Contest of the mitochondrial import signals

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BIOSS Seminar 29.03.2011

Mitochondria are organelles of the eukaryotic cell, which are crucial for generation of ATP by oxidative phosphorylation. They contain about 1.000 different proteins located in one of the four subcompartments of the organelle: The outer membrane, the inner membrane, the intermembrane space or the mitochondrial matrix. Virtually all these proteins are synthesized as precursor proteins on cytosolic ribosomes outside the organelle and have to be imported and sorted into the right subcompartment within the organelle. Complex machineries called translocases recognize different targeting signals within the precursor proteins to perform this task. However, the interplay between the different translocases and even some basic import pathways are not understood yet. To analyze this, we performed import experiments with engineered precursor-proteins containing different, competing targeting signals.