

WC12

Program



August 27-31, 2023
Niagara Falls
Canada

WC12

3Rs OVER THE EDGE

8 PLENARIES

6 PARALLEL TRACKS

400+ PRESENTATIONS

400+ POSTERS

SOCIAL EVENTS

**Enclosed program contains
the "almost" final version of
sessions and speakers.
Please continue to monitor
our website for updates.**



Regulatory Acceptance and Global Harmonization

- **S400- Adversity Reinvented: Non-Animal Frameworks for Predictive & Protective Decision-Making**
- **S401 - Phase-in of Non-Animal Methods by the Pharmaceutical Industry**
- **S402 - Unlocking a New NAM-Based Paradigm: Transforming the Evaluation of Agrochemicals**
- **S403 - Dedicated Acute Lethality Necessary with NAMs? Cross-Sector 3Rs Efforts in Acute Toxicity**
- **S404 - Is it Good Enough? Establishing Scientific Confidence in New Approach Methods**
- **S045 - Meeting at the Falls: ICATM Partner Updates**
- **S406 - Regulatory Acceptance of NAMs in EcoTox – How Do We Get there?**
- **S407 - The 3Cs: Curating & Cultivating Change for Faster Integration of NAMs in Animal-Free Policy Making**
- **S408 - NAMs in Developmental Neurotoxicity – Difficult Road Leading to Change**
- **S409 - Warp-Speed Replacement? Remaining Challenges in Vaccine and Biologics Batch Testing**
- **S410 - NAMs in Practice: Fit-for-Purpose NGRA Across Sectors**
- **S411 - A Decade of Progress: Lessons from Animal-Free Cosmetics Policy Worldwide**
- **S412 - Putting All the Chips on the Table! Doubling Down on Regulatory Acceptance of MPS**

Session S400 (Symposium)

Adversity Reinvented: Non-Animal Frameworks for Predictive & Protective Decision-Making

Chairs: Patience Browne & Donna Macmillan

Adversity has traditionally been assessed using in vivo toxicity tests, however, with the advent of sophisticated testing strategies using combinations of New Approach Methods (NAMs) and increasingly target-relevant test systems, adversity must be reinvented. Although NAMs face a number of challenges for demonstrating their suitability in making regulatory decisions, there are now many examples of their use within Integrated Approaches to Testing and Assessment or Next-Generation Risk Assessment frameworks designed to be both predictive and protective of human health and the environment. This session will discuss adversity, the integration of NAMs in regulations, and examples of NAM-based decision making.

#36 Introduction to the Traditional Concept of In Vivo Adversity

Kim Boekelheide; Brown University

#162 In the Room Where It Happens: Assessing Pesticide Hazard

Monique Perron, U.S. Environmental Protection Agency

#150 Reducing the Burden on Animals and the Heart: An Evidence-Based Approach to Cardiotoxicity Assessment

Alexandra Schaffert, Institute of Medical Biochemistry, Medical University Innsbruck, Innsbruck, Austria

#347 Critical needs for non-animal regulatory hazard assessment: a REACH perspective

Tomasz Sobanski, European Chemicals Agency

#206 The process and importance of integrating NAMs in GHS

João Barroso, European Commission, Joint Research Centre

#315 AOP-based in vitro adversity to predict in vivo effects

Nicole Kleinstreuer, NIEHS/DTT/PTB/NICEATM

#183 Rethinking NAM Adversity

Patience Browne, OECD

#381 Tiered approaches for next generation risk assessment (NGRA) of chemicals: Two case studies

Maria Teresa Baltazar, Safety and Environmental Assurance Centre, Unilever

#359 Development of a non-animal Integrated Approach to Testing and Assessment for Acute Aquatic Toxicity for Classification and Labelling

Donna Macmillan, Humane Society International

Session S401 (Symposium)

Phase-in of Non-Animal Methods by the Pharmaceutical Industry

Chairs: Joanne Storey and Kirsty Reid

The purpose of this session is to explore technological frontiers, ethical frameworks, and regulatory acceptance of new approach methodologies in the pharmaceutical industry. Methodologies utilized in the discovery and development of human medicines will be presented covering demonstrable application to date, innovative technologies, future concepts and remaining hurdles. Approaches will be covered by phase, from early discovery, then to development, including safety and toxicological testing of pharmaceuticals up to regulatory acceptance, followed by the quality control of vaccines manufacture. The session will end with a broad presentation on additional challenges facing the large-scale uptake of methodologies and the future vision.

#175 Non-Animal methods in quality control of vaccine testing batch release

Shahjahan Shaid, GSK Marburg

#258 An integrated research and testing strategy to go beyond the 3Rs

Kevin Thibault-Duprey, Sanofi

#269 Collaborative initiatives supporting reduction of NHP use in drug development

Donna W Lee, Genentech

#303 Support of first-in-human clinical trials with human in vitro toxicity testing

Mario Beilmann, Boehringer Ingelheim Pharma GmbH & Co KG., Nonclinical Drug Safety, Biberach, Germany

#582 The progression of MPS utilization in drug Discovery

Jason Ekert, UCB Pharma

#680 Making NAMs the ethical solution to animal use in the pharmaceutical industry

Aurélie Thomas, AstraZeneca

#791 Animal-free methods in life sciences and healthcare - successes and challenges

Kerstin Kleinschmidt-Dörr, Merck KGaA Darmstadt, Germany

#801 Advancing acceptance of NAMs for regulatory testing of medicinal products in the EU

Sonja Beken, European Medicines Agency

Session S402 (Workshop)

Unlocking a New NAM-Based Paradigm: Transforming the Evaluation of Agrochemicals

Chairs: Gina Hilton & Marc Corvaro

The rapidly growing human population, increasing climate-related pressures, and associated scientific advancements in agriculture and safety science are heightening the demands for sustainable, safe and effective crop protection solutions. Although the existing agrochemical safety evaluation paradigm, which relies on traditional toxicology methods, is well established, it is unlikely to meet the emerging challenges of a developing and ever-expanding sustainable agriculture. This session will foster a discussion on how to rethink agrochemical safety evaluation to make it fit-for-purpose, integrative of new science, and explore the applicability of new approaches for regulatory decisions in the face of changing global and local needs.

#704 A next-generation framework for agrochemical risk assessment

Gina Hilton, PETA Science Consortium International e.V.

#629 Achieving an Animal-Free Product Safety Assessment

Richard Currie, Syngenta Ltd

#93 Defined Approaches for GHS Categorization to Assess Eye Irritation Potential of Agrochemical Formulations

Amber Daniel, Inotiv

#300 A "question-box" approach: practical considerations for NAM-based agrochemical safety assessment

Marco Corvaro, Corteva Agriscience Italia, Rome, ITA

#566 Regulatory opportunities and challenges to reduce testing on animals in a next-generation risk assessment

Deborah Ramsingh, Health Canada

Session S403 (Symposium)

Advancements and Opportunities in the Replacement, Reduction and Refinement of Acute Toxicity Tests

Chairs: Fiona Sewell & Glenn Myatt

Acute toxicity tests are currently conducted as part of global regulatory risk assessment and hazard classification packages for industrial chemicals and agrochemicals. These tests are generally carried out in rodents, fish and birds. Historically, the endpoint of acute toxicity studies (via varying exposure routes) has been mortality. These studies are therefore associated with severe suffering and present a great opportunity for the application of 3Rs principles. This session will highlight alternative models and approaches that are accepted, being evaluated or are currently in development to reduce the reliance on animals for provision of acute toxicity data across sectors.

#441 Refining and removing global mammalian acute toxicity testing requirements

Fiona Sewell, National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs)

#467 Replacing animal use in the acute toxicity 'six-pack' for industrial chemicals and pesticides – US perspective

Lindsay O'Dell, U.S. EPA

#166 A step-by-step approach for assessing acute oral toxicity without animal testing for cosmetic ingredients

Hajime Kojima, National Institute of Health Sciences (NIHS)

#21 Acute Toxicity In Silico Models and Expert Reviews

Glenn Myatt, Instem

#387 Evaluation of an in silico model for predicting pesticide acute oral toxicity

Patricia Bishop, The Humane Society of the United States

#710 Applying the 3Rs to Fish Acute Toxicity Tests in an Industrial Chemical Company

Sarah Hughes, Shell Global Solutions (US) Inc.

Session S404 (Symposium)

Is it Good Enough? Establishing Scientific Confidence in New Approach Methods

Chairs: Anne Gourmelon & Anna van der Zalm

To reduce use of animals in toxicity testing, while more effectively protecting human health and the environment, there is a need to define criteria to establish scientific confidence in new approaches. While the principles of validation of new approaches, established by the Organisation for Economic Co-operation and Development, remain true today, the processes by which they are evaluated need to be revisited to improve the timeliness of their uptake. This session will explore collaborative projects led by international scientists from regulatory, industry and non-governmental organizations to update the processes for evaluating new approaches and ensuring their readiness for regulatory use.

