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Opening Ceremony and Keynote

„Engineering organoids“

Matthias Lutolf

Roche,
Switzerland

Matthias Lutolf is the founding Director of the Roche Institute for Translational Bioengineering and a Professor of Bioengineering at the Swiss Federal Institute of Technology in Lausanne (EPFL). His research focuses on the use of cutting-edge bioengineering strategies to guide stem cell-based development to build novel organoids with improved reproducibility and physiological relevance for basic research and real-world applications in drug discovery and development.

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Keynote

„Mapping tissues in vivo and in vitro“

Roser Vento-Tormo

Wellcome Sanger Institute, UK

Roser Vento-Tormo’s research interest is to understand the influence of cellular microenvironments on individual cellular identities and responses, in the context of development and immunity. Her team (https://ventolab.org/) employs single-cell and spatial transcriptomics methods to deconstruct the cell signals in human organs and tissues, and utilise this information to inform the reconstruction of novel in vitro models. Essential for this work, is the novel computational tools her team develops to build cell–cell interactions networks from transcriptomics data. In her predoctoral research, she studied the interplay between cell signalling and epigenetic machinery key to regulating cellular fate decisions in myeloid cells. She pursued her postdoctoral studies in the Teichmann laboratory as an EMBO / HFSP fellow, where she developed CellPhoneDB.org, a computational tool to study cell-cell communication from single-cell transcriptomics data. She used CellPhoneDB to disentangle the complex communication between maternal and fetal cells in the uterine-placental interface during early human pregnancy. Vento-Tormo work has been funded by many recognised international agencies (H2020, MRC, CZI, Wellcome-LEAP), and she has recently obtained the Early Career Research Award from the Biochemistry Society (2021).

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Keynote

„Advancing new alternative methods at FDA“

Donna Mendrick

Food and Drug Administration,
USA

Dr. Donna L. Mendrick is the Associate Director of Regulatory Activities at the National Center for Toxicological Research (NCTR) and serves as the liaison between NCTR and the regulatory centers at the FDA. Her FDA wide committee assignments include Chairing the Emerging Sciences Working Group, the Artificial Intelligence Working Group, co-chairing the Alternative Methods Working Group and being a member of the FDA's Senior Science Council. In the area of alternatives, she is co-lead from FDA on Tox21, represents NCTR on ICCVAM, and is a member of the European-Organ-on-Chip-Society (EUROoCS).
Prior to becoming the Associate Director and locating to FDA's White Oak campus, she was the Director of the Division of Systems Biology at NCTR. Dr. Mendrick was an Assistant Professor of Pathology at Harvard Medical School and Brigham and Women's Hospital until 1995 when she joined joining Human Genome Sciences. Just prior to joining the FDA in 2008, she was a Scientific Fellow and Vice President of Pharmacogenomics at Gene Logic. Dr. Mendrick has over 25 years of experience in the fields of alternative models (in vitro systems and computational modeling), immunology, pathology, pharmacogenomics, pharmacology, toxicology, toxicogenomics, and in vivo efficacy and safety assessment of recombinant therapeutic proteins and monoclonal antibodies.

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Keynote

„Multi-organ on chip platforms for individualized studies on human pathophysiology“

Gordana Vunjak-Novakovic

Columbia University,
USA

Gordana Vunjak-Novakovic is University Professor, the first engineer to receive this highest academic rank at Columbia University. The focus of her lab is on engineering functional human tissues for use in regenerative medicine and patient-specific “organs-on-a-chip” models of diseases, including cancer. She is well published and highly cited, has mentored over 150 trainees, and founded four biotech companies. She is a member of Academia Europaea, Serbian Academy of Arts and Sciences, US National Academy of Engineering, US National Academy of Medicine, US National Academy of Inventors, International Academy of Medical and Biological Engineering, Royal Society – Academy of Science, and the American Academy of Arts and Sciences.

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Keynote

„MPS – bioengineering the future of biomedicine“

Thomas Hartung

Johns Hopkins University,
USA

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).

