Brigitte PERTSCHY (ORCID: 0000-0003-3558-0191): Regulation of ribosomal RNA metabolism by the RNA helicase Prp43 and its cofactors

Research interest and scientific background: In growing yeast cells, RNA comprises ~98% of the nucleic acid content. About 60% of cellular transcription is devoted to the synthesis of ribosomal RNA (rRNA) and ~50% of mRNA transcription to the production of ribosomal proteins. Consequently, the synthesis of ribosomes is a major metabolic process spending large amounts of a cell's energy resources. Eukaryotic ribosome biogenesis is a multi-step process involving massive rRNA restructuring events, promoted by ~20 different RNA helicases, including Prp43[1]. Prp43 is a key enzyme in ribosome biogenesis, participating in several different maturation steps. Specificity of Prp43 is achieved by its interaction with different cofactors[2,3,4,5]. We are interested how these cofactors recruit Prp43 to different sites in the rRNA and how they regulate its function.

Approach and methods: The interaction between Prp43 and selected cofactors, as well as with ribosome precursors, will be characterized biochemically. Moreover, the project will include genetic and cell biological experiments, in particular phenotypic investigations of cofactor mutants. Most of the work will be performed using yeast as a model organism.

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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