#72 The current and future role of OECD in chemicals assessment

Anne Gourmelon, OECD

#313 Human Biological Relevance: Topical Toxicity Case Studies

Nicole Kleinstreuer, NIEHS/DTT/PTB/NICEATM

#205 The future of validation: It's not all about ring trials

João Barroso, European Commission, Joint Research Centre

#573 Increasing Scientific Confidence through Good Practice in the Application of Mechanistic Data

Bette Meek, University of Ottawa

#156 Inference Model Performance: A Key Component for Scientific Confidence Frameworks for NAMs

Richard Becker, American Chemistry Council

#240 Technical Framework for Enabling High Quality Measurements in New Approach Methodologies (NAMs)

Elijah Petersen, NIST

#52 Accelerating the transition to animal-free NGRA: a transformative governance approach

Merel Ritskes-Hoitinga, Utrecht University, Faculty of Veterinary Medicine, IRAS tox

#508 Evaluating New Approach Methodologies for use in Next Generation Risk Assessment

Alistair Middleton, Unilever

Session S405 (Symposium)

Meeting at the Falls: ICATM Partner Updates

Chairs: Nicole Kleinstreuer & Michele Regimbald-Krnel

The International Cooperation on Alternative Test Methods (ICATM) was created to foster dialog among national validation organizations. This dialog facilitates international cooperation in the critical areas of validation studies, independent peer review, and development of harmonized recommendations. Representatives from ICATM members and partner organizations will present updates on progress on NAMs, with particular emphasis on regulatory acceptance and implementation in their respective areas.

#356 Evolving regulatory frameworks require methods that are both innovative and scientifically valid

Valérie Zuang, European Commission - Joint Research Centre

#126 Update on recent activities at JaCVAM

Yoko Hirabayashi, The Center for Biological Safety and Research (CBSR), the National Institute of Health Sciences (NIHS)

#482 The Progress of Alternative Methods in Brazil: Activities of BraCVAM

Octavio Presgrave, Institute of Science and Technology in Biomodels (ICTB), Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro, RJ, Brazil ;Brazilian Centre for Validation of Alternative Methods (BraCVAM), Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro, RJ, Brazil

#114 KoCVAM's accomplishments in development of the alternative methods listed in the OECD TGs and support for the introduction and utilization of non-animal alternative methods in Korea

Jae-ho OH, Toxicological Screening & Testing Division, National Institute of Food and Drug Safety Evaluation, Ministry of Food and Drug Safety, Cheongju, Chungbuk, Republic of Korea

#696 Update on Canada's efforts to reduce the reliance on animal toxicity testing,

Michèle Régimbald-Krnel, Director, Environmental Health Science and Research Bureau, Healthy Environments and Consumer Safety Branch, Health Canada

#337 Regulatory Acceptance and Implementation of New Approach Methodologies in Taiwan

Pinpin Lin, National Institute of Environmental Health Sciences, National Health Research Institutes, Taiwan

#185 The OECD and the Future of Risk Assessment

Patience Browne, OECD

#319 ICCVAM Activities 5 Years into the Strategic Roadmap: Successes and Opportunities

Nicole Kleinstreuer, NICEATM

Session S406 (Workshop)

Regulatory Acceptance of NAMs in EcoTox – How Do We Get there?

Chairs: Cristina Inglis & Kellie Fay

Regulatory acceptance of new approach methods for ecotoxicology can face several barriers, including insufficient validation for different use contexts, a lack of standardization in data processing and uncertainties in interpretation or extrapolation to multiple species. This workshop will cover topics such as the OECD path to mutual acceptance of data, lessons learned during the development of the OECD 249 rainbow trout gill cell-based assay, using Interspecies Correlation Estimation models for extrapolation of acute toxicity in aquatic organisms, understanding the relationship between transcriptomic points of departure and traditional fish toxicity endpoints such as endocrine disruption. Join us for this interactive session, where we will cover these topics with Q&A, live surveys and more!

#569 Lessons learned on validation, acceptance and uptake of the rainbow trout gill cell-based assay (RTgill-W1)

Kristin Schirmer, ETH Zürich, Department of Environmental Systems Science, ;Swiss Federal Institute of Aquatic Science and Technology/Utox, ;EPF Lausanne, School of Architecture, Civil and Environmental Engineering

#120 Accepting the separation of toxicology and statistics in New Approach Methodologies in Ecological Risk Assessment

Sandy Raimondo, US Environmental Protection Agency

#659 Establishing Scientific Confidence of Cross-Species Extrapolations through Case Studies

Adriana C Bejarano , Shell Global Solutions Inc.

#780 Comparing transcriptomic, metabolic and behavioural points of departure in zebrafish larvae exposed to a diverse suite of toxicants

Jason O'Brien, Environment and Climate Change Canada

#531 Challenges for regulating endocrine disruptors that target adipogenesis in fish

Zhichao Dang, RIVM

Session S407 (Workshop)

The 3Cs: Curating & Cultivating Change for Faster Integration of NAMs in Animal-Free Policy Making

Chairs: Beta Montemayor and Tim Singer

To be updated shortly.

Session S408 (Symposium)

NAMs in Developmental Neurotoxicity – Difficult Road Leading to Change

Chairs: Ellen Fritsche

#310 Generating Screening Level Developmental Neurotoxicity (DNT) Information of Chemicals in a New Approach Methods (NAMs) Battery

Helena Hogberg, NICEATM, PTB, DTT, NIEHS

#453 Mapping of DNT NAMs' signaling pathways in human physiology and disease

Eliska Kuchovska, IUF - Leibniz Research Institute for Environmental Medicine

#489 The DNT IVB – a challenging road leading to change

Ellen Fritsche, IUF - Leibniz Research Institute for Environmental Medicine, DNTOX GmbH

#529 Prediction of developmental neurotoxicity using a read across approach

Yukuto Yasuhiko, Division of Pharmacology, National Institute of Health Sciences

#588 Comparison of dose-response modeling pipelines for developmental neurotoxicity (DNT) new approach methods (NAMs)

Kelly Carstens, US Environmental Protection Agency

#615 Early Screening Using Cheminformatics in an Integrated Assessment for Neurotoxicity/Developmental Neurotoxicity

Sue Marty, Dow, Inc.

Session S409 (Symposium)

Warp-Speed Replacement? Remaining Challenges in Vaccine and Biologics Batch Testing

Chairs: Laura Viviani & Elliot Lilley

Biologicals such as vaccines, cytokines, enzymes, and hormones are tested extensively post-licensure as part of routine quality control and batch release testing to ensure the safety and potency of products. It is estimated that more than 10 million animals a year are used worldwide in biologics development and that 80% of these animals are used for quality control and batch release testing. In recent years, there has been considerable progress towards adoption of 3Rs approaches in batch release testing. This symposium will highlight efforts to accelerate global harmonization of the regulatory acceptance and industry implementation of 3Rs approaches for batch release of human vaccines.

#140 Why are we at a turning point in implementing and accepting non animal testing for vaccines batch release testing? Successes and remaining global challenges in the field.

Laura Viviani, SciEthiQ, Consultant for Humane Society International

#122 Review of animal testing requirements in WHO Guidelines and Recommendations for biologicals: a proposal to implement 3Rs principles

Elliot Lilley, NC3Rs

#153 Alternative Methods for Potency And Safety Test for Batch Release In Human Vaccines

Pradip Das, Biological E Limited Hyderabad, India

#155 EDQM's work on implementing alternatives to animal testing

Catherine Milne, EDQM

#157 Regulatory Considerations for the Development, Licensure, and Use of Non-Animal-Based Quality Control Assays for Vaccines

Robin Levis, U. S. Food and Drug Administration

#373 Global harmonisation of acceptance and implementation of 3Rs approaches in Biologicals quality control and batch release testing– an industry perspective

Emmanuelle COPPENS, Sanofi

#389 Insights from a contract testing laboratory; adoption of new approach methodologies for adventitious agent testing of biologics

Sarah Sheridan, Merck KGaA

#174 The consistency approach for the substitution of in vivo testing for the quality control of established vaccines: practical considerations and progressive vision

Shahjahan Shaid, GSK Marburg

#103 Europe enforces and supports in-vitro methods

Ingo Spreitzer, Paul-Ehrlich-Institut

#714 Development of non-animal methods for potency testing of diphtheria and tetanus vaccines

Laura Hassall, Medicines and Healthcare products Regulatory Agency

Session S410 (Symposium)

NAMs in Practice: Fit-for-Purpose NGRA Across Sectors

Chairs: Anne Gourmelon & Maria Baltazar

There is an ongoing need to provide robust scientific evidence that non-animal New Approach Methodologies (NAM) can be used in safety assessments in both regulatory and risk assessment contexts. In this session we will explore some of the different NGRA approaches that are currently being applied and adopted by different sectors, namely cosmetic, pharmaceutical and pesticide with a perspective from industry and regulatory bodies. Practical examples of approaches to assess general occupational risk assessment, carcinogenicity, acute inhalation toxicity, and skin sensitisation without the use of animal testing will be shared. In addition, recommendations for promoting the regulatory acceptance of NAMs will be discussed.

