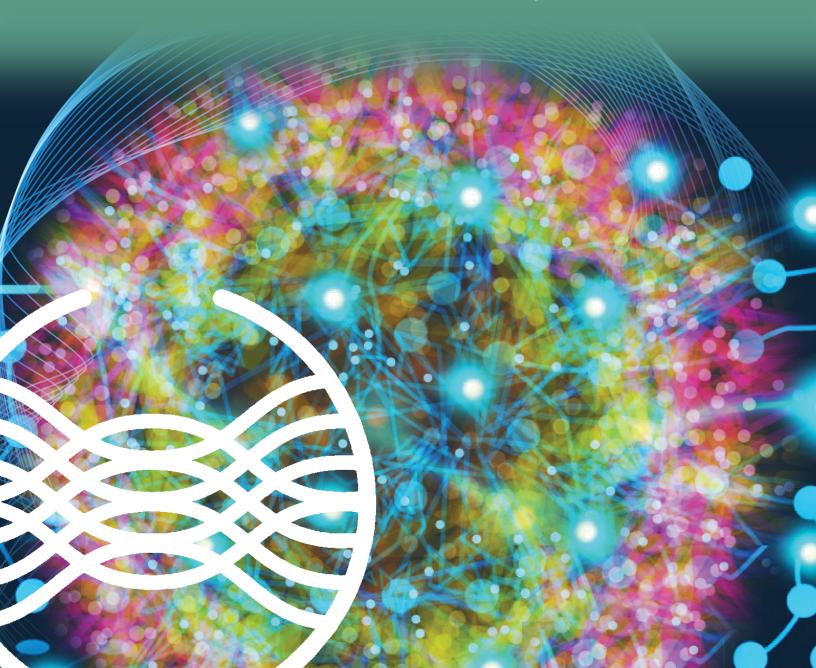
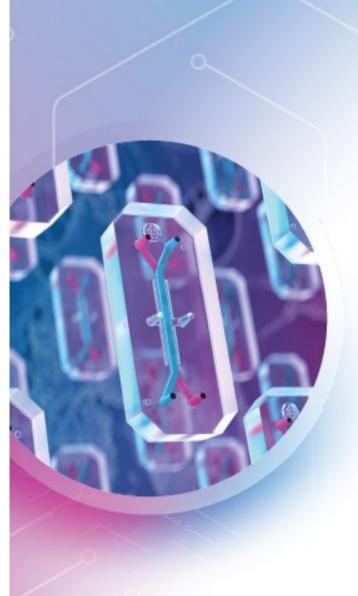
MICROPHYSIOLOGICAL SYSTEMS WORLD SUMMIT

New Orleans, Louisiana, USA | May 30-June 3, 2022



Program Contents •

Hosts
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Program At A Glance
Program
Maps
Social Events



Understand and Predict Human Response Earlier

Organ-on-a-Chip technology has been proven to predict human response better than other testing methods. With human-relevant science now available, why do we continue to rely on animal testing and in vitro models that fail to predict human response? Shouldn't we be doing everything possible to relieve human suffering caused by disease?

Visit Emulate at booth #101 to learn more.



emulatebio.com

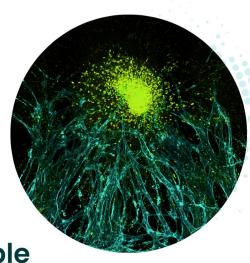


Precision Architecture

For Drug Discovery

Qureator's Curiochips

Qureator's Microphysiological Systems (MPS), known as Curiochips, are designed for recapitulating the complexity of tissue microenvironments, thus providing ideal microscale 3D cell culture conditions for a variety of applications in biomedical research.



A.R.C.H. Principle



Qureator's Curiochips Microfluidic Technology Allows For:

- Investigation of underlying biology of disease
- Target validation in 3D co-culture conditions
- Establishment of disease models composed of patient-derived samples
- Large-scale drug screening for a new therapy or combo agents with existing drugs
- Prediction of clinical responses and patient stratification
- Identification of biomarkers for monitoring drug's efficacy in future clinical studies

Applications

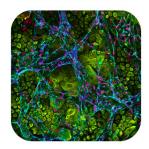
Oncology (Tumor Microenvironment)



Vascular Biology

Blood-Retinal-Barrier

Dermal Angiogenesis

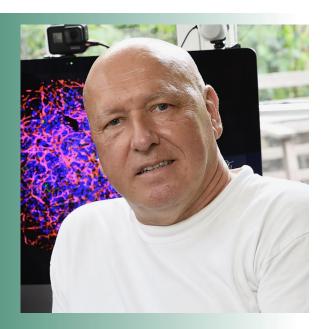




Hosts

Thomas Hartung





Johns Hopkins University

Thomas Hartung, MD PhD, is the Doerenkamp-Zbinden-Chair for Evidence-based Toxicology in the Department of Environmental Health and Engineering at Johns Hopkins Bloomberg School of Public Health, Baltimore, with a joint appointment at the Whiting School of Engineering. He also holds a joint appointment for Molecular Microbiology and Immunology at the Bloomberg School. He is adjunct affiliate professor at Georgetown University, Washington D.C.. In addition, he holds a joint appointment as Professor for Pharmacology and Toxicology at University of Konstanz, Germany; he also is Director of Centers for Alternatives to Animal Testing (CAAT, http://caat.jhsph.edu) of both universities.

CAAT hosts the secretariat of the Evidence-based Toxicology Collaboration (http://www.ebtox.org), the Good Read-Across Practice Collaboration, the Good Cell Culture Practice Collaboration, the Green Toxicology Collaboration and the Industry Refinement Working Group. As PI, he headed the Human Toxome project funded as an NIH Transformative Research Grant. He is Chief Editor of Frontiers in Artificial Intelligence. He is the former Head of the European Commission's Center for the Validation of Alternative Methods (ECVAM), Ispra, Italy, and has authored more than 600 scientific publications (h-index 100).



Hosts

Suzanne Fitzpatrick



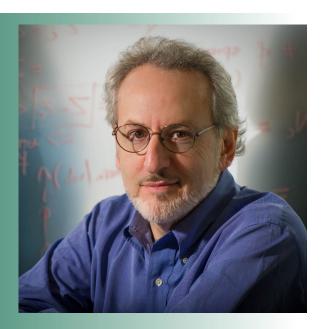
U.S. Food and Drug Administration

Dr. Suzanne Fitzpatrick is the Senior Advisor for Toxicology at the US Food and Drug Administration Foods Program. She is a board-certified toxicologist in the US and in Europe. Dr. Fitzpatrick is the co-chair of the CFSAN, EFSA and OECD work group on advancing new predictive toxicology test methods for food safety. Dr. Fitzpatrick chairs the FDA's Alternative Methods Work Group that is currently focusing on in vitro Microphysiological Systems. This work group published the FDA Report on Advancing Alternative Methodologies. Dr. Fitzpatrick helped develop the FDA DARPA NCATS program on Organs on a Chip and continues to work and give presentations on this evolving area. Dr. Fitzpatrick chaired the FDA Predictive Toxicology Roadmap Committee. Dr. Fitzpatrick is the principal FDA representative to ICCVAM and to the Tox 21 partnership with EPA, NCATS, and NIEHS. Dr. Fitzpatrick is an Adjunct Professor at Johns Hopkins University. She received her BA from the University of California at San Diego and her PhD from Georgetown University.