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Keynote and Closing Ceremony

„Integrating human organoids into organismoids – how to achieve human boby homeostasis in vitro“

Uwe Marx

TissUse,
Germany

Uwe Marx is a physician by training. He received his doctorate degree from the Charité in Berlin, Germany and is the founder and Chief Scientific Officer of TissUse a Berlin based company founded in 2010. Dr. Marx was appointed an Honorary Professor of Medical Biotechnology at the Technische Universität Berlin in 2022. Along his 35-year academic carrier at the Charite Berlin, the University of Leipzig and the Technische Universität Berlin he always focussed on the invention and implementation of innovative biopharmaceutical products and technology platforms. Immunotoxins, human monoclonal antibodies, stem cell transplants and human tissue engineering platforms resulted from his developmental work and have been secured by 30 patent families with several hundred granted patents in place. Dr. Marx published several book chapters and more than 150 peer reviewed papers. He founded numerous German biotech companies, among them ProBioGen and VITA34. Furthermore, he served as a reviewer for various German governmental biotech programmes. Since 1991 Dr Marx is engineering human multi-organ bioreactors and since 2010 miniaturized human multi-organ-chip systems in collaboration with the Technische Universität Berlin. As a scientist Dr. Marx has developed the theoretical background of the organismoid theory – a concept and its principles to generate miniature mindless and emotion-free equivalents of a human individual´s body on chips. The Russel and Burch award has been awarded to Dr. Marx by the Humane Society of the United States in Sep 2021. Dr. Marx hosted the two stakeholder CAAT-workshops of the MPS-community in 2015 and in 2019 in Berlin.

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Takao Ashikaga
National Institute of Health Sciences, Japan

RT: Moving MPS into practice

Dr. Takao Ashikaga is a section chief of division of the Risk Assessment in the National Institute of health Sciences, Japan. He holds a Ph. D. (1995) in biotechnology from Tokyo Institute of Technology. From 1995 to 2017, he worked for Shiseido, a Japanese cosmetics maker. He had been extensively involved in the development of human Cell Line Activation Test (h-CLAT: OECD TG442E), which is a kind of MAT. He has been in charge of listing of MAT in Japanese Pharmacopoeia since 2021. He is author more than 50 scientific papers.

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David Beebe
University of Wisconsin-Madison, USA

3.6 MPS in cancer research: next generation tumor models

"Can Engineered Organotypic Models Predict Patient-Specific Response?"

David J. Beebe is the Claude Bernard Professor of Biomedical Engineering, a John D. MacArthur Professor and Professor of Pathology & Laboratory Medicine at the University of Wisconsin-Madison. From 2012-2017 he co-led the Tumor Microenvironment Program in the University of Wisconsin Carbone Cancer Center. He has published >350 archived journal articles with >40,000 citations (h-index of 92). David's current cancer related research interests center on the understanding and application of micro scale cell-based assays to understand cancer biology and response to therapy to improve cancer diagnosis and monitoring. Additional research topics include novel micro scale technology development, infectious disease biology and diagnostics.

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Sonja Beken

Belgian Federal Agency for Medicines and Health Products, Belgium

2.8: Reproducibility of MPS

"Advancing regulatory acceptance of MPS for testing of medicinal products – an EU perspective"

Sonja Beken holds a Master in Biological Sciences and PhD in Pharmaceutical Sciences from the Vrije Universiteit Brussel (VUB), Belgium and a Master in Applied Toxicology from the University of Surrey, UK. She is the Coordinator of the Unit of non-clinical assessors at the Belgian Federal Agency for Medicines and Health Products (FAMHP), a Unit responsible for the evaluation of non-clinical data submitted to support all phases of drug development (e.g. marketing authorizations, clinical trials, EU/national scientific advice, etc). Sonja Beken is the Chair of the 3Rs Working Party at the European Medicines Agency (EMA) and Member of its Non-Clinical Working Party. Over the years, Sonja Beken has contributed to the direct identification of opportunities for regulatory implementation of 3R testing paradigms through her active involvement in large-scale international initiatives (EPAA, CAAT, ILSI HESI, NC3Rs, AIMBE & NIH, etc). Her main areas of expertise relate to regulatory science, non-clinical drug development, (in vitro) toxicology and metabolism as well as alternative models to animal experiments (3Rs).

