TEDD Annual Meeting

50 shades of 3D: from ultraflat 3D to recellularised organs.
Harnessing the constructional and metabolic potential of human cells in vitro.

27th October 2016

Campus Grüental, Wädenswil, Switzerland
www.icbc.zhaw.ch/tedd
Introduction

As the new Head of the TEDD Competence Centre I would like to extend a warm welcome to the existing, new, and future members of this growing network.

*Form follows function* is a principle associated with modernist architecture and industrial design in the 20th century. However, considering contemporary tissue culture and efforts to render cell-based systems and complex tissue equivalents more physiological, the term *function follows form* would equally apply. Be it building connective tissue structures, or stacking cellular compartments allowing for crosstalk between different cell types - all these efforts have one goal: to emulate *in vivo*-like functionality. Part of this functionality is rooted in the spatial relationships between cells and connective tissue structures. Therefore, three-dimensional (3D) cell culture technology has emerged as one of the fastest growing experimental approaches in the life sciences. The 3D cell culture market is predicted to reach 1.35 billion USD by 2021 from currently 470 Million USD this year at a CAGR of 23.6% (marketsandmarkets.com).

This TEDD annual meeting will highlight current segments of the 3D cell culture market, namely scaffold free, scaffold-based, bioprinting, and the use of recellularised tissues. This year we shall shed some light on metabolic tissue engineering, namely the generation of human brown fat cells from progenitor cells. Brown fat was originally assumed to be present only in babies and small infants, but there is increasing evidence that adults have brown fat deposits to varying degrees. What makes brown fat so interesting is its capacity to become a fuel guzzler after activation, increasing the metabolic rate and burning calories.

Come and listen to the talks, which will cover new technologies to empower cells to perform on a higher physiological level and receive the latest information about current activities in research and industry in the field. During the extended lunch you will have the opportunity for discussion and networking, and also be able to visit our industrial and research partners’ exhibition, where they share their latest ideas and technologies.

Join our community to take the next steps to spearhead implementation and prevalidation of 3D tissue models for widespread commercial use.

I look forward to seeing you in Wädenswil,

best regards,

Michael Raghunath, Head of TEDD Competence Centre
Program

9:00  Registration and welcome coffee

9:30  Opening of the meeting

   Prof. Dr. Christian Hinderling, Director of the Institute of Chemistry and Biotechnology, Zurich University of Applied Sciences (ZHAW)

9:40  Metabolic Tissue Engineering: a tale of two fats

   Prof. Dr. Michael Raghunath, Head of TEDD Competence Centre, Zurich University of Applied Sciences (ZHAW)

10:20 Regulation of brown fat formation and function

   Prof. Dr. Christian Wolfrum, ETH Zurich, Department of Health Sciences and Technology, Switzerland

11:00 To be defined

   Prof. Dr. Heike Walles, Department Tissue Engineering & Regenerative Medicine (TERM, University Hospital Würzburg), Translational Center Würzburg, Regenerative Therapies in Oncology and Musculoskeletal Disease Würzburg, branch of the Fraunhofer Institut Interfacial Engineering and Biotechnology (IGB), Germany

11:40  Short talks

   • Human 3D-cocultures for the study of liver fibrosis
     Prof. Dr. Laura Suter-Dick, University of Applied Sciences and Arts Northwestern Switzerland

   • Adding metabolic competence to 3D cell-based assays using a spheroid-based microphysiological system
     Dr. Olivier Frey, InSphero AG, Switzerland
12.00 – 14:00  Networking lunch, poster presentation and exhibition

14:00  
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**Fabrication of functional human skeletal muscle tissue for drug testing using 3D bioprinting**

*Dr. Hansjoerg Keller, Novartis Institutes for BioMedical Research, Switzerland*

14:40  
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**Short talks**

- Engineering human hair follicles *in vitro* – opportunities in regenerative medicine and cosmetics testing
  *Dr. Uwe Marx, TissUse GmbH, Germany*

- Evaluation by 3D imaging of the molecular activity in pre-clinical phases
  *Dr. Jean-Michel Lagarde, imactiv-3d, France*

- SiMPLInext SA - Hi-Fi *in vitro*. Delivering on the promises of permeable supports for tissue engineering
  *Dr. Silvia Angeloni Suter, CSEM & SiMPLInext, Switzerland*

15:20  
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**To be defined**

*Dr. Fred Zülli, Mibelle Group, Switzerland*

16.00  
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**Final remarks and TEDD next steps**

*Prof. Dr. Michael Raghunath, Head of TEDD Competence Centre, Zurich University of Applied Sciences (ZHAW)*

16:20  
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**Aperitif and networking**
Exhibition

At the exhibition selected industrial and academic partners will present their latest technologies and ideas. This platform will enable discussions, collaboration and the generation of new network projects.

List of confirmed exhibitors
Ruwag, Biotek, Tecan, SiMPLInext, C-CIT

Further Details

Location
ZHAW Wädenswil, Campus Grüental,

Fee
TEDD members free of charge; other participants CHF 120.-; students CHF 60.-

Registration
www.icbc.zhaw.ch/tedd