Hosts





Wyss Institute Harvard University

Donald E. Ingber, M.D., Ph.D. is the Founding Director of the Wyss Institute for Biologically Inspired Engineering at Harvard University, Judah Folkman Professor of Vascular Biology at Harvard Medical School and the Vascular Biology Program at Boston Children's Hospital, and Professor of Bioengineering at the Harvard John A. Paulson School of Engineering and Applied Sciences. He received his B.A., M.A., M.Phil., M.D. and Ph.D. from Yale University. Ingber is a pioneer in the field of biologically inspired engineering, and at the Wyss Institute, he currently leads scientific and engineering teams that cross a broad range of disciplines to develop breakthrough bioinspired technologies to advance healthcare and to improve sustainability. His work has led to major advances in mechanobiology, tumor angiogenesis, tissue engineering, systems biology, nanobiotechnology, and translational medicine, with his most recent pioneering contributions being the development of human Organ-on-Chips as replacements for animal testing and multiplexed electrochemical sensors for medical diagnostics. Through his work, Ingber has helped to break down boundaries between science, art and design, and has made great strides in translating his innovations into commercial products with many now either in clinical trials or currently being sold. He has authored more than 500 publications and over 170 U.S. patents, founded 7 companies, and has been a guest speaker at more than 550 events internationally. Ingber is a member of the National Academy of Medicine, National Academy of Engineering, National Academy of Inventors, American Institute for Medical and Biological Engineering, and the American Academy of Arts and Sciences. He also was listed among the Top 20 Translational Researchers in 2012, 2019, and 2020 (Nature Biotechnology).















In vitro solutions for in vivo results





















JONES WALKER













Roche Institute for TRANSLATIONAL BIOENGINEERING



























Lonza











































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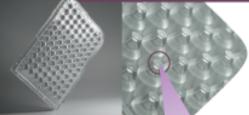




The Most Complete Portfolio of 3D Plate Formats

Unique features enable high reliability and full exploitation of InSphero's organ models

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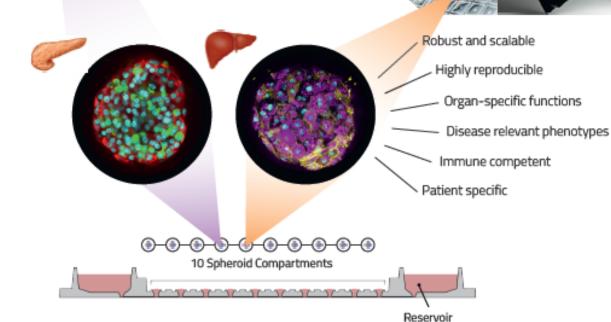
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Akura™ Flow Multiorgan System

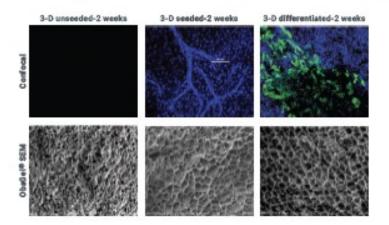
Parallelized Organ-organ Cross Talk

Tubeless perfusion culture
Interconnected spheroids
Automation compatible
Anytime removal of spheroids for analysis



o 880 Obatala





ObaGel®

ObaGel® is a comprehensive human blood-derived 3D cell culturing matrix that supports the development of robust human tissue-like responses from multiple cell types. ObaGel® is used to support and maintain functional characteristics such as proliferation, differentiation, vascularization, and immunogenic responses that are superior to the traditional methods of pre-clinical drug development (e.g. 2D culture and single- source or single-protein matrix-based cell culture).

- HIGH PROTEIN CONTENT >100mg/mL.
 Unique protein profile supports cell growth, motility, and vascular response
- Plug-and-play
 with your existing
 workflow.
 Compatible with
 existing culture
 formats.
- In vitro organoid
 development, 3D
 tissue-like constructs
 for perfusion
 bioreactors and
 microfluidics, as a
 2D layer and/or plate
 coating for CAR-T
 development
- HUVECs, MSCs, iPSCs, other mature cell types



A Platform for every Human Disease

Unprecedented ability to emulate rare diseases with phenotypic models

Human-on-a-Chip®

- Functional, multi-organ, in vitro platforms
- Determine therapeutic index
- Reducing the need for animal testing
- Focus is on building custom models for therapeutic development

2 Organ

3 Organ

4 Organ

Base efficacy & toxicity models

A more complete view Our most advanced, of the human body standard systems

2 - 5 Organ+

Customize the platform to include most organ or barrier tissues of interest as well as immune components

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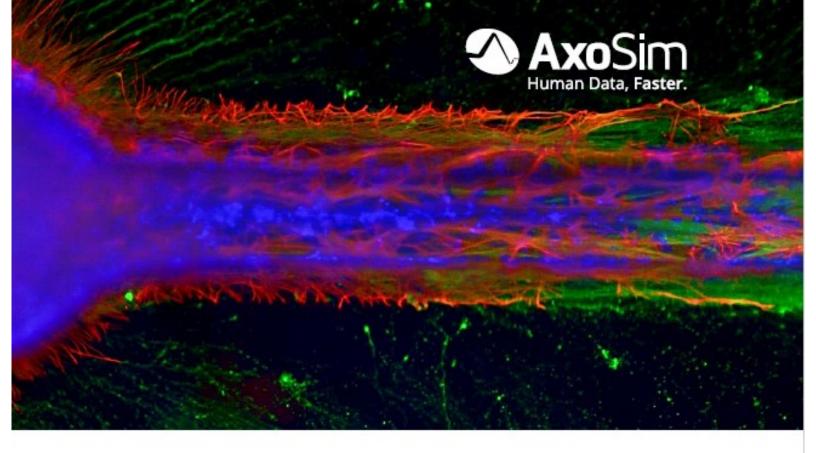
Recent News

First IND filed using microphysiological systems data leading to the authorization of a clinical trial (NCT04658472)



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9:00 AM—11:45 AM | Educational Workshop/ Hands-On Training

Salon A

Moderator: Riccardo Barrile, University of Cincinnati, USA

This workshop will feature 30-minute parallel interactive sessions designed for small groups. Separate registration is required. Registration for this session is free of charge and limited availability.