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Murat Cirit
Javelin Biotech, USA

2.7: MPS from development to commercialization

"Development and Commercialization of Predictive Drug Discovery Platforms Merging Human Tissue Chips and Translational Software"

Murat Cirit, PhD is a bioengineer and the co-founder & CEO of Javelin Biotech. The scope of his products spans development of tissue chip models for drug discovery, and computational algorithms for in vitro in vivo translation. He brings an interdisciplinary approach to develop human centric preclinical drug discovery platforms for a deeper understanding of biological, physiological, and pharmacological processes.

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Rhiannon David
AstraZeneca, UK

2.4: Applications in drug development – Safety

"Advancing pre-clinical safety assessment with MPS: the road to model qualification and adoption"

Dr Rhiannon David is Director of Microphysiological Systems (MPS) in Clinical Pharmacology and Safety Sciences at AstraZeneca, Cambridge, UK. Rhiannon leads the development and integration of advanced cell models, including spheroids and MPS, to improve the human-translation of pre-clinical safety assessment. Prior to joining AZ, following completion of her PhD at the University of Birmingham, Rhiannon undertook postdoctoral research at Imperial College London where she developed an interest in novel techniques that would improve the in vivo relevance of in vitro assays. After joining AZ in 2015, Rhiannon led the development of a bone marrow MPS for improved pre-clinical safety assessment. In 2020, Rhiannon was appointed Director of MPS in Safety Innovation and leads the development and integration of advanced cell models, including spheroids and MPS, to improve the human-translation of pre-clinical safety assessment.

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Zhongze Gu
Southeast University, China

RT: Moving MPS into practice

Prof. Zhongze Gu, who has published 300+ papers – over 100 papers in Organs-on-a-Chip research field – and has the number of citation for over 15000 times, is the University Professor and the Dean of School of Biological Science & Medical Engineering in Southeast University, Nanjing and the Chair of “Organoid and Organ-on-Chip Society” in China. He has been working on Organs-on-a-Chip research and industrialization for over ten years, and is the current chair of the Organoid and Organs-on-a-Chip Association in China, which now has more than 400 delegates from over 100 different institutes and companies. He, together with his team and colleagues, and the entire association will try our best to support the iMPSS, and hopefully to make the world MPS ISO standard happen in the near future.

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Yossi Haran
Quris AI, Israel

1.4. Combining MPS with AI and in silico

"The Sound of Safety - combining MPS with Bio-AI and In-silico to capture the signature of the ordinary (non-toxic) behavior of MPS and the deviations under increasing concentrations of the drugs."

Yossi Haran, the Co-Founder, and CTO of Quris-AI, is a multidisciplinary innovator. His innovative insight (17 patents) has radically shifted the working methodologies of intelligent systems, radiation therapy, and ultrasonic drug delivery. Haran has decades of experience developing cutting-edge hardware, software, and intelligent systems, and currently working with his team on developing an integrated BioAI platform for drug safety prediction.

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Rhiannon Hardwick
BMS, USA

RT: Moving MPS into practice

Dr. Hardwick completed her undergraduate studies in biochemistry at the University of Oklahoma as a McNair Research Scholar, graduate work in pharmacology and toxicology at the University of Arizona College of Pharmacy under the guidance of Nathan J. Cherrington, and postdoctoral research in the University of North Carolina at Chapel Hill Curriculum in Toxicology. She began her industry career as a team leader focused on improving functional features of a 3D bioprinted liver model and expanding disease modeling capabilities while at Organovo (San Diego, CA). She then joined the Translational Safety Sciences group at Theravance Biopharma (South San Francisco, CA) as a project toxicologist for both discovery and development phase small molecule programs. Dr. Hardwick is currently a Scientific Associate Director in Discovery Toxicology at Bristol Myers Squibb (San Diego, CA), where she serves as a project toxicologist for discovery programs. She also leads a lab team with focus on the use of complex in vitro models and microphysiological systems in the identification and characterization of tox liabilities, as well as mechanistic in vitro and in vivo investigations to support candidate nomination. She is a Diplomate of the American Board of Toxicology and active member of the Society of Toxicology and American College of Toxicology. Dr. Hardwick currently serves as Chair of the Cellular and Molecular Mechanisms of Toxicity Gordon Research Conference, Chair of the IQ Consortium Microphysiological Systems Affiliate, and is on the Editorial Board for Toxicological Sciences. She maintains an active role in mentoring and outreach, is a guest lecturer for the University of Arizona College of Pharmacy and San Diego State University, and is a member of the Washington State University College of Pharmacy and Pharmaceutical Sciences Industry Advisory Board.

