

## **IGSTC Post-Doctoral Industrial Exposure Fellowship**

### **Project description**

Living cells are the main component of nature and human life. Understanding cellular evolution and microenvironment interaction are essential steps for hazard, safety, disease and efficacy prediction of chemicals and drug candidates. To accelerate the prediction phase and provide reproducible results, **cellasys** developed a microphysiometry technology to monitor metabolic and morphological parameters, such as extracellular acidification (pH), cellular respiration (pO<sub>2</sub>), and morphology (impedance).<sup>1</sup> A current focus lies in the application of the microphysiometry technology to develop innovative Organ-on-Chips (OoC) setups by incorporating the smallest functional organ or tissue unit into the system. Recently, **cellasys** engineered liver-on-chip<sup>2</sup>, skin-on-chip<sup>3</sup> and intestine-on-chip<sup>4</sup>.

Building upon the developed technology, the specific aim of this project is to engineer and validate a microphysiometry system for integrating 3D cell culture models to standardize experimental protocols for industrial cell culture applications. Work packages depend on the candidatures expertise and range from:

- Designing, evaluating, and optimizing novel electrochemical and optochemical biosensors, including executing experiments to demonstrate performance of new biosensor architectures
- Engineering and optimizing of novel Organ-on-Chip setups with integrated microsensor technologies for automated and standardized measurements of cellular parameters
- Conducting proof-of-concept studies with the developed technology, including implementing statistical analyses of data sets acquired during testing

Location: Spechtstraße 1, 85579 Neubiberg, Germany

Job field: Research & Development

### Literature

- 1 Weiss et al. (2013). Label-free monitoring of whole cell vitality. In 2013 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC): 1607-1610
- 2 Alexander et al. (2018). A novel lab-on-a-chip platform for spheroid metabolism monitoring. *Cytotechnology*, 70(1), 375-386.
- 3 Alexander et al. (2018). Skin-on-a-chip: transepithelial electrical resistance and extracellular acidification measurements through an automated air-liquid interface. *Genes*, 9(2), 114.
- 4 Schmidt et al. (2020). Tissue-on-a-Chip: Microphysiometry With Human 3D Models on Transwell Inserts. *Frontiers in Bioengineering and Biotechnology*, 8, 760.

## **cellasys GmbH**

cellasys delivers system solutions for microphysiometry. These include services such as contract research, research & development, and production & maintenance. Furthermore we offer consulting services in the area of application development, data analysis and data interpretation. Our microphysiometric systems monitor different parameters directly from living cells. These parameters include extracellular acidification (pH), cellular respiration (pO<sub>2</sub>) and morphology (impedance). The measurement is label-free, parallel, continuous and in real-time. Our BioChip technology is currently used in various application areas, including drug development, toxicodynamics, environmental monitoring and personalized medicine.

### **\*Who you are**

- Applicants must have a PhD in electrical engineering, mechanical engineering, biotechnology, biomedical engineering or a related field
- Demonstrated experience in one or more of the following fields: electrochemical and optochemical biosensors, microphysiometry, electroanalytical methods, micro electromechanical systems (MEMS), cell culture, systems engineering
- Demonstrated scientific experience including publications of peer-reviewed articles
- Independent and self-motivated PostDoc who is organized and enjoys solving challenges systematically by using analytical skills
- Excellent verbal and written communication skills as well as fluency in English complete your profile

Interested candidates should send their CV (max. 3 pages) and a cover letter (max. 2 pages) describing their research experience and project proposal to Dr. Sebastian Eggert.

\*Kindly note that the skillsets required by cellasys are over and above the eligibility criteria of IGSTC Post-Doctoral Industrial Fellowships. Prospective candidates who wish to get a Letter of Consent while applying to IGSTC Industrial fellowships are advised to contact cellasys personnel if and only if they satisfy the above conditions.

### **Contact details**

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