

Publication

A spindle-independent cleavage furrow positioning pathway

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The mitotic spindle determines the cleavage furrow site during metazoan cell division, but whether other mechanisms exist remains unknown. Here we identify a spindle-independent mechanism for cleavage furrow positioning in *Drosophila* neuroblasts. We show that early and late furrow proteins (Pavarotti, Anillin, and Myosin) are localized to the neuroblast basal cortex at anaphase onset by a Pins cortical polarity pathway, and can induce a basally displaced furrow even in the complete absence of a mitotic spindle. Rotation or displacement of the spindle results in two furrows: an early polarity-induced basal furrow and a later spindle-induced furrow. This spindle-independent cleavage furrow mechanism may be relevant to other highly polarized mitotic cells, such as mammalian neural progenitors.

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