#361 EPAA Project: Use of New Approach Methodologies (NAMs) in regulatory decisions for chemical safety

Carl Westmoreland, Unilever, SEAC

#201 Building confidence in a new approach to agrochemical carcinogenicity assessment

Amber Goetz, Syngenta Crop Protection LLC

#656 Assessing the Utility of In Vitro Assessment for Acute Inhalation Toxicity

Angela Hofstra, Syngenta Canada Inc

#515 Application of the GARDskin Medical Device assay for regulatory approval of medical devices according to MDR

Andy Forreryd SenzaGen AB

#700 Development and Execution of an Occupational Next Generation Risk Assessment (NGRA) on an Exclusive Use Cosmetic Ingredient under EU REACH: A Case Study on C12-15 Alkyl Benzoate

James Dawick, Innospec Limited, Oil Sites Road, Ellesmere Port, Cheshire, CH65 4EY, UK

#660 Recommendations for Promoting the Regulatory Acceptance of Microphysiological Systems,

Yiguang Zhu, Johns Hopkins University, Bloomberg Schools of Public Health and Whiting School of Engineering, Department of Environmental Health and Engineering, Baltimore, MD, USA

#777 Regulatory Considerations on New Approach Methodologies for Developmental Immunotoxicity

Steven Hermansky, US FDA

Session S411 (Symposium)

A Decade of Progress: Lessons from Animal-Free Cosmetics Policy Worldwide

Chairs: Aviva Vetter & Erin Hill

It has been a decade since the European Union made history by implementing a landmark ban on animal testing for cosmetics and the sale of newly animal tested cosmetics. The following decade has produced remarkable advancement in the identification of new approach methodologies and principles, which achieved the Herculean task of revolutionizing the field of toxicology, as demonstrated by the increasing acceptance and confidence in Next Generation Risk Assessment (NGRA). This session will offer an overview of scientific advancements in animal-free cosmetic safety assessment, the importance of the educational component, and the challenges for regulatory acceptance in different geographies.

#306 Challenges and prospects for Colombia and Latin America in the evaluation of the safety of ingredients and cosmetic products

Maria C. Lozano, Pharmacy Department Faculty of Science, National University of Colombia

#372 Challenges as well as global developments on science and perception of societies

Horst Wenck, Beiersdorf AG

#385 Building confidence in NGRA and milestones achieved in terms of acceptance, incl. dialogue with SCCS

Gladys Ouedraogo

#602 Dissemination of Science: Animal-Free Safety Assessment (AFSA) Education and Training modules

Gavin Maxwell, SEAC, Unilever

#755 The legislative and advocacy road to reform

Ms. Aviva Vetter, Humane Society International

#756 An overview of the evolution of cosmetics regulation in China

To be confirmed

Session S412 (Symposium)

Putting All the Chips on the Table! Doubling Down on Regulatory Acceptance of MPS

Chairs: Charu Chandrasekera & Lena Smirnova

#658 Pharma Industry needs for faster adoption of MPS

Prof Dr. Adrian Roth, Roche

To be updated shortly.



Next-Gen Education

- S413 - An Auspicious Outreach Plan for Adverse Outcome Pathways in Higher Education
- S414 - Comp-Tox in Education: Data Literacy for Next-Generation Risk Assessment
- S415 - Improving Competence and Trust: Implementing the 3Rs in Practice
- S416 - Replacement at the Forefront - Implementing Animal Free Science Education
- S417 - Bringing the 3Rs into the Classroom: It's Never Too Early
- S418 - It's How You Say It! Effective Science Communication to Promote Animal Replacement
- S419 - Implementing the 3Rs in Higher Education
- S420 - Early Career Researchers: Access to NAMs, Funding Opportunities, and Career Paths
- S421 - Waste Not! Training the Trainers for Better Experiments
- S422 - To be updated

Session S413 (Workshop)

An Auspicious Outreach Plan for Adverse Outcome Pathways in Higher Education

Chairs: Jessica Ponder & Dalma Martinovic

The Adverse Outcome Pathway (AOP) framework is gaining momentum as a pragmatic tool in the fields of human health, environmental toxicology and next-generation risk assessment. For the same reasons that make AOPs successful at communicating the advantages and availability of NAMs across a wide variety of disciplines and applications, AOPs are an ideal format for introducing NAMs in toxicology education at the undergraduate and graduate level. This workshop will therefore focus on developing a practical strategy for improving the prevalence of lesson plans and course content for higher education to inform the next generation of toxicologists on the AOP framework.

#11 Goals for Integrating NAMs into Next Generation Education

Merel Ritskes-Hoitinga, Utrecht University, Faculty of Veterinary Medicine, IRAS tox, ;Aarhus University, Department of Clinical Medicine, AUGUST

#564 Advancing Higher Education on AOPs for the Integration of NAMs in Testing and Assessment

Bette Meek, University of Ottawa

#727 “Adverse Outcome Pathways:” a perfect framework on which to build a thesis

Catherine Willett, Humane Society International

#84 Professional Advantages of AOP Development for Graduate Students

Hao Zhu, Rowan University

Session S414 (Symposium)

Comp-Tox in Education: Data Literacy for Next-Generation Risk Assessment

Chairs: Marc Teunis & Thomas Hartung

#20 International computational collaborations for predictive toxicology

Kamel Mansouri, NICEATM/PTB/DTT/NIEHS

#34 Mechanistic computational modeling for chemical toxicity evaluations

Hao Zhu, Rowan University

#38 Artificial Intelligence for Regulatory Science Research

Weida Tong, FDA/NCTR

#104 Educating Risk Assessors in the Probabilistic Risk Assessment Approach

Alexandra Maertens, Johns Hopkins Bloomberg School of Public Health

#343 Bringing reproducible research and programming skills to large research consortia; think big act small

Marc Teunis, University of Applied Sciences, Utrecht

#411 Novel Approach Methodologies and Change Management: a need for a professional Master program

Ronald Vlasblom, HU University of Applied Sciences Utrecht

Session S415 (Symposium)

Improving Competence and Trust: Implementing the 3Rs in Practice

Chairs:

#677 Education and Training in Laboratory Animal Science in the European Union: Benefits, Challenges, and Solutions for Mutual Recognition

#683 ETPLAS - FELASA join forces to establish a CPD framework for the EU.

Jan-Bas Prins, The Francis Crick Institute, London, United Kingdom; Leiden University Medical Centre, Leiden, The Netherlands

#746 How to assess competence? Standards, transparency and objectivity in assessing practical skills

Lucy Whitfield, OWL Vets Ltd

#655 A competency-based approach to teaching animal Welfare & the 3Rs to research animal professionals

Carly O'Malley, Charles River

#721 Free, open access training and competence assessment tools - no excuses left!

Susanna Louhimies, European Commission

#642 Overcoming mindset as a barrier to implementing change

Nicola Osborne, Responsible Research in Practice Ltd

#32 Oversight to facilitate high quality training

Kathy Ryder, Department of Health, Northern Ireland, UK

Session S416 (Symposium)

Replacement at the Forefront - Implementing Animal Free Science Education

Chairs: Janneke Hogervorst & Daniela Salvatori

Education is a key but underestimated element in the transition to animal-free innovation. Technology is moving quickly, and a human-based approach – one that does not use animals - is the way forward for sustainable, personalized public health and chemical safety assessment. This session features speakers from academia, industry and non-governmental organisations to discuss what is necessary to establish human-based science as a strategic topic in education, in co-creation with all stakeholders. The session aims to highlight key ingredients for an animal-free education roadmap that is functional and flexible within and outside academia for skilling and reskilling students and professionals.

#70 Keeping toxicology education relevant in the 21st century

Gina Hilton, PETA Science Consortium International e.V.

#593 Animal-Free Science Education and Training in Brazil and LATAM

Marize Campos Valadares, Laboratory of Education and Research in Toxicology In Vitro - Tox In - Pharmacy Faculty, Federal University of Goiás

#604 Accelerating the Transition to Animal-Free Safety Assessment: what can we learn from the Cosmetics Animal Testing bans?

Gavin Maxwell, SEAC, Unilever

#770 A new documentary film series on humane innovations in veterinary education

Nick Jukes, InterNICHE

#687 Training the Next Generation of Researchers in the Organ-on-Chip Field

Silke Keller, 3R-Center for In Vitro Models and Alternatives to Animal Testing, Eberhard Karls University Tübingen, Germany

#766 Transforming students' minds and hearts through teaching innovative, humane science and bioethics

Kathrin Herrmann, Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action, Berlin, Germany, ;Johns Hopkins Bloomberg School of Public Health, Center for Alternatives to Animal Testing (CAAT)

#425 Ambition statement on innovation in higher education using fewer laboratory animals in The Netherlands

Daniela Salvatori, Faculty of Veterinary medicine, Utrecht University

Session S417 (Symposium)

Bringing the 3Rs into the Classroom: It's Never Too Early

Chairs: Katrin Schütte & Jan-Bas Prins

#405 Three Rs for school-goers – From Study to Virtual Reality.

