Abstract Submitted
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Cell vertices as independent actors during cell intercalation in epithelial morphogenesis[1] DINAH LOERKE, University of Denver — Epithelial sheets form the lining of organ surfaces and body cavities, and it is now appreciated that these sheets are dynamic structures that can undergo significant reorganizing events, e.g. during wound healing or morphogenesis. One of the key morphogenetic mechanisms that is utilized during development is tissue elongation, which is driven by oriented cell intercalation. In the Drosophila embryonic epithelium, this occurs through the contraction of vertical T1 interfaces and the subsequent resolution of horizontal T3 interfaces (analogous to so-called T1 transitions in soap foams), where the symmetry breaking behaviors are created by a system of planar polarity of actomyosin and adhesion complexes within the cell layer. The dominant physical model for this process posits that the anisotropy of line tension directs T1 contraction. However, this model is inconsistent with the in vivo observation that cell vertices of T1 interfaces lack physical coupling, and instead show independent movements. Thus, we propose that a more useful explanation of intercalary behaviors will be possible through a description of the radially-directed and adhesion-coupled force events that lead to vertex movements and produce subsequent dependent changes in interface lengths.

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