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Nicky Hewitt
SWS, Germany

2.6: MPS for Skin, Cosmetics, Aging and Joint

"Cosmetics Europe LRSS project: Use of skin-based multi-organ MPS models in the safety assessment of cosmetics ingredients"

Dr. Nicky Hewitt has been active in the field of in vitro ADME-Tox research for ~30 years. She completed her doctorate degree at Mary's Hospital, London, where she continued her post-doctoral studies on hepatocyte cryopreservation techniques. Dr. Hewitt joined Merck KGaA in Germany in 1996, where she established hepatocyte models for toxicology and drug metabolism research. After several years working with two in vitro ADME-Tox CROs, she became an independent consultant in 2007. In this role, she has focussed on scientific writing for different industries, as well as project management relating to the safety assessment of cosmetic ingredients.

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Yoko Hirabayashi
NIHS, Japan

2.2: Next-Generation Risk Assessment

"Initiatives for New Approach Methods at Japanese Center for the Validation of Alternative Methods (JaCVAM)"

As the Director of the Center for Biological Safety Research (CBSR) at the NIHS, Dr. Hirabayashi oversees testing and research activities related to the comprehensive safety evaluation of chemicals, foods, and drugs using biological resources (laboratory animals, cells, etc.). In addition, she chairs the Steering Committee of JaCVAM and has served as the Japanese National Coordinator of the OECD Test Guidelines Program since 2020.

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Kimberly Homan
Genentech, USA

RT: Diversity and inclusion in preclinical studies

As the Director of the Complex in vitro Systems group at Genentech, Kim strives to improve translational outcomes with medicines by employing organoid and organ-on-chip technologies in the drug discovery and development process. She has prior experience holding key leadership positions in two biotech startups, one of which she co-founded while in graduate school at UT Austin. As a co-appointed postdoc at Roche and at the Wyss Institute in Harvard, Kim invented methods to bioprint human tissues and use them to model drug disposition, mode of action, and safety. Kim holds a B.S. degree in chemical engineering and Ph.D. in biomedical engineering; she is also a former United States Marine Corps officer and veteran.

Kim believes in the importance of D&I at the workplace, in the clinic, and in her in vitro models. She proposes avenues to get started with organoids towards inclusivity in preclinical drug development.

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Akihiro Hisaka
Chiba University, Japan

RT: Diversity and inclusion in preclinical studies

Akihiro Hisaka graduated Hokkaido University in 1982 and received MS degree from Faculty of Pharmacy, Hokkaido University in 1984. He joined Banyu Pharmaceutical Co. Ltd (subsidiary of Merck Sharp & Dohme in Japan), and served as a research scientist of pharmacokinetics, drug metabolism and clinical pharmacology until 2005. He received PhD from Graduate School of Pharmaceutical Sciences, the University of Tokyo in 1999 under supervision of Prof. Yuichi Sugiyama. He was a director of Clinical Pharmacology when he left Banyu. He became a lecturer in Department of Pharmacy, the University of Tokyo Hospital in 2005. He assigned as project associate professor of Pharmacology and Pharmacokinetics, the University of Tokyo Hospital in 2007. He holds an additional post as senior visiting researcher at Sugiyama Laboratory, RIKEN, in 2011. On April 2014, he became professor at Laboratory of Geometric Pharmacology and Therapeutics, Graduate School of Pharmaceutical Sciences, Chiba University. Recently, he worked for documentation of the Japanese guideline of drug-drug interaction as a core member.

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Roger Kamm
MIT, USA

1.3: Vascularization of MPS

"A Microphysiological Model of Cerebral Amyloid Angiopathy"

Kamm is the Green Distinguished Professor of Biological and Mechanical Engineering at MIT. His lab works at the interface of biology and mechanics. Current interests are in developing models of healthy and diseased organ function using microfluidic technologies, with a focus on vascularization. Kamm has fostered biomechanics as Chair of the US National Committee on Biomechanics and of the World Council on Biomechanics. He is a member of the National Academy of Medicine and National Academy of Engineering.

