



## HUMAN & BIOTECHNOLOGY

Fields of Expertise TU Graz

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**Gernot Müller-Putz,**  
**Human & Biotechnology**

Source: Lunghammer – TU Graz

### **2021** is an anniversary year for Biomedical Engineering at TU Graz.

The subject area is celebrating its 50th anniversary. As an elective subject bundle in the field of electrical engineering, one of the most successful teaching and research areas at TU Graz started in 1970/71 as an elective subject group: Biomedical Engineering. Only three years later, the specialized Institute of Electrical and Biomedical Engineering was found-

ed under Stefan Schuy, later Rector of TU Graz. After a few years of development, the institute housed four departments: Biophysics, Medical Informatics, Medical Electronics and Health Care Engineering and two Ludwig Boltzmann Institutes (Assistive Technology, Medical Informatics and Neuroinformatics) as well as a testing facility for biomedical engineering. In 2001, the biomedical engineering branch of study was established as part of the electrical engineering diploma programme. In 2004, the organization was divided into four independent institutes: Genomics and Bioinformatics, Human-Computer Interfaces, Medical Technology, and Health Care Engineering with a European Test Centre for Medical Devices. Later, the Institute of Genomics and Bioinformatics was dissolved, and in 2007 the Institute of Biomechanics founded. The Bachelor's programme started in 2007, followed immediately by the Master's programme in Bio-

medical Engineering. Today, the institutes, including the Institute of Biomedical Informatics, are housed in the Biomedical Engineering Building at Stremayrgasse 16, which was renovated a few years ago.

At the Annual Conference of the Austrian Society for Biomedical Engineering, which took place at TU Graz, a festive evening was held to celebrate the anniversary. Rudolf Stollberger announced his retirement and received great applause, and his successor, Martin Uecker, was welcomed as head of the Institute of Biomedical Imaging.

After last year's call for FoE tenure-track positions, we were able to enlist Kerstin Lenk, who is setting up the Computational & Experimental Neuroscience working area at the Institute of Neural Engineering. She writes about her work in this issue of TU Graz research. ●

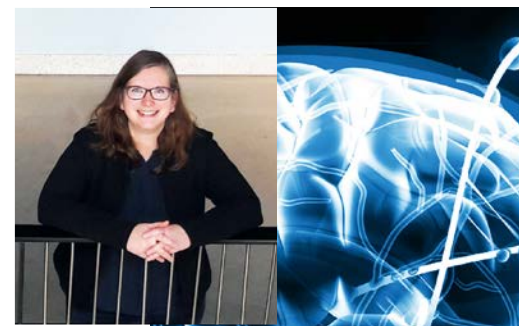
**Kerstin Lenk**

## Computational Models of Neurons and Astrocytes in Studying Brain Dynamics in Health and Disease

Astrocytes are non-neuronal brain cells that contribute to the exchange of neurotransmitters and ions. They are involved in various cognitive functions like sleep and memory formation. Using computational models, we simulate the interaction between neurons and astrocytes. By perturbing parts of the signaling pathways, we investigate astrocyte behavior in diseases like Alzheimer's, epilepsy, and schizophrenia.

In the past, neurons in the brain were considered the sole contributors to cognitive function. This view has been chang-

ing over the last four centuries, and other non-neuronal cells are now being investigated as to whether or how they >



**Kerstin Lenk**

**has been an assistant professor at the Institute of Neural Engineering since April 2021, focusing on computational neuroscience. The goal is to understand how neurons and other brain cells such as astrocytes interact with each other and how this interplay is disturbed in diseases.**

Source: Hannah Pulferer