Deutsche Forschungsgemeinschaft

DFG 2020 BECAUSE RESEARCH MATTERS

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The DFG to Fund Eleven New Research Training Groups

Topics range from optimised artificial vision and digitalisation in medicine to the perception of the Baltic Sea region / €56 million for initial four-and-a-half-year period

The Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) is establishing eleven new Research Training Groups (RTGs) to further support early career researchers. This was decided by the responsible Grants Committee which had its meeting postponed from 8 May to 7 July and convened via video link due to the coronavirus pandemic. The new RTGs will receive a total of approximately €56 million worth of funding for an initial period of four and a half years starting from October 2020. This includes a 22 percent programme allowance for indirect project costs. One group is an International Research Training Group (IRTG) with partners in Estonia and Norway. A joint Research Training Group will also be set up in the locations of Duisburg-Essen and Dortmund, which will be organised by researchers from a university and a university of applied science.

In addition to the eleven groups, the Grants Committee also approved the extension of ten RTGs for an additional funding period. Research Training Groups offer doctoral researchers the opportunity to complete their theses in a structured research and qualification programme at a high academic level. The DFG is currently providing funding to a total of 219 RTGs, of which 36 are IRTGs.

The Grants Committee also decided that in future the option of requesting fellowships for postdoctoral researchers will be dropped, after several years during which no scholarships were applied for, but rather only posts for this group of people.

The eleven new Research Training Groups in detail

(in alphabetical order by their host universities, including the names of spokespersons, other applicant universities and cooperation partners):

Retinal implants can be used to restore simple visual functions in patients who are visually impaired or blind. However, the results often fall short of expectations because the technology has not been adequately researched and the biological foundations of the diseases have not been sufficiently investigated. The RTG **"Innovative Retinal interfaces for optimized Artificial Vision – InnoRetVision"** aims to analyse in greater detail the biomedical mechanisms of diseases in the visual system and also improve stimulation results using approaches involving novel electrodes and circuit systems. (RWTH Aachen University, Spokesperson: Professor Dr. Peter Walter, Additional applicant university: University of Duisburg-Essen)

How do human stem cells and progenitor cells with stem cell properties respond to damage caused by chemical substances that trigger changes in the genetic material? The RTG **"Impact of genotoxins on the differentiation efficacy of murine and human stem and progenitor cells and functional competence of thereof derived differentiated progeny"** is examining this question. The researchers intend to examine the immediate response of the cells to toxic substances and to what extent a toxin impairs the development of the daughter cells in the long term. (University of Düsseldorf, Spokesperson: Professor Dr. Gerhard Fritz)

As digitalisation becomes increasingly prevalent in medicine, more and more patient data is available in different locations, whether in electronic patient files or as a result of laboratory analyses. But how can this information to be compiled to enable attending physicians to identify concrete treatment options? The RTG **"Knowledge- and data-driven personalization of medicine at the point of care"** aims to drive this development forward and prepare existing clinical databases with AI techniques. Cases from the field of skin cancer are one example of application. This group is jointly organised by researchers from a university and a university of applied sciences. (University of Duisburg-Essen and Dortmund University of Applied Sciences and Arts, Spokesperson: Professor Dr. Britta Böckmann)

Against the backdrop of increasing global networking and practically unbounded media communication, locations and processes of localisation are taking on new meaning. With the title **"Practicing Place Socio-Cultural Practices and Epistemic Configurations"**, sociological and human geography works will focus on the practices of creating and producing places. In addition, literary and art studies will examine the "practicing place" concept in greater detail than has been the case to date, using the places envisioned in texts and works of art and their realities in terms of knowledge. (Catholic University of Eichstätt-Ingolstadt, Spokesperson: Professor Dr. Hans-Martin Zademach)

The RTG **"FAIR - Fine-Tuners of the Adaptive Immune Response"** intends to explore how the human immune system fends off pathogens using state-of-the-art methods. To do this, the researchers, whose backgrounds are in natural sciences and medicine, will use genetic modifications of primary immune cells using CRISPR/CAS technology or high-resolution imaging methods. The molecular regulatory mechanisms that control the immune reaction are to be examined using this method. (Friedrich-Alexander University of Erlangen-Nuremberg, Spokesperson: Professor Dr. Hans-Martin Jäck)

The RTG **"Interfacing image analysis and molecular life-science (Imol)"** aims to advance combined training in modern microscopy methods together with tools for computer-aided image analysis in the molecular life sciences. Image data sets are extremely large and difficult to analyse. What's more, computer scientists and physicists trained in image analysis often lack expertise in the life sciences, whereas biologists often do not have the required data processing skills. The RTG therefore plans to develop algorithms that facilitate semi-autonomous image analysis for image interpretation. (Goethe University Frankfurt, Spokesperson: Professor Dr. Achilleas Frangakis)

The RTG **"Empires: Dynamic Change, Temporality and Post-Imperial Orders"** is concerned with the dimensions of space and time. Both media reflections and historical examinations of empires will be explored. Experts from the fields of history, political science, sociology and literature intend to use these to examine different empires, such as the Persian Empire, Roman Empire, the European colonial empires of the 19th and 20th centuries, as well as the Soviet Union and China. (University of Freiburg, Spokesperson: Professor Dr. Peter Eich)

Proteases are enzymes, i.e. catalysts produced in the body, which promote the degradation of proteins; they play a key role in almost all

biological processes. For example, there are almost 500 different known proteases in the human body; they can be found in all tissues and cells, both in the intracellular and extracellular environment. Excessive or a lack of protease activity can trigger disease. The RTG **"Understanding protease functions in cellular pathways through discovery and analysis of protease substrates (ProtPath)"** aims to address unanswered questions about protease activity in order to contribute towards the development of new treatments. (University of Freiburg, Spokesperson: Professor Dr. Thomas Reinheckel)

