Seminar/Talk

Mechanisms of microtubule nucleation and size in spindles.

Jan Brugues
MPI CBG & MPI PKS, Dresden

Host: Martin Loose

The spindle is the protein machinery responsible for segregating the genetic material into the daughter cells. We now have identified the key molecular players that contribute to spindle structure and function, including motor proteins, cross-linking proteins, and proteins that regulate microtubule nucleation and polymerization. However, it is still not known how the constituent proteins of the spindle self-organize into a into a proper size and shape. Here, we used laser ablation to measure the minus ends of monopolar spindles where minus ends remain static assembled in Xenopus leaevis egg extract as a proxy to microtubule nucleation. We found that bulk nucleation from a RanGTP-mediated gradient of nucleators alone cannot account for the spatial profile of microtubule nucleation in monopoles. Instead, microtubule-stimulated nucleation regulated by the RanGTP gradient explains the nucleation profile and microtubule density in these structures. This nucleation mechanism could account for the scaling of spindles with cell volume as observed in early embryogenesis or spindles encapsulated in extract, and provides an alternative prediction to previous models based on microtubule dynamics (via a limiting pool of tubulin or MAPs).

Thursday, April 13, 2017 04:00pm - 05:00pm
Mondi Seminar Room 2, Central Building

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.
Please find a schedule of the ISTA Shuttle on our webpage:
https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.