Life Sciences Seminar

Basolateral protrusion and apical contraction cooperatively drive Drosophila germ-ban extension

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Throughout development, tissues undergo complex morphological changes, resulting from cellular mechanics that evolve over time and in three-dimensional space. During Drosophila germ-band extension (GBE), cell intercalation is the key mechanism for tissue extension, and the associated apical junction remodelling is driven by polarized myosin II-dependent contraction. However, the contribution of the basolateral cellular mechanics to GBE remains poorly understood. Here, we characterize how cells coordinate their shape from apical to basal side during rosette formation, a hallmark of cell intercalation. Basolateral rosette formation is driven by cells mostly located at the dorsal/ventral part of the rosette. These cells exhibit actin-rich wedge-shaped basolateral protrusions and migrate towards each other. Surprisingly, the formation of basolateral rosettes precedes that of the apical rosettes. We further show that basolateral rosette formation is independent of apical contractility, but requires Rac1-dependent protrusive motility. Furthermore, we identified Src42A as a regulator of basolateral rosette formation. Our data show that in addition to apical contraction, active cell migration driven by basolateral protrusions plays a pivotal role in rosette formation, contributing to GBE.

Wednesday, June 14, 2017 04:00pm - 05:00pm
Experimental Biology Room (I04.2OG - LAB)

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