



Open position for the LSM call of applications

Department/Institute: LMU faculty of Biology, Cell Biology

Subject areas/Research fields: Cell Biology, Biochemistry

Keywords: mitochondria, proteostasis, Hsp70, chaperone, protein import, protein folding

Name of supervisor: PD Dr. Dejana Mokranjac

Project title: Understanding the unique features of the mtHsp70 system that underlie
mitochondrial proteostasis

Project description:

Mitochondrial Hsp70 (mtHsp70) in the matrix has a central role in mitochondrial proteostasis. Within the TIM23 complex, mtHsp70 is the central component that converts the energy of ATP hydrolysis into unidirectional transport of proteins into mitochondria. In the matrix, mtHsp70 has a central role in folding of newly imported proteins but also, subsequently, in prevention of their aggregation. Our recent data showed that the two pools of mtHsp70 are functionally connected and that changes in distribution of mtHsp70 between the TIM23 complex and the matrix signal the state of mitochondrial proteostasis to the rest of the cell. Though mtHsp70 shares the typical, two-domain structure of other Hsp70 chaperones, it is also a unique member of this highly conserved chaperone family as its ATP-hydrolysis driven cycles require cochaperones that are not present elsewhere. In this project we will address how the import and folding cycles of mtHsp70 are connected and analyze whether some functions of the cochaperones unique to mtHsp70 may have been overlooked.

References:

Banerjee, R. *et al* <https://www.biorxiv.org/content/10.1101/2022.09.05.506649v1> Mokranjac D. (2020) How to get to the other side of the mitochondrial inner membrane – the protein import motor. *Biol. Chem.* 401(6-7):723-736.

For further information, please contact: Dejana Mokranjac, mokranjac@bio.lmu.de

Research group website: https://www.cellbiology.bio.lmu.de/research_groups/mokranjac/index.html

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