1. Lessons Learned Engineering MPS platforms as a Physiologist

Jenn Fang, Tulane University, USA and Will Bralower, Aracari Biosciences, USA

2. The Translational Organ-on-Chip Platform (TOP), an open platform for modular interfacing of organs-on-chips

Andries Van der Meer, Anke Vollertsen, Eric R. Safai, University of Twente, Netherlands

3. Considerations in setting up a high-throughput organ-on-a-chip culture

Kristin Bircsak, Divya Iyer, MIMETAS, Netherlands

4. New MPS based in vitro models for immunooncological applications: circulating immune cells and 3D tissue models cross-talk

Maurizio Aiello, React4Life, Italy

5. Applications of mathematical modeling in design and translation of microfluidic Organ-on-Chips

Narasimhan Sriram, Hesperos Inc., USA

6. How Organ-on-Chip Technology is Revolutionizing Drug Discovery

Sepand Bafti, Nortis, USA

7. How to effectively use human microphysiological systems to assess ADME properties of novel drug compounds

Tomasz Kostrzewski, Emily Richardson, CN-Bio, United Kingdom

8. Clinically Relevant Testing of Diseased Neuromuscular Junctions for Evaluation and Therapeutic Recovery of Functional Deficits

Virginia Smith, Hesperos Inc., USA

9. Predicting Drug-Induced Liver Injury Caused by Small Molecules Using Human Liver-Chip

Goodwell Nzou, Emulate, USA

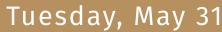
10. Hands-on the new innovative organs-on-chip tool kit: NeuroBento™

Thibault Honegger, NETRI, France

11. Connecting 2D and 3D models in a Multi-Organ-Chip for safety and efficacy evaluation

Thi Phuong Tao, Katharina Schimek, TissUse GmbH, Germany

Program



*Indicates Young Investigator

11:45 AM—12:45 PM | Round Table: Developers Meet Regulators

Ballroom AB

Moderator: Magdalena Kasendra, Cincinnati Children's Hospital Medical Center, USA and Annie Moisan, HOPE, Switzerland

Developers, regulators, and end users (academics and industry) of MPS from the United States, Europe, and Asia will discuss the current progress and remaining challenges in implementation of alternative methods in order to replace, reduce, and refine animal testing. They will also discuss the importance of collaboration to ensure worldwide harmonization and acceptance of New Approach Methodologies and MPS in particular.

- 1. Adrian Roth, Roche, Switzerland
- 2. Jan Lichtenberg, InSphero, Switzerland
- 3. Nina Hobi, AlveoliX, Switzerland
- 4. Anthony Bahinski, Vivodyne, Inc., USA
- 5. Daniel Levner, Emulate, USA
- 6. Suzanne Fitzpatrick, Food and Drug Administration, USA
- 7. Noo Li Jeon, Seoul National University, South Korea
- 8. Kaoru Sato, National Institute of Health Sciences, Japan

12:50 PM—2:10 PM | Parallel Sessions

S1.1 Gastro-intestinal, liver MPS—Ballroom AB

Moderators: Kristin Bircsak, MIMETAS, Netherlands and Ramin Banan Sadeghian, Kyoto University, Japan

• 12:50 PM-1:10 PM

137. Predictive Nephrotoxicity Testing of Ochratoxin A and Linkage to CKDu

Edward Kelly, University of Washington, USA

1:10 PM—1:30 PM

79. Standalone Microphysiological System with Precise Oxygen Control for Intestinal-Microbial Interactions

Abhinav Bhushan, Illinois Institute of Technology, USA

1:30 PM—1:50 PM

34. Characterizing the reproducibility of a liver microphysiological system for assaying drug toxicity, metabolism, and accumulation – joint study by an MPS developer and a regulator

*Tomasz Kostrzewski, CN-Bio, UK

Continued next page



Tuesday, May 31

S1.1 Gastro-intestinal, liver MPS cntd.

• 1:50 PM-2:10 PM

136. Peristalsis-like deformations increase tumor cell intravasation through GABAergic signaling in a colorectal cancer-on-chip model

*Carly Strelez, University of Southern California, USA

S2.1 Nervous system MPS—Ballroom C

Moderators: Itzy Morales Pantoja, Johns Hopkins University, USA and Stefan Kustermann, Roche, Switzerland

• 12:50 PM-1:10 PM

194. Peripheral Nervous System Platform towards Disease Modeling and Neurotoxicity

Ben Cappiello, AxoSim, USA

1:10 PM—1:30 PM

232. Human on a chip systems applied to neurodegenerative rare diseases"

James Hickman, University of Central Florida, Hesperos Inc., USA

• 1:30 PM-1:50 PM

62. Multifluorescent human brain organoid model for high throughput chemical toxicity and drug efficacy screening.

Carolina Romero, Johns Hopkins University, USA

• 1:50 PM-2:10 PM

199. Human stem cell-based retina on chip – a screening platform for retinal drug development

*Madalena Cipriano, Eberhard Karls University of Tübingen, Germany

S3.1 Endocrine MPS—Ballroom D

Moderators: Martin Trapecar, Johns Hopkins University, USA and Katharina Schimek, TissUse GmbH, Germany

• 12:50 PM-1:10 PM

102. A microfluidic thyroid-liver platform to enable cross-species comparison of mechanisms of thyroid toxicity in rats and humans

Marian Raschke, Bayer AG, Germany

• 1:10 PM-1:30 PM

130. Patient-specific human immunocompetent adipose tissue-on-chip models for obesity- and endocrinology research

*Julia Rogal, Eberhard Karls University of Tübingen, Germany

• 1:30 PM-1:50 PM

82. A New Multi-Organ Microfluidic Device to Recapitulate Endocrine Signalling in Vitro: The LATTICE Platform.

*Hannes Campo, Northwestern University, USA

• 1:50 PM-2:10 PM

189. A microphysiological system coupling of metabolic associated fatty liver disease (MAFLD) to endocrine pancreatic islets: Towards the association and causal link between MAFLD and Type 2 diabetes (T2D)

*Julio Aleman, University of Pittsburgh, USA

2:15 PM—3:35 PM | Parallel Sessions

S1.2 Lung MPS—Ballroom AB

Moderators: Emily Richardson, CN-Bio, UK and Abhinav Bhushan, Illinois Institute of Technology, USA

• 2:15 PM-2:35 PM

88. Complex in vitro models Representing the Pulmonary System

Arno Gutleb, Luxembourg Institute of Science and Technology, Luxembourg

• 2:35 PM-2:55 PM

44. Development of the Human-Relevant Aerosol Test Platform HUMIMIC-InHALES for Evaluating Respiratory Toxicity and Systemic Effects of Inhaled Aerosols

Kasper Renggli, Philip Morris International, USA

• 2:55 PM—3:15 PM

100. An Advanced Drug Screening Platform for Respiratory Viruses

Mirjam Kiener, AlveoliX, Switzerland

3:15 PM—3:35 PM

Biofabricated lung tissue models as assay platforms for drug development

Marc Ferrer, National Institutes of Health, National Center for Advancing Translational Sciences, USA

S2.2 Immune function, bone marrow-on-chip—Ballroom C

Moderators: Lisa Wagar, University of California, USA and Silvia Scaglione, React4Life, Italy

Tuesday, May 31



S2.2 Immune function, bone marrow-on-chip cntd.