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Julie Kim

Northwestern University, USA

3.5: Addressing Reproduction & Endocrinology with MPS

“The Female Reproductive Microphysiologic System”

Julie Kim, PhD is the Susy Y. Hung Professor of Obstetrics and Gynecology in the Division of Reproductive Science in Medicine at Northwestern University. She received her B.Sc. in Microbiology from the University of Toronto in Toronto, Ontario, Canada, and her Ph.D. at Laval University in Quebec City, Canada. Dr. Kim's laboratory is dedicated to exploring the multifaceted effects of sex hormones and their intersection with risk factors that promote the growth and development of uterine diseases, such as endometrial cancer, uterine fibroids, and endometriosis. To achieve this goal, her lab develops and employs state-of-the-art in vitro and in vivo models that closely mimic the physiology of reproductive tissues.

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Stefan Krauss
University of Oslo, Norway

1.8: MPS for organ interactions

"Reconstructing metabolic cross talk on chip"

Stefan Krauss M.D. is professor and director of the Centre of Excellence Hybrid Technology Hub at the Institute of Medical Biology, University of Oslo and the Oslo University Hospital. Stefan Krauss has a background in medicine, developmental biology, developmental signaling and chemical biology. He is currently focusing on applying morphogenetic signaling to advance organoid development and integration on chip. He has published 113 peer reviewed articles (including in Cell, Nature and Nature Journals) and 6 patents. His discovery of the key vertebrate signal Shh was identified as one of the 24 Milestones in Development by the journal Nature (http://www.nature.com/milestones/development/milestones/full/milestone21.html).

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Hiroyuki Kusuhara
University of Tokyo, Japan

3.1: ADME and PK/PD modelling with MPS

"Application of MPS to the ADME studies: in vitro model for the intestinal drug absorption"

Hiroyuki Kusuhara received his BSc, MSc and PhD (Pharmaceutical Sciences) from the University of Tokyo (Japan). Hiroyuki started his career as an academic scientist in The University of Tokyo as Assistant Professor of Pharmaceutical Sciences (1998). He was promoted to Associate Professor (2004) and Professor (2012) of Graduate School of Pharmaceutical Sciences, The University of Tokyo. He is currently professor and chair of Laboratory of Molecular Pharmacokinetics at Graduate School of Pharmaceutical Sciences, The University of Tokyo, Tokyo, Japan. Hiroyuki's major research interest encompass interindividual variability in human drug disposition, specifically: identification of drug transporters in the tissue distribution, and clearance; pharmacokinetics; modeling and simulation; in vitro-in vivo extrapolation; PK imaging; drug-drug interactions.

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Marcel Leist

CAAT-EU, University of Konstanz, Germany

4.3: MPS for Chemical and Drug Toxicity Testing

"Novel models and technologies for developmental and adult neurotoxicity prediction"

Marcel Leist obtained an MSc in toxicology (Guildford 1989), and a PhD in pharmacology (Konstanz 1993). Since 2006, he has been head of the department of in vitro toxicology and biomedicine at the University of Konstanz (inaugurated by the Doerenkamp-Zbinden foundation), and director of the Center for Alternatives to Animal Testing in Europe (CAAT-Europe), a joint venture with Johns-Hopkins University. From 2000-2006, he worked as 'Head of Department of Disease Biology' on the discovery of neurology and psychiatry drugs in the Danish pharmaceutical company Lundbeck A/S. The current research addresses stem cell differentiation to neuronal lineages as well as the pharmacological and toxicological characterization of test methods and in vitro disease models. The novel test methods are used both to reduce the use of animals in scientific research and to shift research applications towards the use of human cells. The lab is particularly well-known for its test methods for developmental toxicity and neurotoxicity. It is also broadly involved in work on standardizing and quality controlling new approach methods, for instance in large-scale European research programs or as contributor to the OECD GIVIMP or the good cell culture practices 2.0 guideline. The research resulted in > 400 publications (cited over 30,000 times), and was awarded with many national and international research prizes.

