

P031 Centralspindlin and the chromosomal passenger complex are independently required to promote furrow formation and ingression

Lindsay Lewellyn, Amy Maddox, Arshad Desai and Karen Oegema

Ludwig Institute for Cancer Research, Department of Cellular and Molecular Medicine (UCSD)

UCSD Biomedical Sciences graduate program

In the *C. elegans* embryo, cortical remodelling during cytokinesis occurs in two steps. During phase I, contractile proteins accumulate on the cortex in a broad equatorial band concurrent with appearance of a shallow ingression. Following this initial contractile event, the cortex buckles inwards to form a furrow composed of two back-to-back plasma membranes. During Phase II, the furrow, which contains the contractile ring at its tip, ingresses to close the hole between the daughter cells. Equatorial band formation during phase I requires the RhoGEF, LET-21, but not centralspindlin, the chromosomal passenger complex, or inter-zonal microtubule bundling. During phase II, centralspindlin and the passengers, but not inter-zonal microtubule bundling, become critical for contractile ring structure and furrow ingression. Inhibiting inter-zonal microtubule bundling leads to premature passenger/centralspindlin mediated signaling, suggesting that bundling normally limits signaling by inter-zone localized molecules until after the furrow has formed. In addition, whereas inhibition of either centralspindlin or the passenger complex leads to a reduced rate and maximum extent of ingression, simultaneous inhibition of both proteins leads to a synergistic defect in furrow formation, indicating that centralspindlin and the passengers make distinct contributions to furrow ingression.