• 2:15 PM-2:35 PM

12. Microphysiological Systems for Immune Cell Trafficking and Capture

Steve George, UC Davis, Aracari Biosciences, USA

2:35 PM—2:55 PM

180. Modeling Inflammatory Immune Cell Recruitment and Response on Human Colon Intestine-Chip

Chris Carman, Emulate, USA

• 2:55 PM-3:15 PM

205. Engineered immunocompetent intestinal models: applications in cancer immunotherapy and beyond

Nikolche Gjorevski, Roche, Switzerland

• 3:15 PM-3:35 PM

112. A microfluidic bone marrow chip for the safety profiling of complex large molecules in preclinical drug development

*Leopold Koenig, TissUse GmbH, Germany

S3.2 Multi-organ-on-chip—Ballroom D

Moderators: Marian Raschke, Bayer AG, Germany and Arianna Fedi, National Research Council of Italy, Italy

• 2:15 PM-2:35 PM

43. Multi-organ experiments scaled up

Olivier Frey, InSphero, Switzerland

• 2:35 PM-2:55 PM

192. Multiorgan Microphysiological Systems as Tools to Understand Interorgan Crosstalk in Health and Disease

Martin Trapecar, Johns Hopkins University, USA

2:55 PM—3:15 PM

144. InterOrgan multi-tissue chip system for linking matured tissue niches by vascular flow

*Kacey Ronaldson-Bouchard, Columbia University, USA

• 3:15 PM-3:35 PM

11. Establishment of a human multi-organ-chip platform to replace animal transplant models for preclinical evaluation of Treg cell therapies

*Isabell Durieux, TissUse GmbH, Charité, Germany

3:40 PM-5:00 PM | Parallel Sessions

S1.3 Barrier MPS—Ballroom AB

Moderators: Sepand Bafti, Nortis, USA and Kathryn Garner, Newcells Biotech, UK

• 3:40 PM—4:00 PM

272. Neurovascular Organ Chips

Anna Herland, Karolinska, Sweden

• 4:00 PM—4:20 PM

268. Human blood-brain barrier model empowered by an engineered basement membrane

Tae-Eun Park, Ulsan National Institute of Science and Technology, South Korea

4:20 PM—4:40 PM

250. Development of an in vitro 3D neuro-vascular model for Alzheimer's disease

*Georgios Pavlou, Massachusetts Institute of Technology, USA

4:40 PM—5:00 PM

227. Fluidic absorption drives cystogenesis in a human organoid-on-a-chip model of polycystic kidney disease

Benjamin Freedman, University of Washington, USA

S2.3 Cardiovascular MPS—Ballroom C

Moderators: Lucie Low, National Center for Advancing Translational Sciences, USA and Paola Occhetta, Politecnico di Milano, Italy

• 3:40 PM-4:00 PM

276. Validation of an MPS human tumor model: Vascularized colon cancer micro-tumors recapitulate in vivo drug responses

Chris Hughes, UC Davis, Aracari Biosciences, USA

4:00 PM—4:20 PM

15. Cardiovascular MPS models for disease and drug discovery

Christine Mummery, Leiden University, Netherlands

4:20 PM—4:40 PM

110. Microgravity-Induced Mitochondrial Dysfunction in Human iPSC-Based 3D Cardiac Microphysiological System

*Devin Mair, Johns Hopkins University, USA

4:40 PM—5:00 PM

215. Robust strategies for generating perfusable microvasculature-on-a-chip models for cancer studies.

*Zhengpeng Wan, Massachusetts Institute of Technology, USA

Tuesday, May 31



S3.3 Pathology Collaborations in Complex In Vitro Models—Ballroom D

Moderators: Dan Rudmann, Charles River, USA

• 3:40 PM-4:00 PM

269. ESTP/STP Collaboration on Complex In Vitro Models & Pathology

Dan Rudmann, Charles River, USA

• 4:00 PM-4:20 PM

89. How to best guide the characterization of a thyroid-liver chip: The relevance of combining pathological and metabolic readouts

Julia Kühnlenz, Bayer SAS, CropScience, Pathology & Mechanistic Toxicology, Sophia Antipolis, France

4:20 PM—4:40 PM

104. Complex In Vitro Models in Preclinical Toxicologic Pathology – Histotechniques and Examples

*Luisa Bell, University of Basal, Roche, Switzerland

• 4:40 PM-5:00 PM

20. Neural Rosette ArraysTM for Quantitative High-Throughput Screening of Human Developmental Neurotoxicity and Teratogenicity

Randolph Ashton, University of Wisconsin-Madison, USA

5:10 PM—7:10 PM | Opening Ceremony & Keynote Lecture

Ballroom AB

• 5:10 PM

Welcome Speech: Thomas Hartung, Johns Hopkins University, USA and Suzanne Fitzpatrick, Food and Drug Administration, USA

• 5:30 PM

Danilo Tagle, NIH/National Center for Advancing Translational Sciences, USA

MPS World Summit: How the journey began

• 5:50 PM

Introduction: Norman Barnum, New Orleans Business Alliance

Welcome Speech: Gilda Barabino, Olin College of Engineering, USA

• 6:10 PM

Keynote: Donald E. Ingber, MD, PhD Wyss Institute Harvard University, USA

Recapitulating human biology, disease states, and therapeutic responses in vitro

7:15 PM—9:00 PM | Welcome Reception Mark Twain Courtyard, Hilton Riverside

Donald E. Ingber, MD, PhD







Wednesday, June 1

10:05 AM—12:05 PM | Parallel Sessions

S4 Case studies of MPS—Ballroom AB

Moderators: James Hickman, University of Central Florida, Hesperos Inc., USA and Yuan Tian, Auburn University, USA

• 10:05 AM—10:30 AM

210. Chemotherapy-Induced Peripheral Neuropathy Using a Nerve-on-a-Chip Microphysiological System

Lowry Curley, AxoSim, USA

• 10:30 AM-10:55 AM

17. Engineering spatially organized organs-on-chips Liliana Moreira Teixera, University of Twente,

Netherlands

• 10:55 AM-11:15 AM

259. Biophysical and Biochemical Determinants of Angiogenesis into Synthetic PEG Hydrogels from Perfusable Microvasculature

*Ellen Kan, Massachusetts Institute of Technology, USA

• 11:15 AM—11:35 AM

150. Classical Complement Pathway Inhibition in a 'Human-on-a-Chip' Model of Autoimmune Demyelinating Neuropathies

Christopher McAleer, Hesperos Inc., USA

11:35 AM—11:55 AM

182. Electrical pulse stimulation and compounds with anti-atrophic potential influence contractile response of patient-derived skeletal muscle cells in a microphysiological system

*Jorge A. Mojica-Santiago, University of Florida, USA

111:55 AM—12:05 PM—Session Q&A

S5 Immune function in MPS 2—Ballroom C

Moderators: Russell Emmons, Hesperos Inc, USA and Marisa Meloni, Vitroscreen, Italy

• 10:05 AM-10:30 AM

267. A novel immunocompetent MPS platform for modeling the cross-talk between 3D tumor tissues and circulating immune cells

Silvia Scaglione, React4Life, Italy

• 10:30 AM-10:55 AM

226. Organ-on-Chip models recapitulating complex human immunocompetent tissues

Peter Loskill, Eberhard Karls University of Tübingen, Germany

Continued next page



Michael L. Shuler

9:00 AM—9:55 AM | Keynote Lecture Ballroom AB

Keynote: Michael Shuler, PhD

Hesperos Inc., Cornell University, USA

Body-on-a Chip: The Potential to Transform

Drug Development



Wednesday, June 1

S5 Immune function in MPS 2 cntd.