Pierre Deceuninck, European Commission, Joint Research Centre (JRC), EURL ECVAM

#572 Introducing the Three Rs into primary and secondary schools in Europe

Agueda Gras Velazquez, European Schoolnet

#74 A Complete Curriculum: Introducing the 3Rs in Secondary School

Juliane Pearson, National Anti-Vivisection Society

#606 Advancing Three Rs uptake in university education through a European network

Francesca Caloni, Università degli Studi di Milano

#500 ETPLAS for the benefit of free movement of researchers and harmonisation of quality standards across Europe

Jan-Bas Prins, The Francis Crick Institute, London, United Kingdom, Leiden University Medical Centre, Leiden, The Netherlands

#745 Survey Says: How Canadians View the Use of Animals in Post Secondary Education & Training

Liz White, Chief Executive Officer, Animal Alliance of Canada Fund

TBC

Nick Jukes, InterNICHE

Session S418 (Symposium)

It's How You Say It! Effective Science Communication to Promote Animal Replacement

Chairs: Catharine E. Krebs & Kathrin Herrmann

#262 Public awareness of human-relevant, animal-free science: gaining support through effective communication

Rebecca Ram, LUSH PRIZE

#449 Nonanimal Research in the News: Capturing Attention, Making Waves

Reina Pohl, Physicians Committee for Responsible Medicine

#80 The Right Tool for the Job: Why and How to Adapt Your Science Communication for In-person and Virtual Events

Matteo Piumatti, Alvertox Academy

#567 We need to have a respectful conversation about animal use in research

Elin Törnqvist, Department of Animal Health and Antimicrobial Strategies, Swedish National Veterinary Institute (SVA), Uppsala, Sweden; Institute of Environmental Medicine, Karolinska Institutet, Solna, Sweden

#523 Misinformation, disinformation, hyperbole, and exaggeration: communicating the truth in the fake news era

Lindsay Marshall, The Humane Society of the United States

Session S419 (Symposium)

Implementing the 3Rs in Higher Education

Chairs: Mohammad Akbarsha & Thomas Hartung

The Session aims at reviewing the extent to which 3Rs has percolated into higher education curricula in countries across the globe, and the role players. The session Chair is Mohammad Abdulkader Akbarsha, the India Doerenkamp Chair, whereas the Co-Chair is Thomas Hartung, Director, CAAT. Valentine Salamone (Altertox, Belgium), Christian Pellevoisin (Mattek, France), Mohammad Akbarsha (Society for Alternatives, India), Twyla Francois (Animal Alliance of Canada), Arti Ahluwalia (Centro 3R, Europe), Lena Smirnova (CAAT, Johns Hopkins, USA) and Miriam Zemanova (Multiple affiliations in Switzerland and Australia) shall share their Organizations/affiliates' experience/data regarding prescription/training of 3Rs until now and the miles to go.

#110 Fun with NAMs

François Busquet, Altertox

#132 New approach methodologies (NAMs) in higher education: involvement of industry players

Christian Pellevoisin, MatTek Life Sciences

#234 Formal Courses for College Students to Sensitize About NAMs: Catch Them Young

Mohammad Abdulkader Akbarsha, National College (Autonomous), Tiruchirappalli, India (rc@nct.ac.in) & Society for Alternatives to Animal Experiments-India

#273 Defenceless: Animal-Based Trauma Training in the Canadian Military

Twyla Francois, Animal Alliance of Canada

#390 Centro 3R, Mainstreaming Replacement through Pervasive 3R Education

Arti Ahluwalia, Università di Pisa, ;Interuniversity Center for the Promotion of 3Rs Principles in Teaching and Research (Centro 3R)

#471 Training and courses offered at Johns Hopkins Center for Alternatives to Animal Testing

Lena Smirnova, Johns Hopkins University

#764 On the Wild Side: Strategies for Advancing the 3Rs Education of Wildlife Researchers

Miriam A. Zemanova, Environmental Sciences and Humanities Institute, University of Fribourg, Switzerland; Oxford Centre for Animal Ethics, UK; Animalfree Research, Switzerland

Session S420 (Symposium)

Early Career Researchers: Access to NAMs, Funding Opportunities, and Career Paths

Chairs: Kathrin Herrmann & Christian deSaintes

#170 The Path to Better Science: 3Rs and more

Adrian Smith, Norecopa

#323 Young TPI: empowering young people to go animal-testing-free

Victoria de Leeuw, Centre for Health Protection, National Institute for Public Health and the Environment (RIVM)

#352 Helping animal-free innovation cross the Valley of Death. Empowering young researcher to take the leap from lab to business.

Saskia Aan, Stichting Proefdiervrij (Dutch Society for the Replacement of Animal Testing)

#459 Creating Community and Opportunity for Early-Career Researchers

Kathrin Herrmann, Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action, Berlin, Germany; Johns Hopkins Bloomberg School of Public Health, Center for Alternatives to Animal Testing (CAAT)

#620 Initiatives from the European Commission to promote animal-free research

Christian Desaintes, European Commission

#676 Private Funding and Support for Early Career Researchers in Non-Animal Methods: Strategies for Success

Sue Leary, Alternatives Research & Development Foundation

Session S421 (Workshop)

Waste Not! Training the Trainers for Better Experiments

Chairs: Derek Fry & Nuno Franco

#346 Decisions, decisions


Derek Fry, University of Manchester UK

#465 What can possibly go wrong?

Nuno Henrique Franco, i3S, Universidade do Porto; FELASA Working Group on Experimental design in education and training

Session S422 (Workshop)

To be updated shortly.



Ethics, Welfare, Policies, and Regulations

- **S423 - Show Me the Animal Data! Animal Methods Bias in Publishing and Funding**
- **S424 - Monkeys on the Edge: Ethical Research with Nonhuman Primates**
- **S425 - Contemporary Challenges for the Animal Care Committeess**
- **S426 - More Than the 3Rs – What Should Principles of Animal Ethics Look Like Today?**
- **S427 - Role of Roadmaps to Accelerate the Transition to Animal-Free Science**
- **S428 - Transparency and Openness as Tools to Push the 3Rs Over the Edge**
- **S429 - A World of 3R Centres: Unity in Diversity**
- **S430 - Science for Policy, Policy for Science: Engaging Policymakers to Advance Science & Ethics**
- **S431 - To be updated**

Session S423 (Symposium)

Show Me the Animal Data! Animal Methods Bias in Publishing and Funding

Chairs: Emily Trunnell & Catherine Krebs

Developing and increasing the use of non-animal research methods is needed to reduce the numbers of animals used in science. However, barriers to these efforts exist, including “animal methods bias,” a preference for animal-based methods where nonanimal-based methods are suitable. Speakers in this symposium will describe animal methods bias and discuss the evidence for it, ways to address it when it occurs in manuscript peer review and research funding, how language and institutional lock-in contribute to it, and how transdisciplinary and meta-research can be used to mitigate it.

#571 Confronting Animal Methods Bias in Scientific Publishing

Catharine Krebs, Physicians Committee for Responsible Medicine

#610 PRIVAT: a peer review tool for appraising in vitro studies

Sebastian Hoffmann, seh consulting + services; Evidence-Based Toxicology Collaboration

#12 Animal Methods Bias in NIH Research Funding Review Committees

Emily Trunnell, People for the Ethical Treatment of Animals U.S.

#28 Language and workflow in biomedical research indicate institutional bias and how translational medicine can help abolish non-human animal experimentation.

Melanie Ort, Institute of Chemistry and Biochemistry, Department of Biology, Chemistry and Pharmacy, Freie Universität Berlin, Germany; Charité – Universitätsmedizin Berlin, Julius Wolff Institute

#9 Animal-Reliance Bias Mitigation: Developing Evidence from Transdisciplinary Research

Merel Ritskes-Hoitinga, Utrecht University, Faculty of Veterinary Medicine, IRAS tox, ;Aarhus University, Department of Clinical Medicine, AUGUST

Session S424 (Symposium)

Monkeys on the Edge: Ethical Research with Nonhuman Primates

Chairs: Syd Johnson & Lisa Jones-Engel & Susanna Louhimies

This session focuses on the shifting landscape of non-human primate (primate) experimentation. Recent events, including the uplisting of two species of primates to endangered, regulatory flexibility towards and expansion of non-animal alternatives, as well as increased public consciousness around the scientific, ethical and welfare consequences, are changing the way the historical reliance on primates is viewed. This session tackles each of these issues with experts in primate behaviour, biology, conservation, neuroscience, disease, welfare, non-animal alternatives and ethics providing insights into a path forward to a full replacement while providing practical examples of reduction and refinement for those primates still used.

#675 Macaques Over the Edge

Lisa Jones-Engel, People for the Ethical Treatment of Animals, ;Long-tailed Macaque Project

#14 Global Trends in Laboratory Primate Use: 1950 – Present

Andrew Rowan, WellBeing International

#349 Non-Animal Methods in Neuroscience – Focus on Alzheimer’s and Parkinson’s disease

Annalisa Gastaldello, European Commission

#664 Can we justify using nonhuman primates in neuroscience research? A costs versus benefits discussion.

Katherine Roe, PETA

#xxx Pharma actions to push the boundaries of the Three Rs in non-human primate use

Kirsty Reid, European Federation of Pharmaceutical Industries and Associations

#716 Application of Refinement to Reduce the number of Primates used in biomedical research and improve their welfare

Melanie Graham, University of Minnesota

#726 Nonhuman primate research ethics beyond the 3Rs

Andrew Fenton, Department of Philosophy, Dalhousie University

#612 The Three Pillars of Ethical Research with Nonhuman Primates

L Syd Johnson, Upstate Medical University

Session S425 (Workshop)

Contemporary Challenges for the Animal Care Committees

Chairs: Ryan Merkley and John Baumann

Speakers will discuss new and longstanding challenges for animal care committee, including issues related to workload, regulatory loopholes, the development of nonanimal methods, and shifting public perceptions around the use of animals in experiments.

#382 Never Say “No”: An Analysis of Corner-Cutting Measures by IACUCs at Major Public Universities in the United States

Ryan Merkley, Physicians Committee for Responsible Medicine

#663 Bringing IACUCs into the 21st century: ethical gaps and room for improvement

Angela Hvitved, Alternatives Research & Development Foundation

#76 New Korean Legal mandates on IACUC Qualification and Compliance Training Programs to Enhance the Three Rs Principles: 2022 Amendment of the Animal Protection Act

Byung In Choe, Nicholas Cardinal Cheong Graduate School for Life, The Catholic University of Korea

#16 Protocol Review and the Promotion of Alternatives

Andrew Rowan, WellBeing International

#619 Reagent Responsibility: IACUC Assessment of Research Tools

Katherine Groff, PETA Science Consortium International e.V.

