

**Press release****Universität Heidelberg****Marietta Fuhrmann-Koch**

05/25/2021

<http://idw-online.de/en/news769392>Research projects  
Biology, Mathematics, Medicine  
transregional, national**UNIVERSITÄT  
HEIDELBERG**  
ZUKUNFT  
SEIT 1386**Universität Heidelberg Wins Approval for Three Collaborative Research Centres**

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Heidelberg, 25 May 2021

Universität Heidelberg Wins Approval for Three Collaborative Research Centres  
DFG grants more than 33 million euros for two new transregional CRCs and one extended CRC

Heidelberg University has been successful in the latest approval round of the German Research Foundation (DFG), winning funding for three major research consortia. In the life sciences, the Collaborative Research Centre “Mechanisms and Functions of Wnt Signaling” (CRC 1324), based at the Centre for Organismal Studies and with participation of numerous life science institutions in Heidelberg, will enter its second funding period. Two new transregional CRCs were also approved for funding. In the biosciences, researchers from the University of Mainz – the lead university – and Ruperto Carola will collaborate in CRC/TRR 319, “RMaP: RNA Modification and Processing”. Focussing on mathematics, CRC/TRR 326, “Geometry and Arithmetic of Uniformized Structures”, coordinated by the University of Frankfurt, includes researchers from Heidelberg and Darmstadt. Total DFG funding for the three Collaborative Research Centres is more than 33 million euros for a period of four years.

The research of CRC 1324 focuses on so-called Wnt proteins, which control central processes in embryonic development and cell differentiation as well as in tumorigenesis. These proteins arose very early in the evolution of animals and also play an important role in human diseases. As universal developmental factors in the animal kingdom, they regulate organ development and control stem cell behaviour; they are also involved in the formation of the body axes and pattern formation. Aberrations in the signalling network due to mutations or epigenetic dysregulation can result in severe diseases such as cancer. The participating scientists in the Collaborative Research Centre are investigating the Wnt signalling pathway using biochemical, biophysical, genetic and mathematical approaches. After focusing in particular on mechanisms of Wnt signal transduction in the first funding period, the Heidelberg life science researchers will now turn their attention to transferring the gained knowledge into a spatial and temporal context during organ development and in the development of diseases. In the second funding period, the spokesperson of the CRC is Prof. Dr Michael Boutros from the Medical Faculty Mannheim of Heidelberg University. The DFG is funding CRC 1324 “Mechanisms and Functions of the Wnt Signaling Pathway” with approximately 11.5 million euros.

CRC/TRR 319 is focussed on RNA, which is responsible for transferring genetic information into proteins in cells. In addition, RNA has multiple other functions of high current importance, for instance as genetic material of coronaviruses, as a novel vaccine, or as a component of the “gene scissors” CRISPR/Cas9. The transregional Collaborative Research

Centre is particularly interested in how different steps of maturation and modification influence each other during the biogenesis of RNA. To date, little is known about the interplay between RNA processing and the RNA modification pathways; the new consortium of researchers from Mainz and Heidelberg will strive for a deeper understanding of these processes. They expect to gain fundamental insights into the mechanistic and functional processes of “epitranscriptomics”, which deals with the biological consequences of RNA modifications, including in disease contexts. Prof. Dr Andres Jäschke from the Institute of Pharmacy and Molecular Biotechnology at Heidelberg University will serve as co-spokesperson for the “RMaP: RNA Modification and Processing” CRC/TRR being led from the University of Mainz. Funding in the amount of approximately 10.6 million euros has been approved for the research.

The new CRC/TRR 326 will concentrate on the mathematical technique of uniformisation, which can be used to replace complicated geometric objects with simpler ones without changing the local structure. The original complexity is encoded in a suitable symmetry group, i.e. translated into another “language”. This approach opens up new pathways to study the original object. The research seeks to expand techniques of uniformisation and refine them for different challenges, with the aim of applying them to central geometric and arithmetical problems. In doing so, the CRC/TRR researchers from the universities in Frankfurt, Heidelberg, and Darmstadt hope to gain new insights into moduli spaces, amongst other things. Their findings could be relevant particularly in the context of Galois representations and automorphic forms. Prof. Dr Alexander Schmidt from the Mathematical Institute of Heidelberg University is co-spokesperson of the “Geometry and Arithmetic of Uniformized Structures” CRC/TRR, which is receiving DFG funding in the amount of approximately 11.2 million euros.

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