10:55 AM—11:20 AM

279. Tonsil organoids to investigate human adaptive immunity

Lisa Wagar, University of California, USA

11:20 AM—11:40 AM

107. Development of a lymphoid organ-on-chip to evaluate CD4+ T cell/B cell interactions

*Raphaël Jeger-Madiot, Université de Paris, France

11:40 AM—12:00 PM

54. Induced Pluripotent Stem Cell-Derived Neural Organoids Incorporating Microglia for Interrogation of Neural Inflammation

Connie Lebakken, Stem Pharm Incorporated, USA

• 12:00 PM-12:05 PM-Session Q&A

12:15 PM—1:15 PM | Debate: So many choices... What models are best for which purpose?

Ballroom AB

Moderator: Phillip Hewitt, Merck KGaA, Germany

- 1. Ivan Rusyn, Texas A&M University, USA
- 2. Lorna Ewart, Emulate, USA
- 3. Annie Moisan, HOPE, Switzerland
- 4. Jason Ekert, GlaxoSmithKline, UK

1:25 PM—2:55 PM | JRC Lunch Session: The Importance of Standards for Advancing the MPS Field

Ballroom AB

Moderator: Maurice Whelan, European Commission Joint Research Centre (JRC), Italy

• 1:25 PM-1:45 PM

281. Standards supporting innovation: the case of Organ-on-Chip

Monica Piergiovanni, JRC, European Commision, Italy

• 1:45 PM-2:05 PM

22. Open Platform Technology for Organs-on-Chips

Andries Van der Meer, University of Twente, Netherlands

• 2:05 PM-2:25 PM

287. Standards for integrating heterogenous data and metadata from organ-on-chip technologies

Martin Golebiewski, Heidelberg Institute for Theoretical Studies, Germany

2:25 PM—2:45 PM

278. Guidelines for microfluidics: how to simplify your OoC Life?

Nicolas Verplanck, Université Grenoble Alpes, CEA, LETI, France

2:45 PM—2:55 PM—Session Q&A

3:00 PM-5:00 PM | Parallel Sessions

S6 Reproducibility and robustness of the hardware and cellular models; standardization and harmonization (best practices)—Ballroom AB

Moderators: Doreen Miao, Ananda Devices, Canada and Olivier Frey, InSphero, Switzerland

• 3:00 PM-3:25 PM

213. Systems Engineering of Microphysiometry

Joachim Wiest, cellasys, Germany

• 3:25 PM-3:50 PM

74. Identification of variation factors for the development of assays using MPS

Yuzuru Ito, Tsukuba University, Japan

• 3:50 PM—4:10 PM

75. Circadian physiology in microphysiological systems

Alastair Stewart, University of Melbourne, Australia

• 4:10 PM-4:30 PM

174. Development of a Functional Human iPSC-Cortical Neuron-MEA Model for Long Term Potentiation Analysis and Alzheimer's Drug Testing

*Kaveena Autar, University of Central Florida, USA

4:30 PM—4:50 PM

253. IQ MPS Affiliates: Accelerating the development and adoption of MPS models in industry

Kimberly Homan, IQ MPS Affiliate, USA

4:50 PM—5:00 PM—Session Q&A

S7 Pharmacokinetic and -dynamic in MPS—Ballroom C

Moderators: Maurizio Aiello, React4Life, Italy and Job Komen, University of Twente, Netherlands

• 3:00 PM-3:25 PM

97. A PBPK-compliant human intestine-liver-brainkidney Chip for QIVIVE in drug development

Reyk Horland, TissUse GmbH, Germany



Wednesday, June 1

S7 Pharmacokinetic and -dynamic in MPS cntd.

• 3:25 PM-3:50 PM

118. A continuous, automated perfusion culture and analysis system (CAPCAS) to enable massive parallelization of organs-on-chips, chemostats, and other miniature bioreactors

John Wikswo, Vanderbilt University, USA

• 3:50 PM-4:10 PM

134. Modeling doxorubicin's pharmacokinetics and pharmacodynamics in a human InterOrgan chip

*Diogo Teles, Columbia University, USA

• 4:10 PM-4:30 PM

258. Biodistribution and PK modeling of a multiorgan human-on-a-chip system consisting of a GI tract, blood brain barrier and neurons

*Narasimhan Sriram, Hesperos Inc., USA

• 4:30 PM-4:50 PM

129. Using in vitro cell models, kidney MPS, and PBPK modeling to predict human renal clearance: health, disease, and drug interaction

Catherine K. Yeung, University of Washington, USA

• 4:50 PM-5:00 PM-Session Q&A

5:00 PM—7:00 PM | Poster Presentations Abstracts 1-156, 291-300 Salon CD

8:00 PM—11:00 PM | Reception

The Civic Theatre 510 O'Keefe Ave New Orleans, LA 70113





8:50 AM—10:50 AM | Parallel Sessions

S8 Predictive toxicology. MPS for AOP—Ballroom AB

Moderators: Phillip Hewitt, Merck KGaA, Germany and Connie Lebakken, Stem Pharm Incorporated, USA

8:50 AM—9:15 AM

46. A microphysiological system representing liver fibrosis, the concept of AOP-Chip

Laura Suter-Dick, School of Life Sciences FHNW, Switzerland

• 9:15 AM-9:40 AM

76. Astronaut-on-a-chip: human, multi-organ platform for assessing extended effects of cosmic radiation

Daniel Naveed Tavakol, Columbia University, USA

• 9:40 AM-10:00 AM

235. Integrated human intestine-liver-on-a-chip to elucidate liver injury induced by free fatty acid receptor 1 agonists

Ilona Wehl, Boehringer Ingelheim Pharma GmbH & Co. KG, Germany

10:00 AM—10:20 AM

119. 3D Nephroscreen: high throughput drug-induced nephrotoxicity screening on a microfluidic proximal tubule model

Kristin Bircsak, MIMETAS, Netherlands

• 10:20 AM-10:40 AM

90. Dynamic lung inhalation-on-chip: A triple coculture cellular platform to predict toxicity of aerosolized irritants

*Arunima Sengupta, ARTORG, Organs-on-Chip Technologies, Switzerland

• 10:40 AM-10:50 AM-Session Q&A

S9 Reproducibility and robustness of endpoint readouts & analytical tools; standardization and harmonization (best practices)—Ballroom C

Moderators: Jesse Plotkin, Johns Hopkins University, USA and Ming-I Huang, Aracari Biosciences, USA

• 8:50 AM-9:15 AM

221. The BioSystics Analytics Platform: A comprehensive analytical platform creating actionable knowledge from MPS and other in vitro models to advance human health and safety.

