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Actin(g) on phase separation

F-actin networks play a crucial role for cellular integrity and induction of shape changes during development and homeostasis. Actin polymerization is therefore highly regulated by multiple pathways and means such as local monomer concentration, nucleating and sequestering factors. Recently, actin partioning into biomolecular condensates has been reported as additional mechanism to transiently enhance polymerization kinetics. During establishment of the actin cortex in the *C. elegans* oocyte we observe actin droplets from which fibers extrude to form a contractile network. We want to further investigate the proteins driving this condensation of actin into puncta and the resulting implications on the formation of the cortex. Therefore, we reconstitute the main components wsp-1 and the arp2/3 complex in vitro and study their interaction with actin. Furthermore, the partitioning of actin inhibitors into the drops and the resulting polymerization rates will be quantified to test if the polymerization reaction can be relieved from inhibition by differential partitioning.

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