Open Thesis (BA,SA,DA,MA)

Modeling the Autophagy Signalling Network

Description:

Autophagy is an intracellular process whereby double-membrane structures termed autophagosomes deliver cellular components to lysosomes for their degradation and recycling. Study over the past decade has revealed the critical role of autophagy in homeostatic and stress cell signalling. Autophagy induction is tightly regulated and can be triggered by multiple external and internal factors. Dysregulation in autophagy signalling is commonly found in severe diseases such as Alzheimer, Parkinson and Cancer. This integration of autophagy in various cellular processes demands for a holistic exploration of autophagic signalling. The aim of the thesis is to develop a mechanistic ODE model of the signalling network that induces autophagy in response to various different stimuli. The model parameters will be estimated by comparing the model predictions with experimental results from our collaborators in Stuttgart and Tübingen.

Prerequisites:

- Basic knowledge of processes in molecular cell biology
- Basic knowledge of modeling with ODEs
- Basic skills in Matlab

Supervisor:

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Area:

Systems Biology

Properties:

Type: BA,SA,DA,MA
30% literature
30% implementation
40% simulation

Beginning:

now

Weitere Informationen: www.ist.uni-stuttgart.de/education/sada

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