Joe Maggiore, University of Pittsburgh, USA

Program



Thursday, June 2

• 9:15 AM-9:40 AM

289. Development of image-based analysis to support High Throughput Screening using complex biology on MPS

Sanghee Yoo, Qureator, USA

• 9:40 AM—10:05 AM

275. Organs-on-chips - are we ready for fit-for-use?

*Nuria Roldan, AlveoliX, Switzerland

10:05 AM—10:25 AM

188. PREDICT96 Demonstrating high-throughput diverse complex tissue, therapeutic efficacy screening, and biomarker identification

Timothy Petrie, The Charles Stark Draper Laboratory, USA

• 10:25 AM-10:45 AM

160. A 3D-optimized microplate enables spheroid production, long-term cultivation, and confocal high content imaging with cell-level resolution in a single plate

Judith Wardwell-Swanson, InSphero, Switzerland

• 10:45 AM-10:50 AM-Session Q&A

10:55 AM—11:55 AM | Round Table: How can we achieve regulatory acceptance?

Ballroom AB

Moderator: Stefan Kustermann, Roche, Switzerland and Donna Mendrick, Food and Drug Administration, USA

Panelists representing regulatory agencies from Europe, the United States, and Asia will discuss achievements, challenges, and next steps needed to bring the MPS field toward regulatory acceptance. The discussion will be built on the example of skin models as a successfully accepted and implemented example of New Approach Methodologies.

- 1. Suzanne Fitzpatrick, Food and Drug Administration, USA
- 2. Jean-Lou Dorne, European Food Safety Authority, Italy
- 3. Anne Gourmelon, Organization for Economic Cooperation and Development (OECD) Test Guidelines Programme, France
- 5. Maurice Whelan, European Commission Joint Research Centre (JRC), Italy
- 7. Seiichi Ishida, National Institute of Health Sciences, Japan

12:00 PM—2:25 PM

Poster Viewing

2:25 PM—4:25 PM | Parallel Sessions

S10 Computational modeling and A.I. in dialog with MPS—Ballroom AB

Moderators: Nicole Kleinstreuer, National Institute of Environmental Health Sciences, NTP Interagency Center for the Evaluation of Alternative Toxicological Methods, USA and John Wikswo, Vanderbilt University, USA

2:25 PM—2:50 PM

288. Biophysics-based computational modelling as a tool for translational research and drug screening in microphysiological system

Jari Hyttinen, Tampere University, Finland

2:50 PM—3:15 PM

277. Organoid Intelligence (O.I.): the new frontier in biocomputing and intelligence-in-a-dish

Lena Smirnova, Johns Hopkins University, USA

• 3:15 PM-3:35 PM

177. A Multiscale Computational Framework for Modeling Microphysiological Systems

Carrie German, CFD Research Corporation, USA

• 3:35 PM-3:55 PM

4. Machine learned vascularized networks improve predictive power of organ-chips

*James Tronolone, Texas A&M University, USA

• 3:55 PM—4:15 PM

56. Ex vivo human 3D NASH model as a screeningbased discovery approach for selecting and prioritizing drug candidates

Sue Grepper, InSphero, Switzerland

• 4:15 PM-4:25 PM-Session Q&A

S11 Biofabrication and bioprinting for MPS—Ballroom C

Moderators: Jinah Jang, POSTECH, South Korea and Nicholas Geisse, Curi Bio Inc., USA

• 2:25 PM-2:50 PM

273. Biofabrication of kidney proximal tubules and other organ structures in organ-on-chip devices

Thomas Neumann, Nortis, USA

2:50 PM—3:15 PM

286. Instrumented Microphysiological Analytic Platforms for Precision Measurement and Manipulation of Tissue Functions

Devin Mair, Johns Hopkins University, USA

Program

Thursday, June 2

• 3:15 PM-3:35 PM

261. Engineering next generation organoids with automated lab workflows.

Magdalena Kasendra, Cincinnati Children's Hospital Medical Center, USA

• 3:35 PM-3:55 PM

260. Rapid 3D-Bioprinting of a Microfluidic Tissue Model of Glioblastoma

*Riccardo Barrile, University of Cincinnati, USA

3:55 PM—4:15 PM

32. A Novel Tissue Bioreactor For Retinal Organoid Microenvironmental Control

*Emma Drabbe, University of Miami, USA

• 4:15 PM—4:25 PM—Session Q&A

4:30 PM—6:00 PM | S11.2 Reproductive system MPS

Ballroom AB

Moderator: Lena Smirnova, Johns Hopkins University, USA and Ben Capiello, AxoSim, USA

• 4:30 PM-4:50 PM

52. Modeling preterm birth in vitro using a Feto-Maternal interface Organ-On-Chip

*Lauren Richardson, University of Texas Medical Branch, USA

• 4:50 PM—5:10 PM

64. Human host-microbiome interactions and mucus physiology modeled in Cervix and Vagina Chips

Zohreh Izadifar, Wyss Institute Harvard University, USA

• 5:10 PM-5:30 PM

127. The development of a high-throughput screening platform to identify ovarian endocrine disrupting chemicals using a 3D alginate encapsulated in vitro follicle growth system

Shuo Xiao, Rutgers University, USA

• 5:30 PM—5:50 PM

245. Modeling Endometrial-Immune Crosstalk in Micro-Physiological Systems

*Jeremy Huang, Massachusetts Institute of Technology, USA

6:00 PM—8:00 PM | Poster Presentations

Abstracts 157-282, 303-320

Salon CD

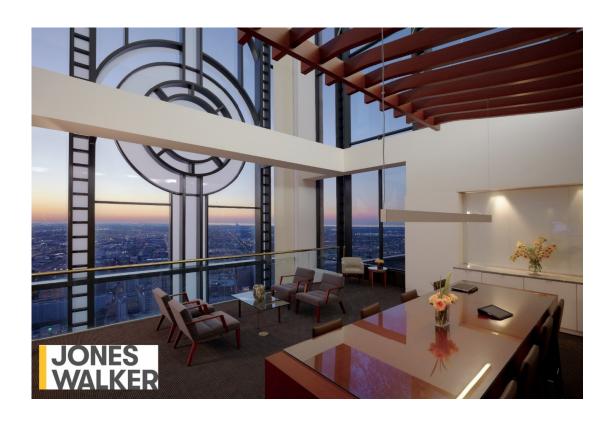








Jones Walker 201 St. Charles Avenue New Orleans, LA 70170





Friday, June 3



9:00 AM—11:00 AM | Parallel Sessions

S12 Precision medicine and clinical trials on chip planning—Salon A

Moderators: Magdalena Kasendra, Cincinnati Children's Hospital Medical Center, USA and Peter Loskill, Eberhard Karls University of Tübingen, Germany

• 9:00 AM-9:25 AM

146. Organismoids – aiming for ultimate precision in patient-specific treatment selection

Uwe Marx, TissUse GmbH, Germany

• 9:25 AM-9:50 AM

211. Human Tissue Models supporting Clinical Development & Personalized Medicine

Adrian Roth, Roche, Switzerland

9:50 AM—10:10 AM

159. A patient-derived lung-on-chip model for immunotherapy safety assessment

*Giulia Raggi, AlveoliX, Switzerland

10:10 AM—10:30 AM

307. A patient-derived iPSC liver acinus microphysiology system is an innovative precision medicine platform for optimizing clinical trial design of nonalcoholic fatty liver disease

