



CDB SEMINAR

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14:00~15:00 Auditorium C1F

Cortex-induced spindle asymmetry drives biased chromosome segregation in female meiosis

Summary

In female meiosis, only chromosomes segregating to the egg are transmitted to the next generation. The asymmetric cell division creates an opportunity for chromosomes to cheat the segregation process to increase their chances of transmission. This meiotic drive violates Mendel's First Law with major consequences for chromosome evolution. Selfish chromosomes can drive by preferentially attaching to the egg side of the spindle, which implies some asymmetry within the spindle, but how such asymmetry is established is unknown. Here we show that cortical signals regulate microtubules to create the spindle asymmetry necessary for biased chromosome segregation. These signals depend on cortical polarization directed by chromosomes, which are positioned off-center to allow the asymmetric cell division. Thus, selfish chromosomes exploit the asymmetry inherent in female meiosis.

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