



## **Major success in the Excellence Strategy: Five cluster initiatives of the Rhine-Main Universities will receive funding**

Frankfurt am Main /  
Darmstadt / Mainz 22 May 25

### **Goethe University Frankfurt, Johannes Gutenberg University Mainz and TU Darmstadt will submit a joint proposal as a University Excellence Consortium**

A total of five of the cluster initiatives submitted by the Rhine-Main Universities (RMU) will receive funding in the Excellence Strategy of the German federal and state governments from 2026 onwards. This was decided by the Excellence Commission, which consists of experts from all fields of research and the government ministers responsible for science and research at the federal and state levels. Overall, 98 funding proposals for new Clusters of Excellence had been submitted, 70 of which were approved for funding. The Rhine-Main Universities submitted full proposals for four new cluster initiatives as well as two follow-up proposals. The Clusters of Excellence will receive funding for a period of seven years.

Prof. Dr. Enrico Schleiff, President of Goethe University Frankfurt and current RMU spokesperson, says: "The decision of the Excellence Commission shows: The Rhine-Main Universities are doing internationally competitive top-level research in various research fields. I am very proud of that. I would like to congratulate all RMU members involved who have led the Clusters of Excellence to success with their pioneering ideas and remarkable engagement. With the potential of our three universities, we will also further develop the cluster initiative which, unfortunately, has not been successful this time."

Now that five Clusters of Excellence will receive funding, and Goethe University Frankfurt, Johannes Gutenberg University Mainz and Technical University of Darmstadt are each in the lead of at least one of these clusters, the Rhine-Main Universities meet the criteria for submitting a joint proposal as a University Excellence Consortium in the Universities of Excellence funding line.

Schleiff states: „The fact that all RMU partner universities were able to successfully prevail against strong competitors in the highly competitive, multistage selection process of the Clusters of Excellence funding line is an important milestone in the decades of close cooperation between our three universities, which, ten years ago, also formally joined forces as the RMU alliance. Now, we are going even one step further: We will submit a joint proposal as a University Excellence Consortium in the Universities of Excellence funding line. We as RMU are bringing together our complementary profiles to create innovative top-level research. Therefore, we are very confident that we will submit a proposal to the German Science

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and Humanities Council in November that will provide creative solutions to the challenges of tomorrow – inspired by our region’s unique character.”

Since 2015, the RMU has developed into a dynamic area of science, with more than 30 Collaborative Research Centres funded by the German Research Foundation (DFG), including more than 20 Transregios, joint study programs, joint activities in the field of spin-offs, vibrant networks and strong partners in the region. These successes are a promising basis for the goals the alliance is targeting now.

The aim of the Excellence Strategy is to strengthen Germany’s position as an outstanding research hub in the long term and further improve its international competitiveness. The Excellence Strategy is implemented in two funding lines by the German Research Foundation (DFG) and the German Science and Humanities Council: the Clusters of Excellence funding line designed to support project-based funding in internationally competitive fields of research at universities or university consortia and the Universities of Excellence funding line which serves to strengthen universities as individual institutions or as university consortia in the long term and further develop their leading international role based on successful Clusters of Excellence. For the latter, individual universities must have at least two, consortia must have at least three Clusters of Excellence.

Financial support through federal and state funding is not the only reason why success in the Excellence Competition is important for universities. It also promotes national and international visibility, because, on the international stage, the program is considered an elite funding program. Clusters of Excellence are able to work on interdisciplinary fields of research with a long-term perspective and further develop research and infrastructure jointly with non-university research partners. They also increase a university’s attractiveness as a research and study location. As an alliance, the Rhine-Main Universities want to strengthen their attractiveness through various joint and complementary offers in research and teaching, improve support for scientists and staff and increase synergies in infrastructure and transfer. In doing so, they want to contribute to sharpening the region’s profile as an internationally visible center of science. A successful proposal as a University Excellence Consortium in the Universities of Excellence Competition would mean an extraordinary boost, in particular on an international level.

### **Overview of the three universities’ cluster projects**

At **TU Darmstadt**, two research projects will be funded as Clusters of Excellence: Reasonable Artificial Intelligence (RAI) and The Adaptive Mind



(TAM), a joint proposal with Justus Liebig University Giessen and Philipps University Marburg.

### **Reasonable Artificial Intelligence (RAI)**

The RAI Cluster of Excellence, under the leadership of the Technical University of Darmstadt, is dedicated to the development of a new generation of AI systems based on the reasonable use of resources, data protection standards and continuous improvement. Multidisciplinary teams are working together in four research areas to shape the future of AI. Although deep learning has enabled important advances in the field of artificial intelligence over the last ten years, current AI systems have displayed some significant weaknesses, such as an inability to reason, difficulty handling new situations and a need for continuous adjustments. Last but not least, current AI systems also require substantial resources. The aim of the Cluster of Excellence project "Reasonable Artificial Intelligence" (RAI) is thus to develop the next generation of reasonable AI.

