



Brigitte PERTSCHY (ORCID: 0000-0003-3558-0191): Assembly factor release in 40S ribosomal subunit maturation

Research interest and scientific background: The synthesis of ribosomes is a central process in all living cells. In yeast, it involves the action of more than 200 ribosome assembly factors, which guide the assembly of ribosomal RNA (rRNA) with ribosomal proteins into pre-ribosomal particles and mediate the stepwise structural transformation of these precursors into mature large 60S and small 40S subunits¹. During these maturation steps, pre-ribosomal particles transit from the nucleolus to the cytoplasm where the final maturation steps take place. Cytoplasmic maturation of 40S subunits includes the restructuring and processing of rRNA, the binding of a few late associating ribosomal proteins, and the dissociation of assembly factors. ATPases and a protein kinase play critical functions in these processes^{2,3,4,5}. The aim of this project is to uncover the mechanism by which these factors coordinate the final maturation steps of the 40S ribosomal subunit.

Approach and methods: Yeast strains carrying specific mutations in the factors of interest will be generated and analyzed with respect to their ribosome biogenesis phenotypes. Moreover, 40S precursor particles will be isolated from these mutants and characterized biochemically. The project will also involve a collaboration for cryo-EM analysis of the purified pre-40S particles.

Affiliation: The student will work at the Institute of Molecular Biosciences at the University of Graz. This project is directly connected to the doc.fund Molecular Metabolism.

References:

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