**“Regulatory Interface between the Actin Cytoskeleton and the Mitotic Spindle”**

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**Abstract**

The actin cytoskeleton is a dynamic network that gives eukaryotic cells their characteristic shape. However, it undergoes extensive reorganization and remodeling during mitosis. Adherent cells, which adopt ‘spread out’ morphologies during interphase, exhibit a dramatic loss of stress fibres upon entering mitosis and become rounded. The cortical actin network becomes more prominent during this time, resulting in an increase in cortical rigidity. Upon completion of cell division, the daughter cells re-establish attachment to the extracellular matrix and, once again attain the spread-out morphology. While the regulatory connections between the actin cytoskeleton and the early mitotic events are apparent, the mechanisms that govern these links are not well understood. In this study, we investigated the functional links between the actin cytoskeleton and the cell division cycle at early stages of mitosis. We found that perturbation of the cortical actin by the inhibition of RhoA and ROCK led to aberrant astral microtubule phenotype and mis-orientation of the mitotic spindle. We have also uncovered the signaling pathway involved and found LIMK2 playing a critical role in organizing the astral microtubules.

**Selected Publications**


