

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Organs- and Tissues-on-Chips (D1)

April 8-12, 2018 • Big Sky Resort • Big Sky, Montana, USA

Scientific Organizers: Christopher P. Austin, Danilo Tagle, Christine L. Mummery and Brian R. Berridge

Supported by the Directors' Fund

Abstract & Scholarship Deadline: December 6, 2017 / Abstract Deadline: January 9, 2018 / Discounted Registration Deadline: February 6, 2018

SUNDAY, APRIL 8

Arrival and Registration

MONDAY, APRIL 9

Welcome and Keynote Address

Christopher P. Austin, National Institutes of Health, USA
Overview of Organs-on-Chips in Drug Development for Safety, Toxicity and Efficacy Testing

Organs-on-Chips in Drug Development

D. Lansing Taylor, University of Pittsburgh Drug Discovery Institute, USA
Liver Microphysiology System as a Key Component in Quantitative Systems Pharmacology

Christine L. Mummery, Leiden University Medical Center, Netherlands
Heart- and Vessels-on-Chip

Jonathan Himmelfarb, University of Washington, USA
A Kidney on a Chip for Disease Modeling and Drug Efficacy Testing

Short Talk(s) Chosen from Abstracts

Integrated Organs-on-Chips

Gordana V. Vunjak-Novakovic, Columbia University, USA
Heart-Liver-Vasculature-Skin

Donald E. Ingber, Wyss Institute for Biologically Inspired Engineering at Harvard, USA
DARPA Integrated 10-Organ System Using Microfluidic Platform

Linda G. Griffith, Massachusetts Institute of Technology, USA
DARPA Integrated 10-Organ System Using a Microwell System

Short Talk Chosen from Abstracts

Poster Session 1

TUESDAY, APRIL 10

Organs-on-Chips for Disease Modeling I

Kevin Kit Parker, Harvard University, USA
Cardiomyocytes-on-Chips as Models for Barth Syndrome and Long QT

Nancy L. Allbritton, University of North Carolina, Chapel Hill and North Carolina State University, USA
Intestinal Simulacra on a Microscale

Steven George, University of Washington, USA
Heart-on-a-Chip: 3D in vitro Models of Atrial Conduction

George Truskey, Duke University, USA
Microphysiological Systems Vascular Model of Progeria

Organs-on-Chips for Disease Modeling II

Helena Therese Hogberg, Johns Hopkins Bloomberg School of Public Health, USA
3D Neuronal Microphysiology Systems and Neuronal Disease Models

Teresa K. Woodruff, Northwestern University, USA
What We Learned from EVATAR and Reproductive Cycles In A Dish

Kevin E. Healy, University of California, Berkeley, USA
Congenital Central Hypoventilation Syndrome (Autonomic Nervous System)

Short Talk Chosen from Abstracts

Poster Session 2

WEDNESDAY, APRIL 11

Other Opportunities: 1) Tissue-on-Chips for Translational Research in Space 2) Environmental Health

Rocky S. Tuan, University of Pittsburgh School of Medicine, USA
3D Osteochondral Microtissue Models to Study Skeletal Pathogenesis under Degenerative and Microgravity Conditions

Bruce R. Conklin, Gladstone Institutes and UCSF, USA
Engineering Disease-Specific iPSC Cells for Personalized Medicine Research

Warren M. Casey, NICEATM, NIEHS, National Institutes of Health, USA

Estrogen Disruptors and Tissue Chips: Assessment of Chemical Compounds Have the Potential to Disrupt Processes in the Human Body that May Lead to Negative Health Effects

Richard S. Paules, NIEHS, National Institutes of Health, USA
Tox21 Efforts in Improving Toxicology and Human Safety Assessment

Short Talk(s) Chosen from Abstracts

Workshop 1

Short Talks Chosen from Abstracts

Commercializing Tissue Chips Technologies

Geraldine A. Hamilton, Emulate Inc., USA
Commercializing Lung and GI on Chips

Thomas Neumann, Nortis, Inc., USA
How Organ-on-Chip Technologies will Revolutionize in-vitro Methods

Uwe Marx, TissUse GmbH and Technische Universität Berlin, Germany
Commercializing Integrated 4-Organ Tissue Chips

Short Talk Chosen from Abstracts

Poster Session 3

THURSDAY, APRIL 12

Perspectives from Regulatory Agencies and Pharmaceutical Industry

Donna Mendrick, Food and Drug Administration, USA
FDA Perspectives on Tissues-on-Chips

Sonja Beken†, European Medicines Agency, Federal Agency for Medicines and Health Products, Belgium
European Regulatory Agency Perspectives on Tissues-on-Chips

Adrian Roth, F. Hoffmann-La Roche Ltd, Switzerland
Industry Perspectives on Validation of Tissue Chip Technology

Brian R. Berridge, GlaxoSmithKline, USA
Use of Tissue Chips to Improve Clinical Translation

Short Talk(s) Chosen from Abstracts

Workshop 2

Short Talks Chosen from Abstracts

Validating Tissue Chips

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Ivan Rusyn, Texas A&M University, USA

Tissue Chip Validation Center

Murat Cirit, Massachusetts Institute of Technology, USA

Quantitative Characterization of Microphysiological Systems

Mark E. Schurdak, University of Pittsburgh, USA

Microphysiological Systems Database

Meeting Wrap-Up: Outcomes and Future Directions

Danilo Tagle, NCATS, National Institutes of Health, USA

What's on the Horizon for Tissues-on-Chips?

FRIDAY, APRIL 13

Departure