🦁 Healthcare industry BW

Three new Clusters of Excellence for Tübingen

University takes next hurdle in the German government's Excellence Strategy funding program. The University of Tübingen is to have three new Clusters of Excellence. As part of the German government's Excellence Strategy funding for higher education research, Tübingen will host new outstanding research networks starting in January 2019. Representatives of Germany's higher education policymakers announced the decision in Bonn on Thursday.

This means that Tübingen has passed another key test in the German government's Excellence funding program. With three approvals in the Cluster of Excellence funding line, the University of Tübingen can once again apply for University of Excellence status.

"The decision to sponsor three clusters in Tübingen underscores just how important these research fields are at the University," said President Bernd Engler, "and it is also a vote of confidence in our non-university partners, without whom this success would not have come about." He thanked the researchers and University employees who worked on the cluster proposals for their tremendous effort.

"This achievement reflects the culture of commitment and cooperation at the University of Tübingen," he said. Professor Engler expressed confidence that the Clusters of Excellence and other areas would benefit from world-class research in Tübingen. He went on to thank the Baden- Württemberg Ministry of Science, Research, and the Arts for its support for Tübingen research, including its structural programs.

Engler said the University would now focus on its application for Excellence status: "We plan to boost research, teaching and innovation at the same time. Research is the core element of the excellence strategy; yet we hope to ensure that research and teaching and knowledge transfer will remain at a high standard." The proposal must be submitted by 10 December 2018, with the final decision to fall on 19 July 2019.

The President also paid tribute to the projects which did not make the cut, expressing his support for the hard work and outstanding research that went into them and pledging to seek alternative funding. Five of the University of Tübingen's original seven proposals were invited to submit full proposals. Tübingen is already home to the Center for Integrative Neuroscience Cluster of Excellence, which was granted sponsorship for a second funding period ending in 2019.

The following Clusters of Excellence will receive the German government's Excellence sponsorship from 2019:

Image-Guided and Functionally Instructed Tumor Therapies (iFIT)

The Image-Guided and Functionally Instructed Tumor Therapies (iFIT) Cluster of Excellence aims to achieve a comprehensive understanding of the biological processes in tumors in order to develop innovative and sustainable cancer treatments. Cancer treatments to date have frequently proven ineffective in the long term. While nowadays it is possible to contain the disease even in patients with tumors in an advanced state using modern drug therapies, resistance to the treatment nearly always develops. The tumors begin to grow again, despite treatment. The researchers therefore seek to comprehensively map the biological processes in tumors using functional genetic analysis and to identify potential weak points which new medications could target.

They will focus in particular on biological processes which enable tumors to survive under stress. State-of-the-art imaging techniques are used to visualize the stressed state of tumors so that the Cluster will be able to apply new, imaging-based, individually-tailored cancer treatments to the patient and his/her disease. Additionally, innovative immunotherapies will seek to activate the patient's own immune system, supporting and complementing targeted drug therapy. The speaker for the Cluster is oncologist Professor Lars Zender, Medical Director of Internal Medicine VIII – Clinical Tumorbiology. Co-speakers are Professor Bernd Pichler, Director of the Werner Siemens Imaging Center at the University of Tübingen, and immunologist Professor Hans-Georg Rammensee. The Max Planck Institutes for Developmental Biology and Intelligent Systems, the Fraunhofer Institute for Interfacial Engineering and Biotechnology, and the Margarete Fischer Bosch Institute for Clinical Pharmacology are partners in the Cluster.

Control of Microorganisms to Fight Infection (CMFI)

The surfaces of the human body host colonies of microorganisms, known as microbiomes. Along with bacteria which have a positive effect on human health, microbiomes contain potentially life-threatening pathogens. In the past, broad-spectrum antibiotics have often been used to tackle them. Nowadays it is known that this not only promotes resistance to antibiotics – in many cases it also damages the microbiome as a whole. Researchers in the Control of Microorganisms to Fight Infection Cluster of Excellence aim to develop a new strategy to control infections.

Their goal is to find new, targeted agents which will have a positive effect on the microbiome. We know that useful bacteria help to keep down the harmful ones. In order to understand and exploit the underlying mechanisms, the Cluster of Excellence will bring together researchers from the fields of molecular, bioinformatics and clinical disciplines. The Cluster speakers are Professor Andreas Peschel and Professor Heike Brötz-Oesterhelt of the Interfaculty Institute of Microbiology and Infection Medicine at the University, along with Professor Ruth Ley, Director of the Max Planck Institute for Developmental Biology. The University Hospitals and the German Center for Infection Research (DZIF) are also partners in the Cluster.

Machine Learning in Science

New technologies using artificial intelligence are set to make tangible changes to our world in the coming decades. Recent breakthroughs in the area of machine learning will make it possible. Algorithms are now able to solve ever more complex problems which previously only humans could manage. The new Machine Learning in Science Cluster of Excellence will analyze these developments, which promise to fundamentally change even the process of scientific investigation. The researchers aim to discover the full potential of machine learning and how it can be harnessed for science and academia in general and to understand the changes this will mean for the scientific process.

At the heart of their research are algorithms which recognize complex structures and causal links in data sets; methods with which uncertainties can be quantified in data-driven scientific models; and techniques enabling the researchers to better understand, interpret and control the phases of machine learning. Ethical and scientific theory issues will also be looked at. The speakers for the Cluster are informatics professor Ulrike von Luxburg and neuroscientist Professor Philipp Berens. The Max Planck Institute for Intelligent Systems and the Knowledge Media Research Center Tübingen are partners in the Cluster.