

ERC-funded Ph.D. positions in epitranscriptomics

The research group of Prof. Dr. Andres Jäschke at the Institute of Pharmacy and Molecular Biotechnology (IPMB), Heidelberg University, offers 3-year Ph.D. positions funded by a recently awarded ERC Advanced Grant. The candidates will study novel epitranscriptomic mechanisms of gene regulation by combining biochemistry, molecular biology, and bioinformatics techniques.

Background:

The Jäschke group is among the leading labs in epitranscriptomics, studying the role of natural RNA modifications in biology. By discovering and characterizing regulatory RNAs connected to the redox coenzyme NAD in various bacteria (*Nature* 2015, *Nature Protocols* 2017, *Cell Reports* 2018) we contributed to the establishment of a new field, directly linking redox biology and gene expression. We also reported the first enzyme that can remove this novel RNA modification (*Nature Chemical Biology* 2016). In 2020, Prof. Jäschke was awarded an Advanced Grant by the European Research Council, providing generous funding for the next years.

Objectives:

NAD is just one of many coenzymes and metabolic intermediates that share certain structural features. This project aims to establish the scope and biological significance of coenzyme-linked RNAs in biology. We will expand our NAD captureSeq protocol to include reduced, phosphorylated, deamidated, and depyridinated NAD-RNAs. We will develop new capture methods to identify cellular RNAs modified with coenzyme A, flavin, thiamine, and N-acetylglucosamine. We will apply these protocols to RNAs isolated from different organisms to explore the occurrence, abundance, and structural variety of such RNAs. For selected modified RNAs, we will unravel the biological significance and biosynthesis.

Our team combines approaches from various fields, including genetics, biochemistry, chemistry, and mass spectrometry to define the functions and mechanisms of gene regulation by coenzyme-linked RNAs. The Ph.D. candidate will learn, develop, and apply state-of-the-art techniques ranging from transcriptome-wide profiling to detailed mechanistic studies within this interdisciplinary project.

The candidates:

We are looking for enthusiastic and motivated candidates who have a strong interest in RNA biochemistry and who would like to challenge textbook wisdom. The applicants should hold a Master's degree in molecular biology, biochemistry, biotechnology, or a related discipline and should have demonstrated excellent academic performance in their studies. Initiative, creativity, team spirit, excellent English language skills, and a solid background in molecular biology are essential traits. Practical experience in RNA biology, next-generation sequencing, and/or mass spectrometry is a bonus.

Team and environment:

The candidates will join a young, interactive, interdisciplinary, and collaborative research team. Heidelberg University is one of the top research universities in Germany, and IPMB is a modern research institute working on cutting-edge projects in the life sciences. The positions are paid according to E13 (50%) TV-L.

Application details:

Learn more about our group at jaschkelab.de. To apply, please send a letter that motivates your application for this particular project, your CV, transcripts, a summary of previous research, and contact details of two academic references as a single pdf-file to Prof. Dr. Andres Jäschke (jaeschke@uni-hd.de).