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Chromosome and mitotic spindle dynamics in fission yeast kinesin-8 mutants AMMON M. CRAPO, ZACHARY R. GERGLEY, J. RICHARD MCINTOSH, M.D. BETTERTON, University of Colorado at Boulder — Fission yeast proteins Klp5p and Klp6p are plus-end directed motors of the kinesin-8 family which promote microtubule (MT) depolymerization and also affect chromosome segregation, but the mechanism of these activities is not well understood. Using live-cell time-lapse fluorescence microscopy of fission yeast wild-type (WT) and *klp5/6* mutant strains, we quantify and compare the dynamics of kinetochore motion and mitotic spindle length in 3D. In WT cells, the spindle, once formed, remains a consistent size and chromosomes are correctly organized and segregated. In kinesin-8 mutants, spindles undergo large length fluctuations of several microns. Kinetochore motions are also highly fluctuating, with kinetochores frequently moving away from the spindle rather than toward it. We observe transient pushing of chromosomes away from the spindle by as much as 10 microns in distance.

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