#23 The Iron Fist and Velvet Glove: Expanding the Implementation of the 3Rs

John Baumann, Indiana University

Session S426 (Symposium)

More Than the 3Rs – What Should Principles of Animal Ethics Look Like Today?

Chairs: Marc Avey & Nuno Franco

#98 Marseille Declaration: Together we prioritize animal welfare

Vice President Jan Ottesen, Novo Nordisk

#154 Bird’s Eye View: Strengthening Protections for Wild Animals in Research

Ron Baron, Physicians Committee for Responsible Medicine

#203 Building value and trust through scientific rigor and transparency

Hanno Wuerbel, University of Bern

#270 What key ethics principles should be: Setting National Standards for the 21st Century

Gilly Griffin, Canadian Council on Animal Care

#403 How do we get to where we must go in Principles of Animal Ethics?

Margaret Landi, Scientists Center for Animal Welfare

#424 Unified Ethical Principles and Utilization of the Basel Declaration

Sally Thompson-Iritani, University of Washington

#464 Beyond harm-benefit – demanding a life worth living for laboratory animals

Nuno Henrique Franco, i3S, Universidade do Porto

Session S427 (Symposium)

Role of Roadmaps to Accelerate the Transition to Animal-Free Science

Chairs: Kimberley Jayne and Luísa Ferreira Bastos

There is growing recognition that animal-based methods in research and testing do not adequately protect human health or the environment. A number of countries and agencies have produced roadmaps to accelerate innovation towards animal-free research and testing methods, some of which contain concrete steps to reduce and replace animal use. However, the number of animals used continues to be high. In this workshop, we will look at the progress already achieved, opportunities for the immediate to long-term reduction and replacement of animal use, and what can be learned from these roadmaps to inspire others to implement similar strategies.

#247 A six-step strategy for a roadmap towards animal free-science in the United Kingdom

Kimberley Jayne, People for the Ethical Treatment of Animals UK

#312 Progress towards reducing use of animals in chemical testing and adoption of new methods to evaluate the safety of chemicals and medical products in the United States

Nicole Kleinstreuer, NIEHS/DTT/PTB/NICEATM

#520 EU roadmap towards full replacement of animal-testing for industrial chemicals

Katrin Schutte, European Commission

#379 Towards a more efficient chemical safety assessment applying animal-free approaches

Elisabet Berggren, Joint Research Centre, European Commission

#543 The Need of Harmonization of Alternative Methods and Animal Use in Latin America

Octavio Presgrave, Institute of Science and Technology in Biomodels (ICTB), Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro, RJ, Brazil ;Brazilian Center for Validation of Alternative Methods (BraCVAM), Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro, RJ, Brazil

#363 Key elements for achieving a transition to non-animal science

Barney Reed, Eurogroup for Animals

#595 Bringing the research community with us on a journey to end animal experimentation in Aotearoa, New Zealand.

Tara Jackson, The New Zealand Anti-Vivisection Society (NZAVS)

#342 Target images and their role in facilitating the transition towards non-animal science

Jan-Bas Prins, member of the Netherlands National Committee for the protection of animals used for scientific purposes (NCad), Director of the Biological Research Facility at the Francis Crick Institute

Session S428 (Symposium)

Transparency and Openness as Tools to Push the 3Rs Over the Edge

Chairs: Susanna Louhimies & Andrew Rowan

#283 How can funders improve transparency and quality of animal research? A case study

Bas de Waard, The Netherlands Organisation for Health Research and Development, the Hague, the Netherlands

#408 Monitoring Three Rs implementation – Open access data for indicator building.

Pierre Deceuninck, European Commission, Joint Research Centre (JRC), EURL ECVAM

#421 United States Animal Research Openness Initiative

Sally Thompson-Iritani, University of Washington

#446 The Beyond Animal Testing Index (BATI): A benchmarking tool for a world beyond animal testing.

Cyrille Krul, University of Applied Sciences Utrecht

#542 “Initiative Transparente Tierversuche” – the German initiative to promote transparent communication on animal research

Valeska M. Stephan, Permanent Senate Commission on Animal Protection and Experimentation of the German Research Foundation, ;Rostock University Medical Center

#708 20 Years of Learnings from a Corporate Animal Welfare and Reporting Program

Sarah Hughes, Shell Global Solutions (US) Inc.

#725 Non-Technical Project Summaries to direct funding decisions on research on alternatives

Susanna Louhimies, European Commission

Session S429 (Symposium)

A World of 3R Centres: Unity in Diversity

Chairs: Hajime Kojima & Adrian Smith

This session will showcase the ways in which 3R activities are being coordinated at many levels: globally, nationally, regionally and institutionally. The session includes reports from 3R centres and associations in Europe, the US and Asia, illustrating the diversity of ways in which the 3Rs are being implemented, and how these interact to form effective networks for dissemination. A successful partnership between industrial stakeholders in Europe will also be described. In addition, the session highlights how a pharmaceutical company promotes the 3Rs within its own organisation, leading to improvements both in animal welfare and data quality in drug discovery.

#97 Norecopa: A one-stop-shop for global 3R resources

Adrian Smith, Norecopa

#688 The Rise of European 3R Centres and their Network EU3Rnet

Winfried Neuhaus, Faculty of Medicine and Dentistry, Danube Private University, 3500 Krems, Austria; AIT Austrian Institute of Technology GmbH, Competence Unit Molecular Diagnostics, 1210 Vienna, Austria; EUSAAT - European Society of Alternatives to Animal Testing

#679 The European Partnership for Alternative Approaches to Animal Testing (EPAA): Accelerating the Transition to Animal-Free, Sustainable Innovation

Gavin Maxwell, EPAA; SEAC, Unilever

#83 Development of an internal granting program for proactive 3Rs advancement

Brianna Gaskill, Novartis Institute for Biomedical Research

#265 The 3Rs Collaborative: Creating Evidence-Based, Practical, and Impactful 3Rs Change

Megan LaFollette, The 3Rs Collaborative

#127 Korea Information Center for the 3Rs: The First 12 years

Byung In Choe, Nicholas Cardinal Cheong Graduate School for Life, The Catholic University of Korea

#167 Latest activities and future directions of JSAAE for Asian cooperation toward 3Rs

Hajime Kojima, Center for Biological Safety and Research (CBSR), the National Institute of Health Sciences (NIHS)

Session S430 (Symposium)

Science for Policy, Policy for Science: Engaging Policymakers to Advance Science & Ethics

Chairs: Mikalah Singer & Erin Hill

#212 Policy for science: the role of policymakers in supporting innovative science

Francois Busquet, alertox

#235 History in the Making: the European Citizens' Initiative to End Animal Testing

Julia Baines, PETA UK

#289 Recent progress of alternatives to animal testing from regulatory science in Japan

Yasunari Kanda, National Institute of Health Sciences

#322 Critical Dialogue for Evolving NAM Support and Policy in South Korea

Borami Seo, Humane Society International

#320 Advancing science and ethics through legislation: the HEARTS Act

Monica Engebretson, Cruelty Free International

#480 Engagement of Scientists with the Public and Policymakers to Promote Alternative Methods

Thomas Hartung, Johns Hopkins CAAT

#329 Partnering with policymakers to advance NAMs: Strategies and best practices that achieve results

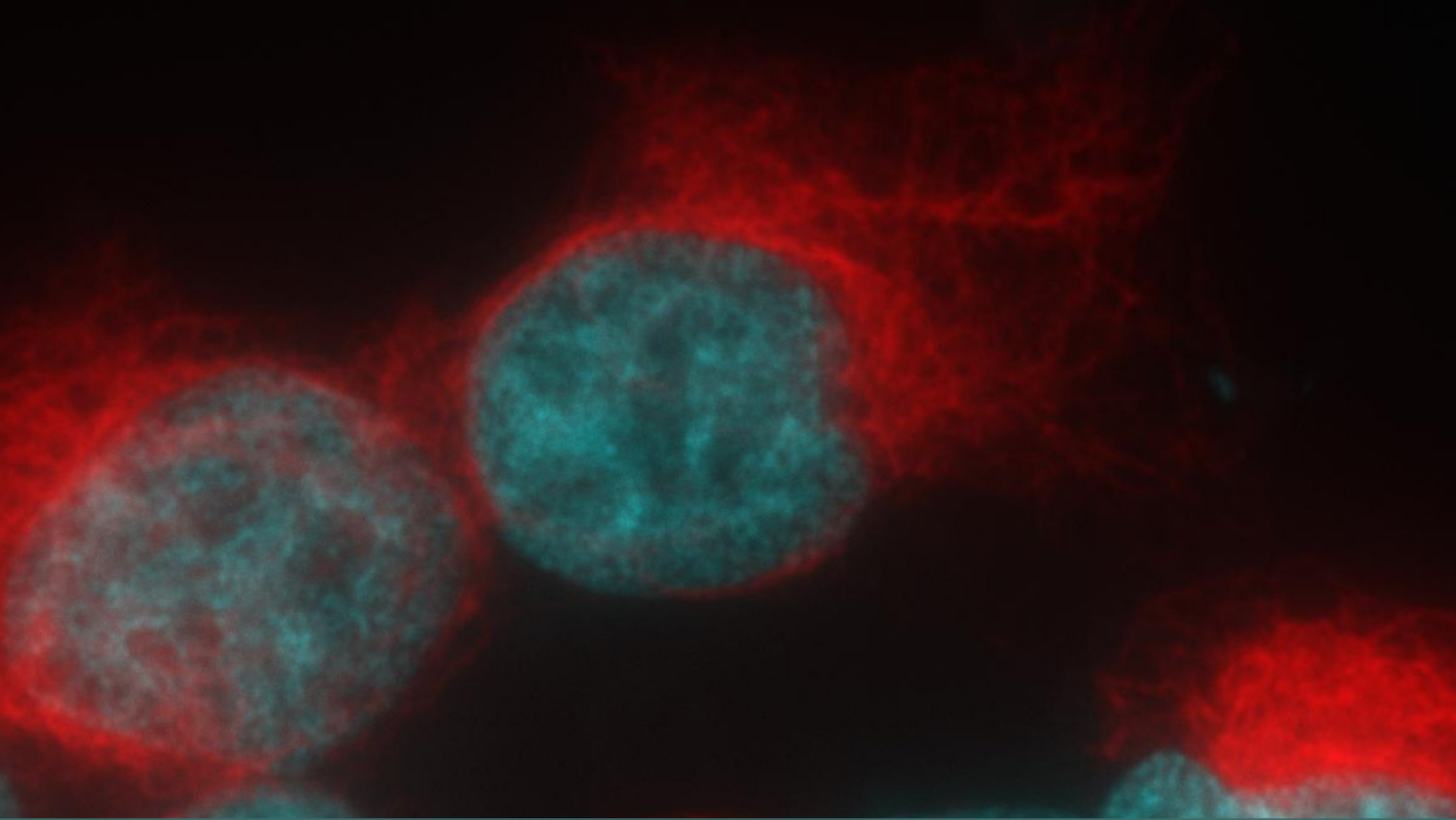
Elizabeth Baker, Physicians Committee for Responsible Medicine