### **The Adaptive Mind (TAM)**

Researchers from institutions such as the Centre for Cognitive Science at TU Darmstadt will contribute their expertise in the fields of cognitive science and artificial intelligence to this research cluster. In "The Adaptive Mind" the researchers will, together with their colleagues from the Universities of Gießen and Marburg, investigate how human behaviour is impacted by changing external conditions – with humans remaining stable in some situations and adapting in others. A key question being investigated by the research cluster is how to balance these two strategies in adaptive and learning systems. The aim is to develop new approaches for how we can understand human perception, thought, decision-making, actions, and learning using computational models. This topic is relevant for many academic fields – such as cognitive science, neuroscience, psychology, research on learning robots, and the training of neural networks.

At **Johannes Gutenberg University Mainz**, the Excellence Cluster PRISMA<sup>++</sup> will be funded.

### **Precision Physics, Fundamental Interactions and Structure of Matter (PRISMA<sup>++</sup>)**

PRISMA<sup>++</sup> is the follow-up project for the Cluster of Excellence "Precision Physics, Fundamental Interactions and Structure of Matter" (PRISMA<sup>+</sup>). The proposal for the cluster was being submitted jointly by JGU's Institute of Physics and Institute of Nuclear Physics, together with the Helmholtz Institute Mainz. The purpose of this cluster is to explore the existence of a "new physics" beyond that of the Standard Model of particle physics. There are three main factors underlying the research into the limitations of the Standard Model. These are the extent of synergy between theory and



experiment, the availability of state-of-the-art facilities on the campus and wide-ranging international collaboration. Among the core features of the cluster is the construction and operation of the particle accelerator MESA (Mainz Energy-recovering Superconducting Accelerator) that will enable the results of high-precision experiments to be compared with the predictions of theoretical physics. In this new funding period, the cluster is proposing to also investigate aspects of physics at high and low energies with the intention of identifying new particles and phenomena. In addition, the study of the properties of neutrinos is to be intensified. The work of the cluster will continue to receive significant support through the research program of the Mainz Institute of Theoretical Physics (MITP) and the development of hardware by the PRISMA Detector Lab. The Mainz Physics Academy will furthermore remain the umbrella body responsible for all activities relating to the training and career planning of the associated young researchers. Prof. Dr. Concettina Sfienti of the institute of Nuclear Physics at JGU and Prof. Dr. Alfons Weber of the Institute of Physics at JGU are the spokespersons for PRISMA<sup>++</sup>.

At **Goethe University Frankfurt**, two Clusters of Excellence will be funded: the cluster initiative SCALE and the existing Cluster of Excellence Cardio-Pulmonary Institute (jointly with Justus Liebig University Giessen).

#### **SCALE: Subcellular Architecture of Life**

Cells consist of billions of molecules that are organized from single molecules to large molecular complexes to organelles. Although the functions of many individual molecules have been well characterized by now, it often remains unclear how the cellular architecture develops and functions, and how the parts interact. In addition to uncovering the cell's self-organization principles, the scientists at SCALE also want to create a simulation of the cell with high spatial and temporal resolution. This, they hope, will lead to a better understanding of how cells really function and how their various "machines" interact.

#### **CPI: Cardio-Pulmonary Institute**

Diseases of the cardiovascular system often go hand in hand with lung diseases, and are the most common causes of death worldwide. The Cluster of Excellence seeks to understand which molecular biological processes underlie these organs' functioning as well as their failure in diseases. To find new therapeutic approaches, CPI scientists are developing cross-university model systems, ranging from cell cultures to animal models, and combining the results with examination data from patients. The cluster received funding as the "Excellence Cluster Cardio-Pulmonary System" from 2006 to 2018 and was again awarded the title of Cluster of Excellence Cardio-Pulmonary Institute in 2019.

**The Rhine-Main Universities (RMU)**

Goethe University Frankfurt am Main, Johannes Gutenberg University Mainz and Technical University of Darmstadt make up the RHINE-MAIN-UNIVERSITIES (RMU). The universities have a combined total of more than 95,000 students and 1,500 professors and cooperate closely in research, studying and teaching. These renowned research universities are shaping the Frankfurt-Rhine-Main region as an internationally visible academic hub.

Further information: <https://www.rhein-main-universitaeten.de/en>