Journal of Cell Science

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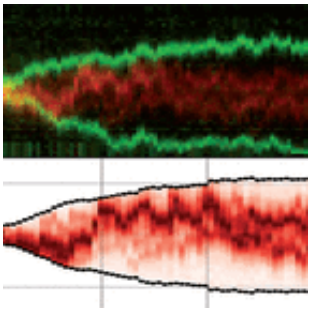

Kinesin-8 family members have been shown to control chromosome congression in higher eukaryotes by regulating chromosome oscillations. However, it is unclear how kinesin-8-dependent regulation of microtubule (MT) dynamics contributes to chromosome alignment in *Schizosaccharomyces pombe*. On page 3720, Sylvie Tournier, Yannick Gachet and colleagues present a quantitative description of the oscillation and positioning of chromosomes in order to decipher the role of kinesin-8 in kinetochore alignment. They found that *ΔKlp6* cells, which lack kinesin-8 activity, have a defect in centering kinetochores. However, this defect was not caused by the increase of chromosome oscillation that the authors noted in these cells. Correcting the large drifts in kinetochore trajectories that resulted from unattached kinetochores in the absence of kinesin-8 did not rescue chromosome misalignment either. Insights into the molecular role of kinesin-8 came from the observation that kinesin-8 could control MT pulling forces in a length-dependent manner. By modelling spindle dynamics to predict chromosome segregation defects, the authors were able to demonstrate that including a length-dependent MT pulling force is sufficient to reproduce chromosome alignment. By contrast, omitting the pulling force contribution generated a situation resembling that in *ΔKlp6* mutant cells. Thus, in fission yeast, chromosome congression is achieved through a mechanism that involves the localised action of kinesin-8 at kinetochores to generate a force gradient to correctly align chromosomes.

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