#635 Public policy: a key to driving scientific innovation and protecting animals

Kathleen Conlee, The Humane Society of the United States

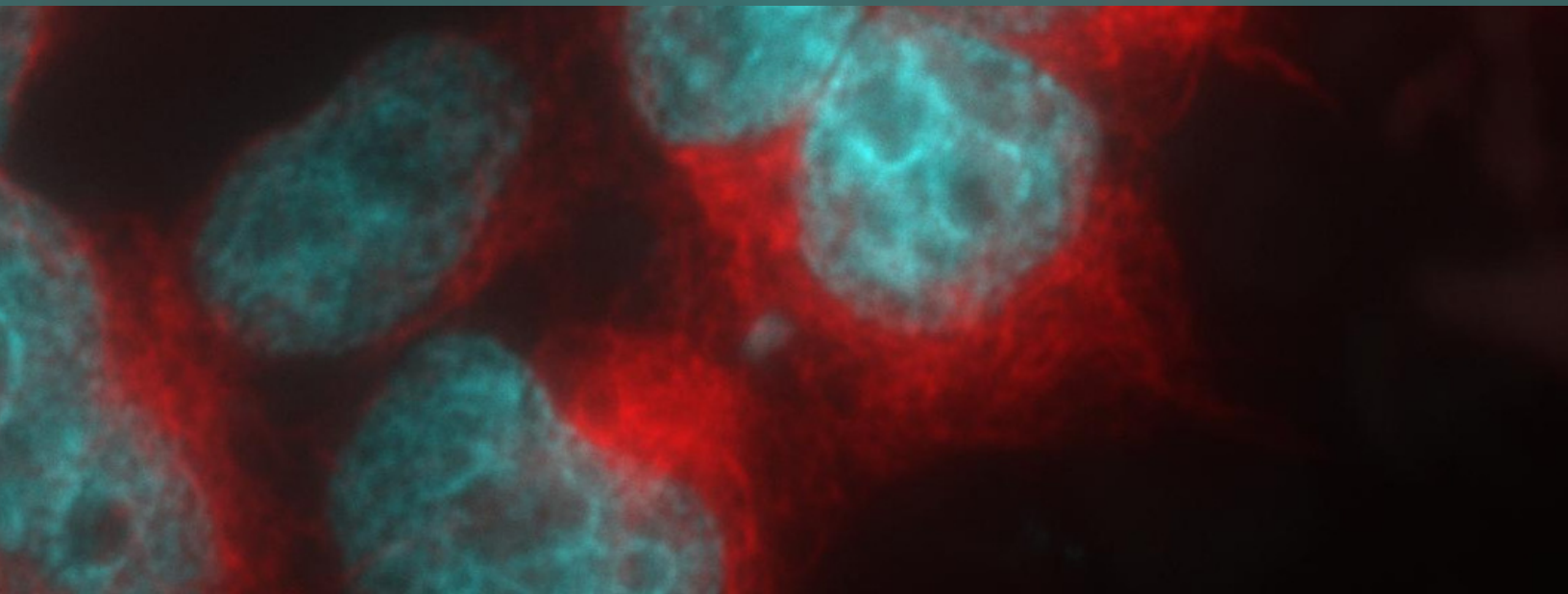
Session S431 (Symposium)

To be updated shortly.



Human-Centred Biomedical Research

- S432 - Replacement in Action: Animal-Free Reagents, Methods, and Standards
- S433 - Disease-in-a-Dish? MPS for Disease Modelling
- S434 - In-a-Dish or On-a-Chip? Complex In Vitro Models
- S435 - Future of Multi-Scale Modelling and Simulation in Disease & Toxicology
- S436 - The Human Lung: Infection Biology and Inhalation Toxicology
- S437 - Challenging the Status Quo: Roadmap to Accelerate Transition to Animal-Free Research



Session S432 (Symposium)

Replacement in Action – Animal-Free Reagents, Methods, and Standards

Chairs: Joao Barroso & Charu Chandrasekera

#10 Animal free recombinant antibodies for research and diagnostics

Stefan Dübel, Technische Universität Braunschweig, Germany

#318 An Animal Component-Free Human Neuroprogenitor Cell Culture Model for High-Throughput Chemical Hazard Screening

Megan Culbreth, US Environmental Protection Agency, Center for Computational Toxicology and Exposure (CCTE), Research Triangle Park, NC

#357 A Worldwide Survey on the Use of Animal-Derived Materials and Reagents in Scientific Experimentation

Sandra Coecke, European Commission, Joint Research Centre (JRC), Ispra, Italy

#436 Beyond serum-free cell culture media design: a systematic approach towards long-term animal-origin free cultivation of RTgill-W1

Barbara Jozef, Eawag: Swiss Federal Institute of Aquatic Science and Technology, Dübendorf, Switzerland

#524 An integral approach to reduce the use of fetal calf serum

Jeffrey Bajramovic, 3Rs Centre Utrecht, Utrecht University, Utrecht, The Netherlands

#694 Development of a scale to classify the animal-free status of in vitro tests: a tool for transparent communication.

Carol Treasure, XCellR8 Ltd

#786 Spoiled Milk? Replacing Animal-Derived Blocking Buffers in Immunoassays

Justin Roberto, Canadian Centre for Alternatives to Animal Methods

Session S433 (Symposium)

Disease-in-a-Dish? MPS for Disease Modelling

Chairs: Lisa Levin & Sandeep Raha

Animal-based research is often attached to significant challenges with reproducibility and translatability to the human condition. In response, developers of microphysiological systems have aimed to create more human-relevant investigative methodologies by utilizing human cells to recapitulate normal and abnormal human physiology. This session will introduce some examples of how these technologies are being used to study liver disease, type 2 diabetes, IBD, degenerative and neoplastic neurological disorders, joint disease, cervical cancer, and cardiac ischemia.

#37 Patient Biomimetic Twins in Precision Medicine

Lansing Taylor, University of Pittsburgh, ;Drug Discovery Institute

#169 3D spheroids of the pancreatic beta cell line EndoC- β H5 for modelling diabetes-on-chip

Katharina Schimek, TissUse GmbH, Berlin

#583 Early innate and adaptive immune responses in human intestinal tissue slices from IBD and non-IBD patients ex vivo

Valerie Beneke, Fraunhofer Institute for Toxicology and Experimental Medicine (ITEM), Member of the German Center for Lung Research (DZL), Member of Fraunhofer Cluster Immune Mediated Diseases (CIMD), Hannover, Germany

#182 Human Neuron-on-a-chip platform to automate the screening of compounds targeting Alzheimer's Disease

Xue Ying Chua, PhD Physics: Ananda Devices, Laval, QC, Canada

#226 Automated Platform for Creating Patient-Derived Glioblastoma Organoids and High Throughput Drug Screening

Yuval Daskal, Grass Center of Bioengineering, The Hebrew University, Jerusalem, Israel

#771 An advanced in vitro model of human blood-brain barrier and its interaction with brain cancer neurospheres

Bhumika Singh, Kirkstall Limited

#559 Simulating mechanical forces during joint movement on cartilage in an animal-free bioreactor set-up

Alexandra Damerou, German Rheumatism Research Centre Berlin, ;Charité-Universitätsmedizin Berlin

#527 Modeling the Stages of Cervical Cancer Pathogenesis: Establishment of a Healthy Cervix-, a Pre-Cancerous CIN- and an Immunocompetent Carcinoma-on-Chip

Elena Kromidas, Department for Microphysiological Systems, Institute of Biomedical Engineering, Faculty of Medicine, Eberhard Karls University Tuebingen, Tuebingen, Germany

#782 High throughput cardiac ischemia model Human-on-a-Chip platform

Chase Miller, Hesperos, Inc.

