

P007 Dynamics of the contractile ring filament network during cytokinesis

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Cytokinesis requires the constriction of a contractile ring that assembles around the cell equator during anaphase. The structural components of the contractile ring include three polymer systems: actin, myosin II, and the septins. Another component, anillin, has been shown to interact with all three types of filaments *in vitro*, suggesting a role as a filament cross-linker. How this filamentous network is organized during constriction is not understood. We used the *C. elegans* early embryo as a model system to quantitatively analyze the distribution of myosin, the septins and anillin in the contractile ring during constriction. Four-cell embryos co-expressing GFP-myosin/septin/anillin and an RFP-labeled membrane marker were imaged as one of the cells progressed through a vertical cell division, allowing direct end-on visualization of the constricting ring. Quantification of the GFP signal in the contractile ring revealed that the concentration of myosin, the septins and anillin remain approximately constant per unit length during ring closure. In addition, the width of the ring does not change, demonstrating that the total amount of the ring components decreases proportionally to the decrease in ring circumference. Our results show that the three ring components exhibit similar dynamics, suggesting the filament systems within the contractile ring are coordinately regulated.