

# Biotechnet Conference Report: TEDD Events 2023

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



### Quick Facts



**12 April 2023, Swissmem, Pfingstweidstrasse 102, 8005 Zürich**



**50 Participants**

**Academic, SMEs, startups, clinical, international**



**Talks by scientists, Breakout discussions**



**Organized by: Competence Centre TEDD, SwissPhotonics, Innovation Booster Photonics**

### Takeaway



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 also have 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.

## Session Highlights

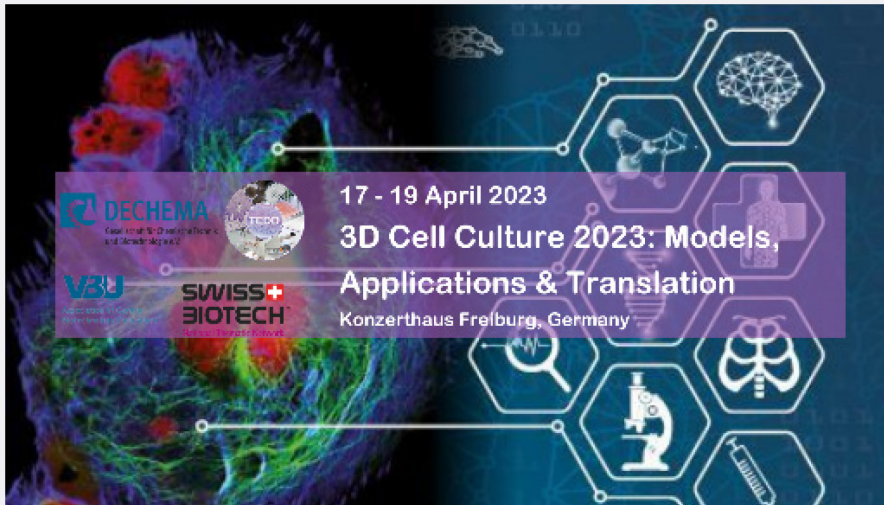
### Scientific talks

- Welcome & Introduction, Jörg Güttinger, Managing Director Innovation Booster Photonics, Ulrich Stärker, Board Member Swissphotonics, Markus Rimann, Head of TEDD Competence Centre, ZHAW
- Cancer Organoids as Patient Avatars in Precision Medicine, Lara Planas-Paz, Department of Pathology and Molecular Pathology, University Hospital Zurich
- «Google Maps» for tissue biology – Mapping tissues with spatial omics technologies, Denis Schapiro, Heidelberg University Hospital
- Turnkey Multiphoton Microscopy in Life-Science and Medicine, Stefanie Kiderlen, Lukas Krainer, Prospective Instruments GmbH
- Automating Spatial Transcriptomics, Andreas Geipel, HSE AG

### Break-out Discussion

- 1. Break out Discussion : 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

# 3D Cell Culture 2023: Models, Applications & Translation



## Quick Facts



**17-19 April 2023, Konzerthaus Freiburg**



**165 Participants**

**Academic, SMEs, startups, clinical, international**



**Lectures, Poster Session, Poster flash Talks**

**Conference dinner with Poster award**

**28 Exhibitors**



**Organized by: Competence Centre TEDD, Dechema, Swiss Biotech**

## Takeaway



The 3D Cell Culture 2023 conference will focus on advanced and predictive 3D cell culture models. Main topics of the 7th conference of the 3DCC series are latest trends in development, biology and applications of organoids, the biology in Microphysiological Systems, new developments in the field of Personalised Medicine, the path from 3D cell cultures to cell-based therapies, as well as enabling technologies for standardisation and scalability.

In addition to scientific presentations, the exhibition will showcase practical applications, products and solutions and further stimulate discussion between researchers, solution providers and users.