Session S434 (Symposium)

In-a-Dish or On-a-Chip? Complex In Vitro Models

Chairs: Justin Roberto

Changes to existing technologies are currently being made to improve and reduce the need for animal methods and revolutionize existing promising alternative methods. This session describes various complex in vitro models existing as microphysiological systems – whether in a dish or chip. These systems include various models of liver, heart, skin, neuromuscular junctions, tumors, and bone. These models aim to advance physiological relevancy by incorporation of vascularization, electrical stimulation, wound healing assays, perfusion, bioprinting, and immune response. Through these models and criteria to improve cell culture practices, this session serves complex in vitro models on-a-dish or on-a-chip.

#481 Good Cell Culture Practice (GCCP) 2.0 extending to Microphysiological Systems

Thomas Hartung, Johns Hopkins CAAT

#24 The Electro-Mitochondrial Coupling of a Microphysiological Human Heart

Mohammad Ghosheh, Alexander Grass Center for Bioengineering, The Hebrew University of Jerusalem, Jerusalem, Israel

#587 Human neuromuscular junction-on-a-chip platform as a drug development tool supporting development of therapies

Margaret Magdesian, Ananda Devices Inc.

#487 Unleashing the Potential of Bioprinted Tumors: A Step towards Personalized Cancer Therapy

Shreyas Gaikwad, Texas Tech University Health Science Center

#172 Development towards an Organ-on-the-Chip technology for complex in vitro testing of T cell products

Isabell Durieux, BIH-Center for Regenerative Medicine

#550 Development of a cartridge bioreactor for parallelized cultivation and stimulation of complex tissue models

Moritz Pfeiffenberger, Deutsches Rheumaforschungszentrum Berlin; Charité Universitätsmedizin Berlin

#78 Vascularization of multi-Organ-on-Chips with blood and lymphatic endothelial cells for the generation of immunocompetent skin models

Sue Gibbs, Amsterdam University Medical Center

#717 Effects of Lactobacillus Plantarum on a Human Induced Pluripotent Stem Cell Derived Intestinal Epithelial Cell Model in Comparison with Human In Vivo Data and a Caco-2 Cell Based Model.

Meike van der Zande, Wageningen Food Safety Research - Wageningen University & Research

#248 A linked liver- and heart-organoids on-a-chip for chemical-induced cardiotoxicity testing

Wei Cheng, School of Public Health, Shanghai Jiao Tong University School of Medicine

Session S435 (Symposium)

Future of Multi-Scale Modelling and Simulation in Disease and Toxicology

Chairs: Catherine Mahony & Tom Knudsen (Co-Chairs)

Computational modelling to recapitulate human biology is at a turning point. Knowledge of molecular and cellular environments is now enabling computer predictions of differentiated states at the level of the cell, tissue, organ and even organism and computation has advanced sufficiently to be able to deal with human variability, disease states and life stages. In this session examples from across the globe of modelling and simulation initiatives will be presented, along with views on how such models and simulations might serve in lieu of animal testing. What is needed to develop beyond proof of concepts to build credible models will also be discussed and views from workshop attendees is encouraged to reach a point of clarity on action to be taken to overcome challenges.

#102 The Universal Immune System Simulator: an in silico model to predict the risk associated with exposure to immunotoxicants and sensitizers

Francesco Pappalardo, University of Catania

#392 Developing an in silico Virtual Cornea for Predictive Toxicology

James Glazier, Indiana University

#435 Lab on a Laptop: Beyond the Experimental Model

Arti Ahluwalia, Università di Pisa, ;Centro di Ricerca E. Piaggio, Interuniversity Center for the Promotion of 3Rs Principles in Teaching and Research (Centro 3R)

#632 Engineering a Computable Epiblast for in silico Modeling of Developmental Toxicity

Thomas Knudsen, US EPA; Center for Computational Toxicology and Exposure

#638 A roadmap from single organ models to the integrated virtual human twin in disease and toxicology

Liesbet Geris, University of Liège & KU Leuven

#686 Establishing the credibility of computational models in biology and toxicology

Maurice Whelan, European Commission Joint Research Centre (JRC)

Session S436 (Symposium)

The Human Lung: Infection Biology and Inhalation Toxicology

Chairs: Brett Lidbury & Jorid Sørli

This session is devoted to New Approach Methodology (NAM) investigations of lung pathology post infection or as a result of inhalation toxicity. Currently there are no validated alternative methods to assess inhalation toxicity of airborne substances, leaving substantial gaps for animal-free research translation, drug/chemical manufacture, as well as safety regulation. In addition, modelling lung pathology is challenging due to organ complexity, thus requiring that NAMs be developed specifically for various lung tissues. How animal-free alternatives, developed for the study of lung disease due to infection or toxicity, can reinforce innovation in this context also will be discussed.

#46 Advanced immunocompetent in vitro primary human lung models for toxicity assessment and infectious disease research

Samuel Constant, Epithelix

#147 Human cell-based in vitro systems to assess respiratory toxicity of liquid and aerosolized surfactants

Andreas O Stucki, PETA Science Consortium International e.V., Stuttgart, DE

#214 Generation of an alveolus-on-chip model for personalized drug screening against viral-bacterial co-infections in viral pneumonia

Hristina Koceva, Institute of Biochemistry II, Jena University Hospital, Germany

#227 Efficacy and safety of metabolic interventions for the treatment of severe COVID-19: in vitro, observational, and non-randomized open label interventional study

Yuval Daskal, Grass Center of Bioengineering, The Hebrew University, Jerusalem, Israel

#290 Establishing scientific confidence in a cell-free method to predict decreased lung function

Jorid Sørli, The National Research Centre for the Working Environment

#452 High-throughput Preclinical Model of Breathing Human Alveoli

Kimia Asadi Jozani, School of Biomedical Engineering, McMaster University

#462 Using immortalised blood cells to study the long-term effects of common respiratory viruses

Claire Allan, La Trobe University Australia

#502 Targeting Respiratory Viruses: A Novel Alveolus-on-Chip Infection Model for Pre-Clinical Applications

Mirjam Kiener, Department of Urology, Inselspital, Bern University Hospital, Department for BioMedical Research (DBMR), University of Bern, Bern, Switzerland

#788 Alveoli-in-a-Dish: 3D-Bioprinted Human Lung Tissue Model for Inhalation Toxicity

Jessica Szawara, Canadian Centre for Alternatives to Animal Methods, University of Windsor

Session S437 (Workshop)

Challenging the Status Quo: Roadmap to Accelerate Transition to Animal-Free Research

Chairs: Helder Constantino & Jarrod Bailey

#729 Using a standardized tool to assess the translational (ir)relevance of animal models

Bianca Marigliani, Humane Society International

#451 Putting Patients First: A Human-Centered Approach to Translating In Vitro Virology Research into Clinical Practice

Avner Ehrlich, Grass Center for Bioengineering, Benin School of Computer Science and Engineering, Jerusalem, Israel

#186 Human Relevant Models in Biomedical Research – Progressing Science through Innovation

Annalisa Gastaldello, European Commission

#29 Helpathons to accelerate human relevant science

Sue Gibbs, Amsterdam University Medical Center, ;The Helpathon Hotel, Academic Center for Dentistry Amsterdam

#719 Advancing and enabling human-relevant research in India

Kasturi Mahadik, Centre for Predictive Human Model Systems, Atal Incubation Centre-CCMB

#432 Developing and embedding education programmes for the transition towards Non-Animal Methods at Utrecht University

Daniela Salvatori, Veterinary Faculty, TPI Utrecht, Utrecht University

#707 What policy and science tools are needed to effectively transition away from animal models

Helder Constantino, Humane Society International

#418 Policy change underpinned by science: accelerating a shift towards human-focused research and testing by working with policy makers.

Jarrod Bailey, Animal Free Research UK



Refinement and Impact on Science

- **S438 - Refinement's Impact on Research – A Critical Review**
- **S439 - Refinement in Challenging and Constrained Situations**
- **S440 - Gegevens worden opgehaald. Wacht een paar seconden en knip of kopieer vervolgens opnieuw.**
- **S441 - Reducing Severe Suffering: Time for a Strategic Approach**
- **S442 - From Systematic Reviews to Pre-Registration: Streamlining for Better Research**
- **S443 - 21st Century Animal Welfare Assessment**
- **S444 - Smart Statistics to Reduce and Refine Animal Use**
- **S445 - Refined Mouse Handling: Evidence, Barriers, and Solutions to Practical Use**

Session S438 (Symposium)

Refinement's Impact on Research – A Critical Review

Chairs: Kathrin Herrmann & Joanna Makowska

In the European Union at least, replacement of live animals for scientific purposes is the ultimate goal, enshrined in legislation through Directive 2010/63/EU. However, until this full replacement is achieved, animal use that encompasses all applicable Refinement methods and that ensures high-quality, reproducible research will remain of critical importance to justify animal use in science. In the past two decades, research into refined animal housing, husbandry, care, and experimental procedures has flourished, but reviews on the practical application of refinements have indicated shortcomings in the translation of such findings into practice. This symposium critically addresses the practical impact of refinement on scientific progress and animal use.

#753 Better Animal Welfare and Better Science? – Observations by a Former Inspector

Kathrin Herrmann, Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action, Berlin, Germany; Johns Hopkins Bloomberg School of Public Health, Center for Alternatives to Animal Testing (CAAT)

#776 How Far Should Refinement Go?

