



University of Stuttgart

Stuttgart Research Center Systems Biology (SRC SB)

Systems Biology Seminar Talk

„Toward a World of ElectroGenetics“

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Abstract:

With the advent of the internet of things, interconnected electronic devices are starting to dominate our daily lives and are reaching the control complexity of living systems, and yet work radically different: While human metabolism uses ion gradients across insulated membranes to simultaneously process slow analog chemical reactions and communicate information in multicellular systems via soluble or volatile molecular signals, electronic devices use multicore central processing units to control the flow of electrons through insulated metal wires with gigahertz frequency and communicate information across networks via wired or wireless connections. While analog biological systems and digital electronic devices efficiently work in their respective worlds there are no efficient interfaces between electronics and genetics. We will report our first attempts to design direct electro-genetic interfaces and our progress toward a world of ElectroGenetics and the internet of the body.

CV:

Martin Fussenegger is Professor of Biotechnology and Bioengineering at the Department of Biosystems Science and Engineering (D-BSSE) of the ETH Zurich in Basel as well as at the University of Basel. His research focuses on mammalian cell engineering, in particular on the assembly of synthetic gene circuits that process complex control and closed-loop expression logic as well as on the production of theranostic designer cell implants that interface with host metabolism to correct prominent metabolic disorders. Martin Fussenegger graduated with Werner Arber at the Biocenter of the University of Basel (1992), obtained his Ph.D. in Medical Microbiology (1994) at the Max Planck Institute of Biology (Tübingen, Germany) and continued his postdoctoral studies on host-pathogen interactions at the Max Planck Institute of Infection Biology (Berlin, 1995). He then joined the ETH Institute of Biotechnology (1996), where he received his habilitation in 2000, and became Swiss National Science Foundation Professor of Molecular Biotechnology in 2002, prior to being awarded a Chair in Biotechnology and Bioengineering at the ETH Institute for Chemical and Bioengineering in 2004. On a presidential mission, he moved to Basel in 2008 to build up the D-BSSE, the Department of Biosystems Science and Engineering of the ETH Zurich

**Thursday
October 13, 2022
4 p.m. – 5 p.m.**

**Lecture Hall 0.106
Allmandring 31
Stuttgart**