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https://www.gesundheitsindustrie-bw.de/en/article/press-release/new-research-building-engineering-life-inspired-molecular-systems

New research building for engineering life-inspired molecular systems

Heidelberg University is to acquire a research building to develop innovative engineering science strategies and technologies on the basis of life-inspired molecular systems. The German Science and Humanities Council has now expressed its backing for the idea with an outstanding rating. This recommendation is the crucial precondition for a new building on the university campus Im Neuenheimer Feld.

The building for "Life-inspired Engineering Molecular Systems" (LEMS) will be attached to the Faculty of Engineering Sciences and provide space for an innovative research programme at the interface of engineering sciences, natural sciences and life sciences. The Joint Science Conference (GWK) of the federal and state governments will take a final decision on the project entailing an expenditure of approximately 68.4 million euros at the end of June this year.

"With its decision, the German Science and Humanities Council has confirmed that our strategy of expanding the engineering of molecular systems is fit for the future. That is a splendid prospect for the university and the colleagues collaborating in this field," underlines Prof. Dr Bernhard Eitel, Rector of Ruperto Carola. In the words of Prof. Dr Christine Selhuber-Unkel, research in this field offers great potential for transfer and translation. "We anticipate that the research conducted in the LEMS building will bring new solutions for societal challenges, particularly in the area of energy-efficient sensor technologies and in medical diagnostics and therapy," emphasises the scientist, who is the founding director of the Institute for Molecular Systems Engineering and Advanced Materials (IMSEAM) at Heidelberg University and one of the lead applicants for the project.

On an area of approximately 3,400 square metres, the new building for "Life-inspired Engineering Molecular Systems" is to provide work areas and laboratories for interdisciplinary research. In the LEMS building, scientists from materials science, physics, chemistry, biology, medicine and artificial intelligence will work together across disciplines. Using live models, the aim is to pattern new functional structures which, when implemented technically, enable, for instance, the interaction of cells with synthetic materials at the micro and nano level. In addition, the research programme includes developing polymer-based active materials, engineering and controlling three-dimensional organoids, and immune-engineering, that is, manufacturing modified immune cells and synthetic cell components. The new building is expected to accommodate various pieces of large-scale equipment, including a platform for producing macromolecules, synthetic DNA and DNA-hybrid structures, and artificial genomes. Likewise projected is an imaging platform for visualising cell and material properties on micro and nano scales, and a platform for decoding the proteome of individual cells.

Half the cost for the new building and its equipment will be covered by the Federal Government and the other half by the State of Baden-Württemberg. Construction is planned to start in 2024. The research building will be situated near the IMSEAM buildings, the European Institute for Neuromorphic Computing and the Physics Institutes, as well as the German Cancer Research Center, a close research partner of Heidelberg University. The German Science and Humanities Council, which has now come out in favour of the LEMS research building, is advising the federal and state governments regarding the funding of university buildings.

Press release

21-Apr-2023
Source: University of Heidelberg

Further information

- University of Heidelberg
- Faculty of Engineering Sciences, Heidelberg University