Society of Developmental Biologists Singapore

SEMINAR SERIES



Speaker: Prof. Anna Akhmanova

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Cellular roadmaps: Control of cell architecture by dynamic microtubules

Abstract:

Microtubules are dynamic cytoskeletal filaments that control different aspects of cell architecture. Microtubules are intrinsically asymmetric polymers, with fast-growing plus ends, which in cells serve as major sites of microtubule assembly and disassembly, and slow-growing minus ends, which are often stabilized and attached to different cellular structures. In my lab, we use in vitro assays combined with single molecule imaging to dissect how the proteins that bind to microtubule plus- and minus ends control microtubule nucleation and growth and thus regulate formation of dynamic microtubule networks or the stable cores of centrosomes and cilia. In parallel, we employ live cell imaging to study how microtubules contribute to cell polarity, migration, division and differentiation. The combination of in vitro reconstitution assays with experiments in cells allows us to decipher how the specific molecular properties of microtubule regulators contribute to cellular function and how microtubule-targeting anti-cancer drugs affect the cytoskeleton.

Prof. Akhmanova studied biochemistry and molecular biology at the Moscow State University. She received her PhD in 1997 at the University of Nijmegen, the Netherlands. In 2001, she started her own research group at the Department of Cell Biology at the Erasmus Medical Center, Rotterdam, the Netherlands. Since 2011, Akhmanova is professor of Cell Biology at Utrecht University. Akhmanova studies cytoskeletal organization and trafficking processes, which contribute to cell polarization, differentiation, vertebrate development and human disease. She is an expert on microtubule dynamics and microtubule-based membrane trafficking. Akhmanova is a recipient of the Netherlands Organization for Scientific Research (NWO) Spinoza Prize (2018), the highest scientific distinction in the Netherlands. She is an elected member of the European Molecular Biology Organization (EMBO) and the Royal Netherlands Academy of Arts and Sciences (KNAW). Akhmanova also serves as a Deputy Editor of eLife, an Open Access journal in Life Sciences.

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Hosted by: Prof. Wang Hongyan

(Laboratory of Neural Stem Cells, Duke-NUS Medical School)

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