# TEDD Visit: University of Zurich Department of Pathology and Molecular Pathology



## Quick Facts



**7 June 2023, Institut für Pathologie und Molekularpathologie, Schmelzbergstrasse 12, 8091 Zürich**



**23 Participants**  
**Academic, SMEs, startups, clinical, international**



**Talks by Scientists, Lab Tour**



**Organized by: Competence Centre TEDD, USZ**  
**Sponsored by Hamilton**

## Takeaway



### Clinical Activities

Our focus is the development of high-fidelity patient-derived ex-vivo cancer models for functional precision oncology. With such an approach, we can complement static features by generating dynamic data that may encompass key vulnerabilities, including those conveyed by altered signalling pathways due to, for example, epigenetic changes not necessarily driven by distinct genomic aberrations. Our functional precision oncology platforms integrate functional testing with comprehensive genomics, transcriptomics and clinical data in order to find druggable targets, redefine the standard of patient care, and improve patient outcomes.

### Research Activities

Our research activities encompass medium to high throughput drug screening and CRISPR/Cas9 technologies on ex-vivo patient derived cancer models for the discovery and identification of novel drug targets and drug vulnerabilities in especially rare cancers such as soft tissue sarcomas and

cancers that are difficult to treat (e.g. pancreatic cancer). We study the environmental influences on drug responses using different hydrogels. With the establishment of resistant patient-derived ex-vivo cancer cell models, we obtain insight into the mechanism of acquired drug resistance. Together with our collaborators, we further pursue projects using cutting-edge machine learning algorithms to better predict drug responses in patient-derived ex-vivo cancer models.

## Session Highlights

### Scientific talks

- Welcome by Chantal Pauli and Markus Rimann
- Talk 1: Functional Precision Oncology – A Clinical Approach
- Talk 2: Science Pitches from the Laboratory of Systems Pathology and Functional Tumor Pathology

### Lab Tours

- USZ Labs



# TEDD Annual Meeting 2023: Clinical applications of advanced cell culture models



## Quick Facts



**8 September 2023, Zürich University of Applied Sciences, 8820 Wädenswil, Switzerland**



**100 Participants:  
Academic, SMEs, startups, clinical, international**



**Lectures, 28 Exhibitors, Long networking lunch**



**Organized by: Competence Centre TEDD**

## Takeaway



Cell culture is an essential tool in biomedical research and pharmaceutical development. Advanced cell culture models, known as microphysiological systems (MPS), have revolutionized the field. They incorporate multiple cell types and can be derived from patient-specific cells or induced pluripotent stem cells (iPSCs), enabling personalized medicine and disease modelling.

The applications of advanced cell culture models in the clinical setting are diverse. They enhance our understanding of disease mechanisms,

aid in drug discovery, and enable personalized medicine. These models are used for studying various diseases, such as cancer and neurological disorders, by closely resembling human tissues. Advanced cell culture models also have significant potential in regenerative medicine, generating tissue-specific organoids for drug testing and bioengineered tissues for replacement therapies.

During this year's TEDD Annual Meeting, we will explore the clinical applications of advanced cell culture models and highlight their potential in revolutionizing biomedical research and patient care. We will delve into their use in disease modelling, drug screening, personalized medicine, regenerative medicine, and other emerging areas. By examining the current state of the field and discussing recent advancements, we aim to shed light on the transformative potential of these models in clinical practice and pave the way for future developments in this exciting field.

## Session Highlights

### Scientific talks

- Welcome Address, Prof. Christian Hinderling, Director of Institute of Chemistry and Biotechnology, Zurich University of Applied Sciences (ZHAW), Switzerland
- Opening of the Meeting, Dr. Markus Rimann, TEDD Competence Centre, Zurich University of Applied Sciences (ZHAW), Switzerland
- From biopsy to cure: a challenge for precision oncology, Prof. Javad Nazarian, University Childrens' Hospital Zurich
- Oncology Department, Switzerland
- What regeneration in orthopaedics might bring to an increasingly elderly society, Prof. Benjamin Gantenbein, University of Bern, Medical Faculty, Department for BioMedical Research, Switzerland
- Vascular pattern making using sound induced morphogenesis – experience with the first commercial CymatiX instrument , Bianca Fischli (Team of Prof. Michael Raghunath), Zurich University of Applied Sciences (ZHAW), Switzerland
- Unleashing the potential of Healiva cell therapy models in advancing clinical applications, Dr. Priyanka Dutta-Passecker, Healiva SA, Switzerland
- Role of functional drug testing in precision oncology, Dr. Arno Amann, Department of Haematology and Oncology, Medical University of Innsbruck, Austria
- The role of standardized spheroids in pancreatic islet transplantation, Dr. Markus Mühlemann, Kugelmeiers, Switzerland
- MUVON from bench to bedside, Dr. Deana Mohr, MUVON Therapeutics, Switzerland
- Stimulation through innovation: A new way to monitor engineered muscle tissues for personalized clinical advances, Dr. Jakob Pyszkowski, Optics11 Life, Amsterdam, Netherlands