*Mengying Xia, University of Pittsburgh Drug Discovery Institute. USA

10:30 AM—10:50 AM

252. Microvascular Model Incorporating Cancer-Associated Fibroblasts and Immune Cell Perfusion

Sarah Shelton, Massachusetts Institute of Technology, USA

10:50 AM—11:00 AM—Session Q&A

S13 Disease modeling and drug efficacy testing—Salon

Moderators: Jan Lichtenberg, InSphero, Switzerland and Lorna Ewart, Emulate, USA

• 9:00 AM-9:25 AM

274. Organ-on-a-Chip models in early stage drug discovery: A phenotypic screening exercise

Paul Vulto, MIMETAS, Netherlands

• 9:25 AM—9:50 AM

77. Implementation of microphysiological system in a pharmaceutical company

Kazuhiro Tetsuka, Astellas Pharma, Japan

Continued next page





Prof. Linda G. Griffith

8:00 AM—8:55 AM Keynote Lecture Salon A

Keynote: Linda Griffith, PhD

Massachusetts Institute of Technology, USA

Deconstructing and Reconstructing the Patient

Friday, June 3



S13 Disease modeling and drug efficacy testing cntd.

• 9:50 AM-10:15 AM

122. Towards a comprehensive osteoarthritis modelling on-chip: controlled mechanical stimulation in bi-layered micro-tissues compartments

Marco Rasponi, Politecnico di Milano, Italy

• 10:15 AM-10:35 AM

172. Assessing Contractility of 3D iPSC-Derived Muscle Models for Safety and Discovery Using a Novel, High-Throughput, and Label-Free Instrumentation Platform

Nicholas Geisse, Curi Bio Inc., USA

10:35 AM—10:55 AM

179. Modeling skeletal muscle fibrosis and vascular interactions using a human microphysiological system

Qiao Zhang, Duke University, USA

10:55 AM—11:00 AM—Session Q&A

11:05 AM—1:05 PM | Parallel Sessions

S14 Workshop: Data collection, storage, management and dissemination—Salon A

Moderators: Joachim Wiest, cellasys, Germany and Jason Ekert, GlaxoSmithKline, UK

• 11:05 AM-11:30 AM

270. MPSCoRe: a global working group applying open science to tackling a pandemic

Nicole Kleinstreuer, National Institute of Environmental Health Sciences, NTP Interagency Center for the Evaluation of Alternative Toxicological Methods, USA

• 11:30 AM-11:55 AM

237. A Complete Platform for Preclinical Trials of Non-Alcoholic Fatty Liver Disease Including a Patient-Specific, Human, Biomimetic Liver Microphysiology System and a Portal to the BioSystics, Inc Analytical Platform

Lans Taylor, University of Pittsburgh, USA

• 11:55 AM-12:20 PM

285. From Good Cell and Tissue Culture Practice (GCCP 2.0) to Good In Vitro Reporting Standards (GIVReSt)

Thomas Hartung, Johns Hopkins University, USA

• 12:20 PM-12:40 PM

139. Industry perspective on the challenges and opportunities in developing, selecting and applying advanced in vitro models to drug development in the context of data-driven decision making.

Daniela Ortiz Franyuti, Roche, Switzerland

- 12:40 PM-1:00 PM
 - 41. Neural network analytics as a biomarker for preclinical brain-on-chip assays

Thibault Honegger, NETRI, France

1:00 PM—1:05 PM—Session Q&A

S15 Disease modeling 2—Salon B

Moderators: Arno Gutleb, Luxembourg Institute of Science and Technology, Luxembourg and Sanghee Yoo, Qureator, USA

11:05 AM—11:30 AM

290. Embracing diversity in a microphysiological world

Trivia Frazier, Obatala Science, USA

11:30 AM—11:55 AM

200. Hemorheology and pathophysiology of COVID-19 induced thrombosis predicted by Vein-Chip

Abhishek Jain, Texas A&M University, USA

- 11:55 AM—12:15 PM
 - 48. uScar a mechanically active model of human cardiac fibrosis on chip

*Paola Occhetta, Politecnico di Milano, Italy

- 12:15 PM—12:35 PM
 - 69. Human Tendon-on-Chip (hToC) platform for modeling inflammation, fibrosis, and cell cycle regulation in fibrovascular tendon healing

*Raquel Ajalik, University of Rochester, USA

- · 12:35 PM-12:55PM
 - 96. Modeling ischemic stroke in a triculture neurovascular unit on-a-chip

*Desiree Goubert, MIMETAS, Netherlands

12:55 PM—1:05 PM—Session Q&A





1:10 PM—2:10 PM | Round Table: Overview of Global MPS Activities

Salon A

Moderator: Lena Smirnova, Johns Hopkins University, USA and Danilo Tagle, National Center for Advancing Translational Sciences, USA

Yasuyuki Sakai, University of Tokyo

Megan LaFollette, The North American 3Rs Collaborative, USA

Young-Jae Cho, Seoul National University Bundang Hospital, Korea

Alastair Stewart, University of Melbourne, Australia

Zhongze Gu, Southeast University, China and Kaiming Ye, Southeast University, China

Peter Loskill, EUROoCS, Europe

Ben Maoz, Sagol School of Neuroscience, Tel Aviv University, Israel

Octavio Presgrave, BRACVAM, Brazil

2:15 PM—3:00 PM | Closing Ceremony Salon A

Speakers:

Thomas Hartung, Johns Hopkins University, USA Suzanne Fitzpatrick, Food and Drug Administration, USA

Uwe Marx, TissUse GmbH, Germany

Announcements:

Lena Smirnova, Johns Hopkins University, USA





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Annual Open and AiR Challenge grant programs have made over \$4 million in research grants



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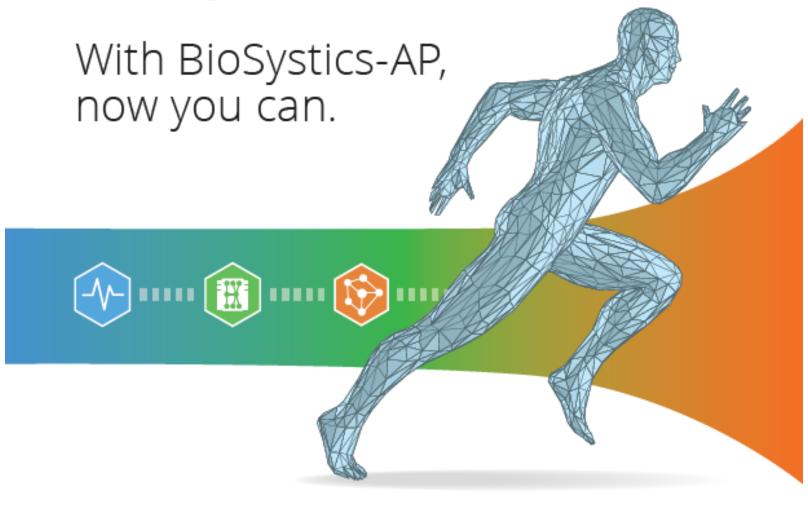