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James McKim
IONTOX by LifeNet Health LifeSciences, USA

RT: Diversity and inclusion in preclinical studies

James McKim, Ph.D. is the Executive Director of Cell-Based In Vitro Assay Services at LifeNet Health Lifesciences. Jim is trained as a biochemical and molecular toxicologist. He was an Assistant Professor at the University of Colorado School of Medicine where his research focused on children's liver disease processes. He then took a position as group leader for Biochemical Toxicology at Dow Corning Corporation. He then moved to Pharmacia Corporation where he headed the first in vitro testing program designed to identify liabilities of new drug candidates in early discovery. Dr. McKim is a founder, President and CEO of multiple biotechnology companies including CeeTox and IONTOX. CeeTox was founded on an in vitro model that estimated small molecule systemic toxicity. Dr. McKim also founded IONTOX, LLC a company focused on the development and characterization of new in vitro testing platforms. Recently, he managed the sale of IONTOX to LifeNet Health. Dr. McKim is a Research Associate Professor at the Western Michigan Homer Stryker School of Medicine in the department of Biomedical Sciences. He is a diplomat of the American board of Toxicology and the founding Editor in Chief of Applied In Vitro Toxicology.

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Milena Mennecozzi

European Commission, Joint Research Centre, Italy

RT: Moving MPS into practice

Milena graduated in Biological Sciences and obtained a PhD in Molecular Biology at the University of Camerino (Italy). She worked for 6 years on Cancer Research in institutions such as MSKCC (NY, USA). She gained knowledge in Toxicology Research at JRC (Italy), where she developed multiparametric cell-based assays for hepatotoxicity screening. She then worked as Associate Director at UCB Pharma (UK), where she managed a team of lab-based scientists, mentored PhD students, and provided scientific knowledge to enable the development of high throughput assays for screening novel therapeutics in immunology and regenerative medicine. She is currently a Project Officer at JRC (Italy) and works on multiple projects to support the development and acceptance of non-animal methods intended for regulatory application.

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Annie Moisan
WellcomeLeap, Switzerland

1.1: Immunology in MPS

"A Bioengineering Approach to T Cell Diversity"

As the HOPE (Human Organs, Physiology & Engineering) Program Director at Wellcome Leap, Annie leads multidisciplinary teams aiming to deliver scientific breakthroughs in human health by leveraging on engineered human models that recreate tissue function and immune competency. Prior to Leap, Annie worked in Pharma where she developed and applied advanced human cell models for preclinical drug profiling and mechanistic understanding of drug toxicity.

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Alexander Mosig

Jena University, Germany

3.8: MPS to address infections

"Dissecting mechanisms of host-pathogen interaction in organ-on-chip"

Alexander Mosig studied Biochemistry and Molecular Biology and obtained his PhD in Cell Biology from the Friedrich Schiller University Jena. He is the independent research group leader of the INSPIRE lab at the Center for Sepsis Control and Care of the Jena University Hospital, focusing on studies on the orchestration of the human immune response by the microbiota in organ-specific environments. He is interested in mechanisms of host-pathogen interaction and its regulation by microbiota-associated metabolites in the context of dysbiosis and acute and chronic inflammatory diseases. An important topic of his work is developing and applying novel microphysiological systems to study these processes in vitro following the principles of the 3Rs (replacement, reduction, and refinement of animal experimentation).

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Janna Nawroth
Helmholtz Munich, Germany

3.2: MPS for Lung Disease Models

"Defining organotypic models: Quantitative benchmarks of human airway epithelial structure and function"

Janna Nawroth received her PhD in Biology at the California Institute of Technology, where she studied the structure-function relationships of jellyfish propulsion and used these insights to engineer muscle powered pumps for biomedical research. For her postdoctoral training, she was awarded the Technology Development Fellowship at the Harvard University Wyss Institute. She developed Organ-Chips and advanced imaging technologies with Don Ingber and Kit Parker to study the mechanics of human heart, lung and liver tissues, before continuing this work at the Organ-Chip company Emulate and later at the University of Southern California. In 2020, Dr. Nawroth received an ERC Starting grant for studying the role of mechanical forces and defective mucociliary clearance in chronic airway disease. In 2021, Dr. Nawroth joined the Helmholtz Pioneer Campus.

