SiLA Rapid Integration

Niklas Mertsch
Universitätsmedizin Göttingen

"Incremental Lab Automation for Tissue-based Drug Screening"

Lukas Bromig
Technische Universität München

"Multi-Stage Bioprocess Optimization"

Dr. Mark Doerr
Universität Greifswald

"LARAsuite & Machine learning guided robotic high-throughput protein/enzyme screening"

November 11th, 2021   **16:45 – 18:30 pm CET**   **@SiLAStandard**   **#simplifythelab**

16:45   **«online portal» open for networking**

17:00   **Welcome - Chair and Moderation: Tim Meyer** Universitätsmedizin Göttingen

17:15   **«Incremental Lab Automation for Tissue-based Drug Screening»** by Niklas Mertsch

Cardiovascular diseases account for one third of all global death. This motivated us to develop a novel drug screening platform for the assessment of potential therapeutics based on engineered heart muscle (EHM) tissue. EHM are generated from human induced pluripotent stem cells (iPSCs) and provide representative, human-centric disease models while reducing the need for animal testing. To improve EHM making and data collection during cultivation and drug testing, we are incrementally introducing automation to the process. Automating repetitive tasks helps us in reducing the risk of human error while increasing quality, traceability, and reproducibility of our experiments. Within academic environments like ours, specific constraints apply to automation: Setups shall remain highly flexible, processes have to be executed by student users with limited IT expertise. And tight budgets have to be met. The SiLA 2 standard, its community and collection of free and open-source tools plays a vital role in the projects ongoing success as it significantly lowers the entry barrier to automation by providing simple means to implementing robust, interoperable drivers for pre-existing devices.

17:30   **«Multi-Stage Bioprocess Optimization»** by Lukas Bromig

17:45   **«LARAsuite & Machine learning guided robotic high-throughput protein/enzyme screening»** by Dr. Mark Doerr

Dr. Mark Doerr is a (bio-)chemist and staff scientist in Prof. Uwe Bornscheuer's protein engineering and bio-catalysis group at the Institute for Biochemistry of the University of Greifswald. He is responsible for the institute's robotic protein high-throughput screening platform LARA (lara.uni-greifswald.de), with planning and programming the screening campaigns and writing the LARAsuite (gitlab.com/LARAsuite) for handling scientific experimental data based on FAIR principles.
To support the open data sharing idea and speed up scientific progress, he is member of the SiLA2 laboratory communication standardization core development team, the maintainer of the SiLA python repository and also member of the core AnIML working group for the standardization of laboratory data. In the German Research Infrastructure (NFDI) he is member of the NFDI4Cat ontology and data standards workgroups. His further scientific interests/fields are evolution, machine learning, enzyme modelling and microfluidics.

18:00   **open discussion:** Lab automation in academic environments: Special needs and challenges