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Heidelberg University successful with six bids for collaborative research

In the current approval round of the German Research Foundation (DFG) Heidelberg University has been successful with six applications for grants to fund major, internationally visible research consortia. The six research consortia – three of them will reach the maximum funding length of twelve years after their extension – are to receive financial resources totalling nearly 87 million euros over a period of four years.

The new humanities and social sciences CRC 1671 "Home(s): Phenomena, Practices, Representations" will investigate the question of why and how "Heimat" – and associated topic areas like being at home, community, motherland / fatherland, or nation – constitute a normal part of our social and individual bonding in the world. The researchers will examine concepts and practices deriving from natural environment and sociocultural interconnectedness in different social, medial and cultural contexts. Home / belonging is understood here as a transcultural, dynamic model, which has been present from the premodern age until the present, and can be observed and analysed over that time. CRC 1671 connects up a host of disciplines that will analyse the discourses of belonging and foreignness – from history, musicology and art history to theology and ancient and modern philology, from regional studies, political science, sociology, ethnology and geography to law. The CRC spokesperson is Prof. Dr Christiane Wiesenfeldt, whose teaching and research is based at Heidelberg University's Department of Musicology. Approximately 12.9 million euros in DFG funding is available for the first funding period.

The new CRC 1638 "Remodelling Cellular Membranes: How Form Change Generates Function" focuses on identifying fundamental types of membrane remodelling that lead to changes in the composition and configuration of biological membranes. The scientists assume that cells couple these "membrane remodelling events" in a modular fashion in order to generate specific biological functions. The research aims to uncover these fundamental remodelling processes and to elucidate the underlying molecular mechanisms. Furthermore, the participating researchers want to find out how individual membrane remodelling events are connected to one another in such a way that these sequences lead to defined physiological processes. In an interdisciplinary approach, they will use a broad range of research methods and instruments in order to decode this link between form and function. CRC 1638 spokesperson is Prof. Dr Michael Meinecke, a scientist at the Heidelberg University Biochemistry Center. In its first funding period the Collaborative Research Centre is to receive DFG finance amounting to approximately 14 million euros.

Another new venture is CRC/TRR 379 "Neuropsychobiology of Aggression: A Transdiagnostic Approach in Mental Disorders", which explores the biological foundations of different forms of aggression disorders. The complex neurocognitive and neurobiological mechanisms that underlie "aggression in mental disorders" (AMD) have been underexposed to date, which hampers the development of successful prevention and intervention strategies. Focusing on the interplay between clinical and experimental neurosciences, the participating researchers are therefore concerned with various features typical of aggression in mental disorders. These include genetic and molecular mechanisms along with hormonal, neuronal and behaviour-related systems. The aim is to identify the most important biosignatures of AMD, in order to come up with new approaches to "personalised" prevention and intervention. RWTH Aachen University is responsible for the spokesperson function. Co-spokesperson is Prof. Dr Sabine Herpertz, an academic at the Medical Faculty Heidelberg of Heidelberg University and Medical Director of the Department of General Psychiatry at Heidelberg University Hospital; she represents the Heidelberg and Mannheim location with the Central Institute of Mental Health. Also involved as a co-applicant university is Goethe University Frankfurt. The CRC/TRR 379 is to receive approximately 16 million euros in funding from the DFG over the next four years.

CRC 1225 "Isolated Quantum Systems and Universality in Extreme Conditions" (ISOQUANT) focuses on the investigation of characteristic common properties shown by many physical systems in spite of fundamental differences in key parameters such as temperature or density. They are examined in an interdisciplinary way, across traditional specialisations, such that a broad range of experimental and theoretical methods become available for the solution of outstanding questions in physics. This approach provides new possibilities for quantum simulation by mapping the properties of various systems on a "reference system". New universality classes have been identified in this way. In the third funding period the participating researchers will also concentrate on condensed matter systems and their potential technological applications. Spokesperson of CRC ISOQUANT is Prof. Dr Jürgen Berges, a scientist at Heidelberg University's Institute for Theoretical Physics. The DFG has granted CRC 1225 funding worth approximately 14.8 million euros for the next four years.

In CRC/TRR 179 "Determinants and Dynamics of Elimination versus Persistence of Hepatitis Virus Infection" the participating

researchers are studying the five medically relevant hepatitis viruses to decipher why some infections are self-limiting and the virus is eliminated while others take a chronic course. Thus far, the scientists have studied the interplay between the infected liver, a given hepatitis virus and the antiviral immune response with the aim of identifying strategies for treating hitherto incurable chronic viral infections of the liver. Based on this, new therapeutic concepts could be developed and tested with regard to their clinical applicability. The third funding phase that has now been approved will see a continuation of these translational efforts, including specific clinical tests. The CRC/TRR 179 spokesperson is virologist Prof. Dr Ralf Bartenschlager, a scientist at the Medical Faculty Heidelberg of Heidelberg University and Director of the Research Unit Molecular Virology in the Center for Infectious Diseases of Heidelberg University Hospital. Co-applicants in the research consortium are the University ofFreiburg and the Technical University of Munich. The consortium, which also includes the German Cancer Research Center as a partner, will receive funding amounting to approximately 15 million euros.

CRC/TRR 186 "Molecular Switches in the Spatio-Temporal Control of Cellular Signal Transmission" deals with the coordination of signal transmission processes in living cells, which play a pivotal role for the functionality of biological systems. The participating scientists are examining how the signals generated by activated molecular switches bring about the precise coordination in time and space of cellular processes such as genetic expression. New chemical biology tools have helped to shed light on essential biological processes like neurotransmission or the cellular release of certain signal molecules, and as yet unexamined molecular switches have been drawn into the research. The third funding period will draw on the basic findings about signal transmission and the switching idea to better understand the complex behaviour of cells with health and disease, and so to influence this behaviour in future. Freie Universität Berlin is responsible for the spokesperson function. Co-spokesperson is Prof. Dr Walter Nickel from the Heidelberg University Biochemistry Center, who served as spokesperson for six years in the first one and a half funding periods. The transregional consortium is to receive approximately 14.1 million euros in funding.

Press release

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Further information

- University of Heidelberg
- DFG - German Research Foundation