# TEDD Visit: REGENHU



## Quick Facts



24 October 2023, REGENHU, ZI du Vivier 22, 1690 Villaz-St-Pierre, 23.11.2023



15 Participants  
Academic, SMEs, startups, clinical, international



Short Talks by Scientists, Lab tours



Organized by: Competence Centre TEDD, REGENHU

## Takeaway



REGENHU is a pioneering leader in the field of bioprinting and high-end 3D printing technologies. Since our inception in 2009, we have consistently pushed the boundaries of innovation to provide cutting-edge solutions for high-precision fluid dispensing and material processing. We are committed to revolutionizing the way industries approach 3D printing. Our journey began with the launch of our first instrument in 2009, and since then, our primary mission has been to develop state-of-the-art technologies that empower our customers to achieve unparalleled results.

What sets us apart is our commitment to customization. Our R-GEN series instruments can be meticulously configured to meet your specific needs in terms of printheads, workzones, options, and consumables. With five fully



functional tool slots and an improved workzone coverage, we provide the versatility required to meet even the most demanding requirements. We are driven by a relentless pursuit of excellence, and our commitment to innovation and customer satisfaction remains unwavering.

## Session Highlights

### Scientific talks

- Welcome by Caio Valeriano (REGENHU) & Markus Rimann (TEDD)
- Talk 1: Opening New Perspectives with 3D Bioprinting by Mauro Petretta (REGENHU)
- Talk 2: Liver Bioprinting for Whole Organ Engineering by Bart Spee (Utrecht University)
- Talk 3: Automating the Sorting of Small Biological Entities by Frank Bonnet (Bionomous)

### Guided tours

#### Focus on networking time

- Participants had an opportunity for different way of interaction – at the extended lunch break, as well as during the lab tour in smaller groups.

# TEDD Visit: Campus Biotech



## Quick Facts



**23 November 2023, Campus Biotech, Chemin des mines 9, 1202 Geneva**



**30 Participants  
Academic, SMEs, startups, clinical, international**



**Short Talks by Scientists  
Lab tours**



**Organized by: Competence Centre TEDD, HEPIA,  
Campus Biotech**



**Takeaway**  
The Campus Biotech is composed of world-class research teams working in a collaborative environment including the Wyss Center, UNIGE, EPFL, HEPIA as well as several companies (GliaPharm, Addex).

They all shared one overarching vision to be a center of excellence in biotechnology and life sciences research focusing on three domains: Neuroscience & Neurotechnology, Digital Health and Global Health.

Tissue Engineering is one of the crucial tools to work at the forefront of life sciences and the Campus Biotech shares state of the art cell culture equipment to showcase during the lab tours.

## Session Highlights

### Scientific talks

- Welcome address by Dr. Markus Rimann, TEDD and Prof Adrien Roux, HEPIA
- Predictive immunocompetent human airway models for safety and efficacy testing, Dr. Samuel Constant, Ph.D., CEO and co-founder; Epithelix
- iPSCs models in the GliaX™ drug discovery program, Dr. Sylvain Lengacher, Co-CEO GliapPharm SA and Dr. Charles Finsterwald, CSO, GliaPharm SA
- Supporting innovative strategies for in vitro brain disease modeling, Dr. Théo Ribierre, PhD, Head of the NeuroNA Human Cellular Neuroscience Platform (HCNP)

### Guided tours

- GliaPharm lab
- HEPIA Tissue Engineering Lab
- NeuroNA Human Cellular Neuroscience Platform

### Focus on networking time

- Participants had an opportunity for different way of interaction – at the extended lunch break, as well as during the lab tour in smaller groups.