The term "peripeteia" refers to turning points of all kinds, such as revolutions, reformations, catastrophes and tipping points. The IRTG **"Baltic Peripeties. Narratives of Reformations, Revolutions and Catastrophes"** plans to examine the perception of the Baltic Sea region in stories and event records using the term "peripeteia". Events that have unexpected consequences and the potential to change interpretations, such as the fall of the Iron Curtain, will be studied in greater detail in the International Research Training Group with partners in Norway and Estonia. (University of Greifswald, Spokesperson: Professor Dr. Eckhard Schumacher; Partner Institution: University of Tartu, Estonia; Norwegian University of Science and Technology, Norway)

How semiconductors made from organic materials need to be arranged in order to achieve the best possible results, for example in the production of organic solar cells, has not yet been clarified in the field of organic electronics. The RTG **"Template-Designed Organic Electronics (TiDE) – Understanding Transport by Transition from Disorder to Order"** intends to use chemical templates, i.e. molecular templates, to organise organic materials at a microscopic level and improve the performance of organic semiconductors. (University of Cologne, Spokesperson: Professor Dr. Klaus Meerholz; Additional applicant university: University of Bonn)

The objective of the RTG **"Ion Pair Effects in Molecular Reactivity"** is to gain an understanding of ion pair structures and their response mechanisms. Ion pairs are used in all fields of chemistry and determine the properties of organometallic reagents, inorganic clusters and entire catalysis classes. However, it is difficult to predict ground state structures and transition states, especially in small ion pairs. The researchers hope to contribute to the targeted manipulation of reaction mechanisms with their work. (University of Regensburg, Spokesperson: Professor Dr. Ruth M. Gschwind)

The ten RTGs extended for a further funding period

(in alphabetical order by their host universities, including the names of spokespersons, additional applicant universities and cooperation partners, with reference to project descriptions in the DFG online database GEPRIS for ongoing funding):

RTG **"The Neuroscience of Modulating Aggression and Impulsivity in Psychopathology"** (RWTH Aachen University, Spokesperson: Professor Dr. Ute Habel, Partner Institution: University of Pennsylvania, USA)
https://gepris.dfg.de/gepris/projekt/269953372?language=en
https://gepris.dfg.de/gepris/projekt/269953372?language=en

IRTG **"Searching for the regular in the irregular: Analysis of singular and random systems"** (University of Bielefeld, Spokesperson: Professor Dr. Rolf Moritz Kaßmann, Partner Institution: Seoul National University, South Korea) https://gepris.dfg.de/gepris/projekt/282638148?language=en
https://gepris.dfg.de/gepris/projekt/282638148?language=en

RTG **"Myeloid antigen presenting cells and the induction of adaptive immunity"** (University of Bonn, Spokesperson: Professor Dr. Christian Kurts, Partner Institution: University of Melbourne, Australia)
https://gepris.dfg.de/gepris/projekt/272482170?language=en
https://gepris.dfg.de/gepris/projekt/272482170?language=en

RTG **"Accelerator Science and Technology for Energy Recovery Linacs"** (TU Darmstadt, Spokesperson: Professor Dr. Norbert Andreas Pietralla; Additional applicant university: University of Mainz)
https://gepris.dfg.de/gepris/projekt/264883531?language=en
https://gepris.dfg.de/gepris/projekt/264883531?language=en

RTG **"Adaption Intelligence of Factories in a Dynamic and Complex Environment"** (TU Dortmund, Spokesperson: Professor Dr. Jakob Rehof)
https://gepris.dfg.de/gepris/projekt/276879186?language=en
https://gepris.dfg.de/gepris/projekt/276879186?language=en

IRTG **"PRoTECT - Plant Responses To Eliminate Critical Threats"** (University of Göttingen, Spokesperson: Professor Dr. Ivo Feußner, Partner Institution: University of British Columbia, Canada)
https://gepris.dfg.de/gepris/projekt/273134146?language=en
https://gepris.dfg.de/gepris/projekt/273134146?language=en

RTG **"Energy Status Data - Informatics Methods for its Collection, Analysis and Exploitation"** (KIT Karlsruhe, Spokesperson: Professor Dr.-Ing. Klemens Böhm)
https://gepris.dfg.de/gepris/projekt/270362368?language=en
https://gepris.dfg.de/gepris/projekt/270362368?language=en

RTG **"Algorithmic Optimization (ALOP)"** (University of Trier, Spokesperson: Professor Dr. Volker Schulz)
https://gepris.dfg.de/gepris/projekt/264747124?language=en
https://gepris.dfg.de/gepris/projekt/264747124?language=en

RTG **"3D Tissue Models for Studying Microbial Infections by Human Pathogens"** University of Würzburg, Spokesperson: Professor Dr. Thomas Rudel)
https://gepris.dfg.de/gepris/projekt/270563345?language=en
https://gepris.dfg.de/gepris/projekt/270563345?language=en

RTG **"Document – Text – Editing. Conditions and Forms of Transformation and Modelling: a Transdisciplinary Perspective"** (University of Wuppertal, Spokesperson: Professor Dr. Jochen Johrendt)
https://gepris.dfg.de/gepris/projekt/277132246?language=en
https://gepris.dfg.de/gepris/projekt/277132246?language=en

Further Information

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Further information will also be provided by the spokespersons of the Research Training Groups.

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More details about the funding programme and the funded Research Training Groups are available at:

- www.dfg.de/gk/en/
  ../../../../../research_funding/programmes/coordinated_programmes/research_training_groups/index.html

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