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Cell Autonomous Shape Changes in Germband Retraction HOLLEY LYNCH, ELLIOTT KIM, ROBERT GISH, M. SHANE HUTSON, Vanderbilt University — Germband retraction involves the cohesive movement and regulated cellular mechanics of two tissues on the surface of fruit fly embryos, the germband and the amnioserosa. The germband initially forms a ‘U’ shape, curling from the ventral surface, around the posterior of the embryo, and onto the dorsal surface; the amnioserosa lies between the arms of this ‘U’. Retraction straightens the germband and leaves it only on the ventral side. During retraction, the germband becomes clearly segmented with deep furrows between segments, and its cells elongate towards the amnioserosa, along what becomes the dorsal-ventral axis. To determine the importance of these changes for the overall movement of the tissues, we observed embryos that did not complete germband retraction due to targeted laser ablation of half the amnioserosa. Without the chemical and mechanical influence of the amnioserosa, germband furrows still formed and germband cells still elongated; however, this elongation was misaligned compared to unablated embryos. Thus, furrow formation and cell elongation in the germband are autonomous, but insufficient to drive proper tissue motion. These results suggest that part of the necessary role of the amnioserosa is proper orientation of germband cell elongation.

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