

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Date submitted: 06 Nov 2015 Electronic form version 1.4