



Life Sciences Seminar

Reverse engineering of dynamic microtubule cytoskeleton architectures

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The cytoskeleton provides the backbone for intracellular order which is fundamental for cell function. Although most of the important components of the cytoskeleton have now been identified, the design principles underlying the internal organization of cells are still poorly understood. A major challenge is the complexity of cytoskeletal networks combined with their thermodynamic non-equilibrium nature. To develop a mechanistic understanding of cytoskeletal systems based on simple physical principles, we reverse-engineer dynamic sub-architectures of the human microtubule cytoskeleton from purified proteins. This powerful quantitative microscopy-based approach allows to identify design principles governing the self-organization of distinct cytoskeletal steady-state structures. We will present in vitro reconstitutions of networks mimicking different types of architectures of the human microtubule cytoskeleton that are important for cell division as cells go through the cell cycle. From these examples, we will extract general rules for the organization of dynamic intracellular filament networks.

Monday, March 5, 2018 09:00am - 10:00am

Big Seminar room Ground floor / Office Bldg West (I21.EG.101)



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