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Róisín Owens
University of Cambridge, UK

1.6: (Bio)Material Advances in MPS

"Bioelectronic tools to study the gut-brain axis"

Róisín M. Owens is Professor of Bioelectronics at the Dept. of Chemical Engineering and Biotechnology in the University of Cambridge and a Fellow of Newnham College. She received her BA in Natural Sciences at Trinity College Dublin, and her PhD in Biochemistry and Molecular Biology at Southampton University. She carried out two postdoc fellowships at Cornell University, on host-pathogen interactions She is a 2019 laureate of the Suffrage Science award. She serves as Scientific Editor for Materials Horizons (RSC). She is author of 110+ publications and 3 patents and her work has been cited more than 8000 times.

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Solen Pichereau

Debiopharm, Switzerland

RT: Diversity and inclusion in preclinical studies

Dr. Solen Pichereau (PharmD, PhD) is dedicated to bringing the right medicine at the right dose to the right patient. In her current role as Clinical Pharmacologist Lead at Debiopharm (Lausanne, Switzerland), Solen is responsible for clinical pharmacology studies of new medical entities across various therapeutic areas, with a focus on oncology. She applies her deep expertise in Pharmacokinetic/Pharmacodynamic (PK/PD) & modeling at pivotal phases of preclinical and clinical development. Overall Solen has contributed more than a decade of advancing candidate molecules into the clinic with world-leading pharmaceutical companies (Roche, Novartis, Boehringer Ingelheim). She received her Pharmacy degree from the University of Tours (France) and her PhD in Pharmaceutical Sciences from the University of Madison (WI, USA).

Over the years, Solen has developed a strong interest for precision medicine and for understanding the impact of gender differences on drug responses, a topic on which she delivered lectures for PK/PD experts at internal forums and international conferences.

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Janine Scholefield

Council for Scientific and Industrial Research, South Africa

RT: Diversity and inclusion in preclinical studies

After completing her PhD in Human Genetics at the University of Cape Town (UCT), Janine Scholefield spent three years as a Nuffield Medical Fellow at the University of Oxford. Since returning to South Africa she has specialised in cellular modelling of disease by being the first to establish induced pluripotent stem cell research in the country. Her research interest is in developing physiologically relevant cellular models of disease using advanced technologies, including super-resolution microscopy, stem cells and genome engineering, especially within the unique context of the diverse sub-Saharan African genetic background. She is a Research Group Leader at the Council for Scientific and Industrial Research and holds a Senior Honorary lectureship position in the Department of Human Biology at the UCT. In addition, she is the Editor-in-Chief for the Springer Nature journal Gene Therapy. Janine is particularly engaged in promoting African research and its scientists by building collaborative networks from within the continent across the globe.

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Alice Soragni
UCLA, USA

2.5: Scalability, automation and throughput

"A patient-derived tumor organoid high-throughput screening platform for precision medicine"

Alice Soragni, PhD, is an Assistant Professor in the David Geffen School of Medicine at UCLA, a member of the Jonsson Comprehensive Cancer Center and of the UCLA Molecular Biology Institute. She has a Master of Science cum Laude from the University of Bologna, Italy and a PhD from the ETH of Zuerich, Switzerland. Her laboratory in the Department of Orthopaedic Surgery at UCLA couples basic research into mechanisms of disease to the development of novel therapeutic strategies. Her expertise lies in the development of tumor organoid models to investigate the biology of rare tumors and perform screenings for functional precision medicine applications.

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Jeremy Sugarman
Johns Hopkins University, USA

1.7: Cell sources for multi-organ systems

"Ethical Considerations in Obtaining Human Cells for Multi-Organ System Research"

Jeremy Sugarman, MD, MPH, MA is the Harvey M. Meyerhoff Professor of Bioethics and Medicine in the Department of Medicine and the Berman Institute of Bioethics at the Johns Hopkins University. He is an internationally recognized leader in bioethics with particular expertise in applying empirical methods for evaluating and analyzing bioethical issues. His contributions to bioethics and policy include his work on the ethics of informed consent, umbilical cord blood banking, stem cell research, international HIV prevention research, global health and research oversight. He has recently been involved with empirical and conceptual scholarship regarding the ethical issues related to organoids. Dr. Sugarman Co-Chairs the Johns Hopkins Institutional Stem Cell Research Oversight Committee and serves on the Ethics and Public Policy Committees of the International Society for Stem Cell Research.