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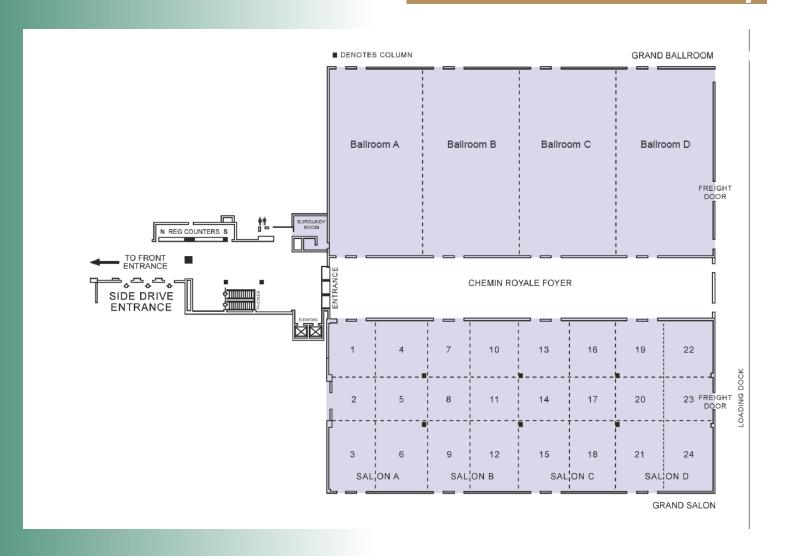
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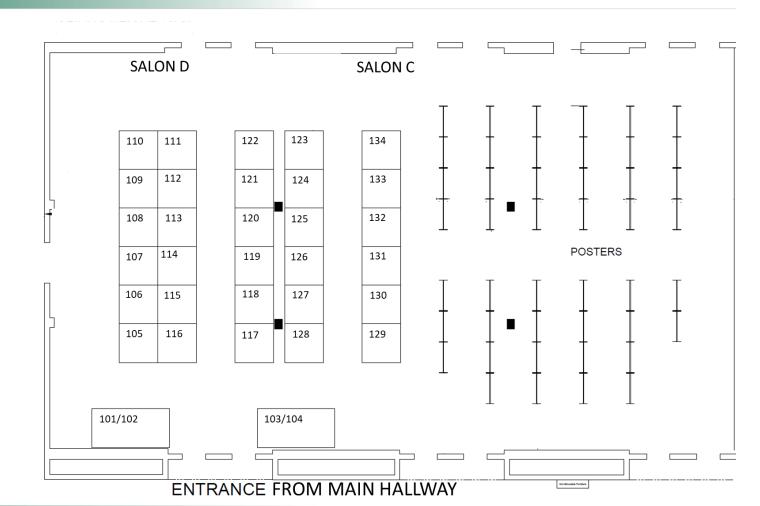


Event Map





Map and Exhibitors



- 101-102—Emulate
- 103-104—Qureator
- 105—Obatala
- 106—Nortis
- 107—Newcells
- 108—Vitroscreen
- 109—Alternatives Research & Development
- **Foundation**
- 110-Netri
- 111—Curi Bio
- 112—Mimetas
- 113—Vitrocell
- 114—React4Life
- 115—TissUse
- 116—AxoSim
- 117—inSphero
- 118—Yokogawa

- 119—Synvivo
- 120—microfluidic ChipShop
- 121—Aracari Biosciences
- 122-CN-Bio
- 123—BioSystics
- 124—AlveoliX
- 125—Cellink
- 126—Essent Biologics
- 127—Ananda Devices
- 128—Hesperos
- 129—New Orleans Business Alliance
- 130—Allevi by 3D Systems
- 131—FujiFilm Cellular Dynamics
- 132—Maxwell Biosystems
- 133-Fluigent
- 134—Altis Biosystems

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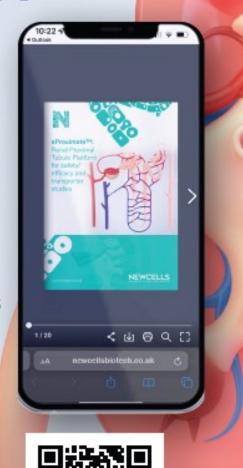
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Creole Queen Dinner Jazz Cruise



7:00 PM CDT

When night falls, the Paddlewheeler Creole Queen rises to the occasion. Step on board and cruise with us into the night where the sleepless activity of America's busiest port buzzes. The sounds of a lively jazz band fill the air as you enjoy a lavish Creole buffet in elegantly appointed dining rooms.

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Scan here to purchase your tickets!







Welcome Reception



7:15 PM—9:00 PM CDT

Mark Twain Courtyard, Hilton New Orleans Riverside

Join us as we celebrate the opening of the conference, featuring the exclusive MPS World Summit 2022 cocktail:

- Vodka
- Simple Syrup
- Pineapple Juice
- Blue Curacao
- Garnished with Orange



Social Events







Macro Party



8:00 PM-11:00 PM CDT

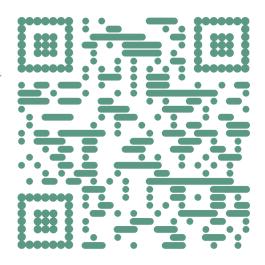
The Civic Theatre, 510 O'Keefe Avenue, New Orleans, Louisiana

Join us at the historic Civic Theatre for food and drinks and music by the Louisiana Spice Band!

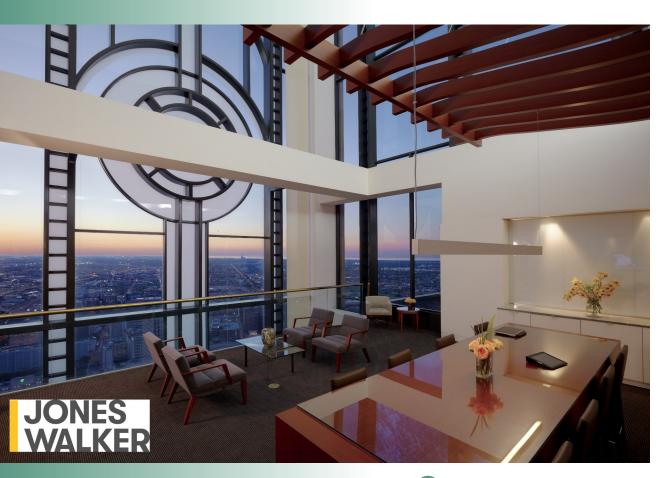
Originally built in 1906 (as The Shubert), the Civic has loomed large in the imagination of New Orleans for decades. Over its varied history, it has hosted vaudeville, burlesque, musicals, and disco.

Tickets: \$45.00-75.00

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Jones Walker Sunset Reception 8:00 PM—10:00 PM CDT

201 St. Charles Ave, New Orleans, Louisiana

Jones Walker invites the attendees of the MPS World Summit to a sunset reception at their office, overlooking the beautiful city of New Orleans!

Shuttle service will be provided from the hotel to the law offices of Jones Walker. The shuttle will pick up guests in the Hilton New Orleans Riverside Breezeway.