

Kolloquium

Biomedizinische Technik und verwandte Gebiete

Wintersemester 2015/16

Donnerstag, 21.01.2016, 17:00 - 18:30 Uhr

Prof. Nicole Radde

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(Moderation: Univ.-Prof. Dr.-Ing. Dr. med. Steffen Leonhardt,
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**„ Sampling-based Bayesian approaches reveal the importance
of quasi-bistable behavior in cellular decision making
processes“**

Abstract:

Positive and negative feedback circuits are ubiquitous motifs in biochemical signaling pathways. The mitogen-activated protein kinase (MAPK) pathway module is part of many distinct signaling pathways and comprises several of these circuits, whose functioning depends on the cell line at hand and the particular context.

The behavior of the MAPK module and specificity especially in PC-12 cells has become a key paradigm, where the same module leads to different cell fates, depending on the stimulating growth factor. This cell fate is regulated by differences in the Erk (MAPK) activation profile.

It is widely believed that sustained Erk response upon transient stimulation with NGF is caused by bistability. Here we present a modeling study in which we reason that also quasi-bistability, i.e. the ability of a monostable system to maintain two distinct states for a long time, plays an important role for cell fate decision in the MAPK pathway.

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