



## **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 that coordinate protein import to mitochondrial metabolism, lipid transport and quality control mechanisms. Altogether, outer membrane protein translocases are embedded into a protein network to control mitochondrial biogenesis.