With a Humboldt Professorship to Universität Heidelberg

In order to strengthen innovative research and transfer in the field of Molecular Systems Engineering at Heidelberg University, biophysicist Prof. Dr Daniel J. Müller has been chosen for a Humboldt Professorship endowed with up to five million euros. It is granted by the Alexander von Humboldt Foundation and financed by the Federal Ministry of Education and Research. At the newly founded Faculty of Engineering Sciences and at the Institute for Molecular Systems Engineering and Advanced Materials (IMSEAM), Prof. Müller – an initiator and pioneer of an engineering approach in biology – is to work on significant issues in bionanotechnology.

Press Release
Heidelberg, 23 November 2022

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International research prize goes to biophysicist Daniel J. Müller on proposal of Ruperto Carola

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With his research, Prof. Müller bridges the gap between the life sciences, systems biology and synthetic biology, in order to characterise the way in which inter- and intramolecular interplay controls biological processes. Novel bionanotechnological methods, such as atomic force microscopy, make it possible to image cells at nanometre resolution, localise cellular interaction and observe how individual receptors of living cells communicate. Nanoscopic imaging of cells, cellular membranes or membrane proteins will simultaneously allow him to map their physical, chemical and biological properties. At the same time, Prof. Müller’s research group develops and uses nanotechnological instruments to quantify the mechanical properties of cells during fundamental processes such as adhesion, sorting, growth and mitosis. In cooperation with colleagues in Basel he recently succeeded in producing efficient tools for genetically reprogramming single neuronal cells in vitro and in vivo.

In the person of Daniel J. Müller, Ruperto Carola seeks to attract a scientist to the Heidelberg centre of science and research who has proved himself in the scientific community to be an excellent representative of his research field. Besides the outstanding scientific qualifications of the candidates for a Humboldt Professorship, the strategies of universities play a key role as they are expected to offer the researchers and their teams long-term career prospects in
Germany. In appointing Prof. Müller, Heidelberg University aims to develop new approaches to molecular systems engineering from the interaction of molecular life sciences and materials sciences with scientific computing and machine learning in connection with novel hardware designs. Building on Prof. Müller’s experience with spinoffs, Heidelberg University can expand its basic research interfaces in industry. That means fostering the translation of findings from the natural sciences into medicine and medical technology and also transfer to industrial applications.

Daniel J. Müller studied physics at TU Berlin and the Hahn Meitner Institute in Berlin. As a doctoral student in the field of biophysics he worked at Forschungszentrum Jülich and the Biozentrum of the University of Basel (Switzerland). After obtaining his doctorate in 1997 he also earned his habilitation in Basel in 2000 and then transferred to Dresden. There he was a group leader at the newly founded Max Planck Institute of Molecular Cell Biology and Genetics, before accepting a professorship for Cellular Machines in 2002 at the Biotechnology Center of TU Dresden. Since 2010 he has taught and pursued his research as Professor for Biophysics at ETH Zurich. Amongst other things, Prof. Müller is a member of the European Molecular Biology Organization (EMBO) and has worked on several scientific structural formation projects, including the Swiss National Competence Center in Research (NCCR) Molecular Systems Engineering in Basel. He was also involved in a successful spin-off in bionanotechnology as early as in 2006.

Eligible for nomination for the Alexander von Humboldt Professorship are researchers from abroad who have an internationally leading position in their field. With support from the highly endowed award they are expected to make a sustainable academic contribution through their research projects to the international competitiveness of Germany as a research location. The prize money is meant for financing the first five years of their work. Up to ten professorships can be granted annually, and from 2020 to 2024 another six are available each year in the field of artificial intelligence. After successful appointment negotiations with the respective universities, the prizes will be awarded next year.

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