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Johannes Gutenberg-Universität Mainz
Pharmaziegebäude, Staudinger Weg 5, EG
Seminarraum 00 112

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Pharmazeutische / Medizinische Chemie

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ABSTRACT zum Vortrag am 26.01.2018, 14.30 Uhr

"Molecular cooperation of mitochondrial protein translocases"

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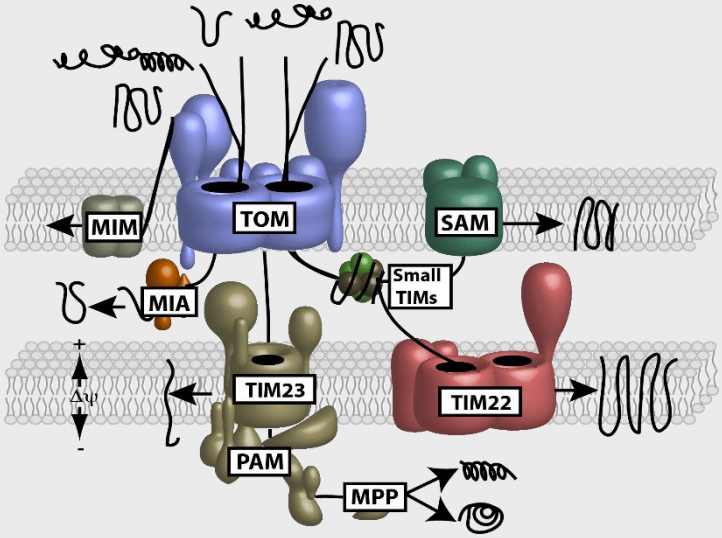
Mitochondria fulfill a plethora of different tasks, which are essential for cell survival. In order to fulfill these functions mitochondria depend on the import of 99% of their protein content. These proteins are synthesized as precursors on cytosolic ribosomes and imported into the target organelle. Dedicated protein machineries sort the precursor proteins into the different mitochondrial subcompartments: the outer and inner membrane, intermembrane space and matrix. Outer membrane protein translocases play a key role for the biogenesis of mitochondria. The translocase of the outer membrane (TOM complex) forms the entry gate for the vast majority of the precursor proteins. In addition, two protein sorting machineries stimulate import and assembly of outer membrane proteins. The sorting and assembly machinery (SAM complex) promotes import of proteins with a membrane-bound beta-barrel, while the mitochondrial import machinery (MIM complex) is involved in the biogenesis of outer membrane proteins with one or more alpha-helical membrane anchors. Strikingly, these protein translocases interact with a number of different partner proteins. The SAM complex is linked to molecular contact sites between mitochondria and the endoplasmic reticulum, which are important for phospholipid transfer and mitochondrial morphology maintenance. Moreover, the TOM complex associates with the voltage-dependent anion channel (VDAC) that allows metabolite and ion flux across the outer membrane. Altogether, outer membrane protein translocases are embedded into a protein network to control mitochondrial biogenesis.



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