



CDB SEMINAR

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FOM Institute AMOLF (Marileen Dogterom Lab), The Netherlands

Friday, December 7, 2012

16:00~17:00 A7F Seminar Room

How can microtubules establish protein patterns at the cell wall?

Summary

Microtubules serve as dynamic pathways for active transport of proteins towards the cell cortex and play a main role in the establishment of cortical protein patterns. Microtubule dynamics and organization are in turn regulated by microtubule associated proteins and forces generated at the cell boundaries. We aim to understand the minimal conditions under which cortical protein pattern formation mediated by dynamic microtubules can arise.

We focus our study on the polarized distribution of the cell end marker Tea1 in interphase fission yeast. This protein is transported along microtubules by a plus-end tracking complex and is delivered to the cell poles where it accumulates. We are developing an in vitro system to reconstitute this microtubule-based protein delivery as well as cortical pattern formation. We use the plus-end tracking system consisting of Mal3, the motor protein Tea2, and Tip1 which can deliver cargo (tagged Tip1) to functionalized walls of microfabricated chambers. This system allows us to test in a controlled manner the conditions for microtubule-based protein delivery to specific places of the cell wall.

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