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Danilo Tagle
NIH/NCATS, USA

4.8: MPS for Pathology

"Collaborative Teams of Biologists, Engineers, and Pathologists Driving Complex in vitro Model Engineering and Characterization"

Danilo Tagle is currently Director, Office of Special Initiatives at the National Center for Advancing Translational Sciences (NCATS) of the National Institutes of Health (NIH) where he coordinates efforts towards developing microphysiological systems or organs on chips. He also coordinates efforts on 3D bioprinting for drug discovery and development, on automated chemistry, on the use of electronic nose technology for disease diagnosis, and the clinical utility of secreted RNA in exosomes for biomarker and therapy development. Prior to joining NCATS in 2012, Dan was a program director for neurogenetics at the National Institute of Neurological Disorders and Stroke (NINDS, NIH), where he was involved in developing programs concerning genomics-based approaches for basic and translational research in inherited brain disorders. Prior to joining NINDS in 2001, Dan was an investigator and section head of molecular neurogenetics at the National Human Genome Research Institute (NHGRI, NIH) and has been involved in the highly collaborative effort toward the positional cloning of genes for Huntington's disease, ataxia-telangiectasia and Niemann-Pick disease type C. He has served on numerous committees, advisory boards, and editorial boards. Dan obtained his Ph.D. in molecular biology and genetics from Wayne State University School of Medicine in 1990. He was an NIH National Research Service Award postdoctoral fellow in human genetics at the University of Michigan. Dan has authored many scientific publications and has garnered numerous awards, including more recently the Roscoe O. Brady Award for Innovation and Accomplishment, and the Henry J. Heimlich Award for Innovative Medicine.

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Jaap den Toonder
Eindhoven University of Technology,
The Netherlands

1.2: Real-time and in-situ monitoring of MPS systems

"Organ-on-Chip: from single chips to standardized open technology platforms with real-time monitoring"

Jaap den Toonder is full professor and chair of the Microsystems section at Eindhoven University of Technology. His research focuses on innovative microsystems design approaches that are often biologically inspired, out-of-cleanroom fabrication technologies, and interactive polymer materials. The application focus is on microfluidic chips, organ-on-chip, biomedical microdevices, and soft microrobotics.

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Mathieu Vinken
Vrije Universiteit Brussel, Belgium

3.3: MPS for acute and repeated toxicity

"Ontologies as tools to support MPS-based predictive toxicity screening"

Mathieu Vinken is a full professor affiliated with the Free University Brussels-Belgium. He has a background in pharmaceutical and toxicological sciences with expertise in mechanistic and in vitro toxicology. He is a European registered toxicologist, editor-in-chief of Toxicology, former president of the European Society of Toxicology In Vitro and current chair of the In Vitro and In Silico specialty section of EUROTOX. He coordinates several national and international projects, among which the European project ONTOX.

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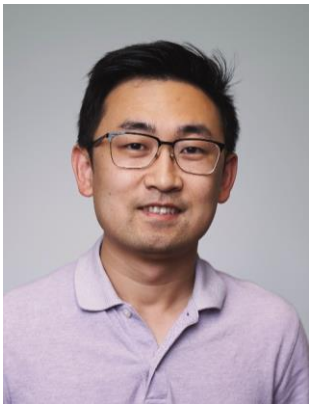

Boyang Zhang
McMaster University, Canada

1.5: Microfabrication, Instrumentation and Sensors

"Platform technology to enhance organoid and tissue culture for drug discovery"

Boyang Zhang is an Assistant Professor in the Department of Chemical Engineering and an Associate Member in the School of Biomedical Engineering at McMaster University. He joined McMaster in July 2018. Previoulsly, Dr. Zhang was a Banting Postdoctoral Fellow at University of Toronto. Dr. Zhang obtained his B.Sc. in Chemical and Biomolecular Engineering from Georgia Institute of Technology in 2010 and Ph.D. in Chemical Engineering and Applied Chemistry from University of Toronto in 2016. Dr. Zhang has authored over 40 publications with over 4200 cumulative citations and filed five patents. His lab focus on the development of bioengineering platform that integrates stem cells, organ-chips, and machine learning for automated high-throughput and high-content drug screening. In 2021, Dr. Zhang and his team co-founded OrganoBiotech that is commercializing the IFlowPlate platform technology for supporting tissue and organoid culture. Dr. Zhang also serves on the Early Career Editorial Advisory Board at ACS Biomaterial Science & Engineering.