Non-invasive analysis of microtissues and organoids with spatially resolved imaging technologies

Workshop on providing new insights into tissue models

Keywords: Engineering microphysiological systems, spheroids and organoids, spatiotemporal analysis of organoid growth and morphogenesis, multimodal data generation

Topic: Three-dimensional 3D cell models offer enormous innovation potentials for instance in medicine, to treat patients in a highly individualised way or in the food industry for the development of alternative methods to produce clean meat.

However, the assessment and long term monitoring of these complex 3D tissue analogues need versatile imaging techniques that can capture not only morphological, but also functional and molecular information for omics analysis, namely transcriptomics, proteomics and metabolomics. This remains a challenge for conventional analytical methods. Current imaging methods offer strengths but have also weaknesses according to their techniques. In this workshop we want to discuss approaches to progress in the non-destructive investigation of advanced 3D cell models with spatially resolved imaging technologies.

Program on Wednesday, April 12, 2023, 14:00 – ca. 17:15h
Swissmem, Pfingstweidstrasse 102, 8005 Zürich

Time	Presentation & Topic
14:00 h	**Welcome & Introduction** Jörg Güttinger, Managing Director Innovation Booster Photonics Ulrich Stärker, Board Member Swissphotonics Markus Rimann, Head of TEDD Competence Centre, ZHAW
14:20 h	**Cancer Organoids as Patient Avatars in Precision Medicine** Lara Planas-Paz, Department of Pathology and Molecular Pathology, University Hospital Zurich
14:45 h	**Limits in 3D imaging with two-photon, three photon and light-sheet microscopy** Stefanie Kiderlen, Lukas Krainer, Prospective Instruments GmbH
15:10 h	**Automating Spatial Transcriptomics** Michael Collasius, HSE AG
15:40 h	**Coffee Break and Networking**
16:10 h	**Break-out Discussion Groups: (proposal, can be adjusted):** 1. Break out Discussion 1 **Challenges for 3D imaging and analysis techniques in deep tissue-like structures** 2. Break out Discussion 2 **Label-free non-invasive monitoring of organoid growth & development: current situation and unmet needs** 3. Break out Discussion 3 **Challenges in end-to-end processes of organoid production, treatment and culture in combination with imaging and analysis**
ca.17:00 h	**Wrap up & Next steps**
17:15 h	**Apéro and Networking**

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