Joanna Makowska, University of British Columbia; Animal Welfare Institute

#440 The National 3R centers and their impact on animal welfare and quality in science part 2 - closing the gap of refinement

Roberto Plasenzotti, SAN Group; Austrian 3R Center

#388 The RepRefRed Society (The Austrian 3R Center) and its impact on animal welfare and quality in science, caring for all. Part I

Birgit Reininger-Gutmann, The RepRefRed Society - The Austrian 3R Center, ;Medical University Graz

#779 Gaps and Considerations in Oversight and Research Limitations in use of Human Nonhuman Animal Chimeras

Ann Lam, Physicians Committee for Responsible Medicine

#1 Why I moved from working on Refinement to Replacement

Merel Ritskes-Hoitinga, Utrecht University, Faculty of Veterinary Medicine, IRAS tox, ;Aarhus University, Department of Clinical Medicine, AUGUST

#521 A fourth R – Reframing research to redefine refinement

Lindsay Marshall, The Humane Society of the United States

Session S439 (Symposium)

Refinement in Challenging and Constrained Situations

Chairs: Amy Shurtleff & Sally Thompson-Iritani

This session is focused on discussing the incorporation of refinements and efforts to minimize negative impact on the animals and the studies performed in constrained situations, such as high biocontainment or surgical environments. Multiple species will be discussed including mice, rats, hamsters, sheep, and non-human primates. Topics range from housing and socialization effects on animal health and physiology to innovative ways to administer analgesics for maximal efficacy. Particular attention will be paid to how these factors might impact future work and support for programs that require special attention to potentially infectious pathogens and efforts to track data for comparisons with historical data.

#609 Enhanced Caging Standards for Rats: effects on welfare and historical data

Lucia Amendola, Charles River Laboratories

#667 Pain management via the drinking water: a watertight affair?

Marion Bankstahl, Institute of Laboratory Animal Science and Central Animal Facility, Hannover Medical School, Germany

#366 Real-time lung function measurements of Syrian hamsters for SARS-CoV-2 research

Nadia Oreshkova, Wageningen Bioveterinary Research, Wageningen University

#367 Monitoring animal behaviour in infectious disease studies with accelerometers and video

Rineke de Jong, Wageningen University and Research

#119 Restricted space does not have to mean restricted choice – keeping monkeys happy!

Michelle Nelson, Defence Science & Technology Laboratory, UK

Session S440 (Symposium)

Caring for All: Behavioural Management to Improve Animal and Worker Welfare

Chairs: Patricia Turner & Susana Louhimies

Animals, scientific outcomes and those caring for animals are all interlinked. Failures to adequately care for one often result in problems with the other two. Addressing promptly issues in an appropriate manner will help developing an environment that allows for a robust science to be carried out without unnecessary suffering and with a staff that can feel professional pride in the work that they carry out. The session explores various ways in which we can better care animals, science and those working with animals, and to take proactive action when issues arise.

#422 Compassion Resilience for working with Research Animals

Sally Thompson Iritani, University of Washington

#244 Caring for Our People Caring for Our Animals: Promoting Compassion Fatigue Resiliency

Megan LaFollette, The 3Rs Collaborative

#330 Aggression in group-housed male mice: a dual approach to increased understanding

Elin Törnqvist, The Swedish National Committee/The National veterinary institute

#699 An Outside the Box Approach for Housing Rats to Enhance Their Behavioural Repertoires

Patricia Turner, University of Guelph; Charles River

#331 Every Day With Every Interaction: Developing a Common Culture Across Disciplines

Kelly Morrisroe, Washington National Primate Research Center; University of Washington

#772 Caring for Science: CIRS-LAS for a Constructive Error Culture in Lab Animal Science

Sabine Bischoff, University Hospital Jena - Animal Welfare Office

#30 Raising Concerns for Good Animal Welfare and Reproducible Science

Kathy Ryder, Department of Health, Northern Ireland, UK

Session S441 (Symposium)

Reducing Severe Suffering: Time for a Strategic Approach

Chairs: Penny Hawkins & Gilly Griffin

Any level of laboratory animal suffering is concerning for the scientific community and public, but reducing and avoiding 'severe' suffering (Category D/E in Canada; USA Category E) should be a top priority. This symposium will promote a strategic approach, with case studies including disease models and toxicology protocols. There will also be examples of effective review bodies and processes, and internal communications, that have successfully driven reductions in severe suffering. These different perspectives will provide participants with new ideas, and information, to help inform a strategic, team approach to reducing suffering within their own establishment, company, or research field.

#51 A 'Roadmap' approach to help end 'severe' suffering

Penny Hawkins, RSPCA

#43 Applying the RSPCA Roadmap to reducing severe suffering in practice – case studies from a pharmaceutical company

Thomas Bertelsen, Novo Nordisk

#136 A Novel Scoring System for Humane Endpoints in Mouse Cecal Ligation and Puncture-Induced Sepsis

Lindsey Ferguson, Division of Animal Resources, Emory University, Atlanta, Georgia.

#144 Refining the Endpoint for Diphtheria and Tetanus Toxoid Potency Assays

Juthika Menon, Sanofi Vaccines

#239 Rethinking endpoints - setting national standards for the 21st Century

Marc Avey, CCAC

#236 Pain in Experimental Animal Studies and the Non-Affiliated Member?

Rabbi Art Vernon, Feinstein Institute for Medical Research, Northwell Health

Session S442 (Symposium)

From Systematic Reviews to Pre-Registration: Streamlining for Better Research

Chairs: Cathalijn Leenars & Bettina Bert

Before performing an animal experiment, systematic reviews can help to identify urgent research questions and to pinpoint scientific outcomes in need for confirmation. Systematic reviews can also detect quality issues animal research is facing that impede the reproducibility of corresponding results and their translation into clinics. Preregistration could be an effective tool to support researchers in better designing their studies and preventing questionable research practices. If NAMs should replace animal research in future, it is crucial to address quality issues already today. Learning from the mistakes from animal research can improve translation from NAMs into clinics.

#223 Recent Developments in Preclinical Systematic Review Methodology

Cathalijn Leenaars, Hannover Medical School

#611 The effect of environmental enrichment on anxiety-like responses of mice: a systematic review

Lucia Amendola, University of British Columbia

#540 Team science: support structures for robust evidence generation and meta-research

Natascha Drude, Berlin Institute of Health at Charité; QUEST Center for Responsible Research

#176 Replicability of preclinical cancer biology

Timothy Errington, Center for Open Science

#45 Preregistration in animal research – Critical evaluation of the current state

Céline Heintz, Federal Institute for Risk Assessment (BfR), German Centre for the Protection of Laboratory Animals (Bf3R)

#291 Does Preregistration of Animal Studies Work?: A Plan to Find Out

Julia M.L. Menon, The Netherlands Organisation for Health Research and Development, the Hague, the Netherlands; Netherlands Heart Institute, Utrecht, the Netherlands

#691 Building trust and increasing utility of NAMs through preregistration and open protocols

Ulf Toelch, BIH QUEST Center @ Charité Universitätsmedizin

#101 Working towards the 'essential 10'

Nikki Osborne, Responsible Research in Practice

Session S443 (Symposium)

21st Century Animal Welfare Assessment

Chairs: Michael Walker & René Tolba

Promoting good welfare and limiting negative outcomes of experiments are the fundamental steps to refinement, and the explicit goal of institutions housing and working with laboratory animals. However, how can we measure the welfare of, and impact of procedures on, animals? This session will provide guidance for assessing animal welfare, and in particular, will cover practical considerations emphasizing animal-based measures of well-being. Specific applied examples of welfare assessment approaches for rodents, sheep and primates are included.

#238 The Next Evolution in Animal Welfare Assessment Standards

Michael Walker, CCAC

#513 Leveraging Data Science for Better Severity Assessment in Laboratory Animal Science

Steven R. Talbot, Hannover Medical School, Institute for Laboratory Animal Science

#624 Insights from the home cage: Data science-driven activity analysis enables sensitive welfare assessment in colitis models

Andre Bleich, Hannover Medical School, Institute for Laboratory Animal Science

#501 Multimodal welfare assessment in laboratory mice after surgery

Christine Häger, Hannover Medical School, Institute for Laboratory Animal Science, Carl-Neuberg-Straße 1, 30625 Hannover, Germany

#256 Development of composite measure schemes for evidence-based severity assessment and refinement in neuroscientific research

Heidrun Potschka, Ludwig-Maximilians-University, Institute of Pharmacology, Toxicology and Pharmacy, Munich

#743 Animal welfare and 3Rs advantages of home-cage monitoring systems

Nuno Henrique Franco, i3S, Universidade do Porto

#654 A novel welfare primate welfare assessment tool for research primates

Carly O'Malley, Charles River

Session S444 (Symposium)

Smart Statistics to Reduce and Refine Animal Use

Chairs: André Bleich & Dan Weary

#195 The “Stats” on Statistics Courses: Requirements in Select Canadian U15 Graduate Programs

Melanie C. H. Gibbons, College of Pharmacy and Nutrition, University of Saskatchewan

#221 Different Types of Meta-Analysis to Replace Animal Experiments Using Literature Data

Cathalijn Leenaars, Hannover Medical School

#514 The RELSA Score: An Evidence-Based Tool for Better Severity Assessment in Animal Research

Steven R. Talbot, Hannover Medical School, Institute for Laboratory Animal Science

#769 Cleaning house – doing away with outdated practices in sample size estimation

Otto Kalliokoski, University of Copenhagen

#785 Prioritising comparisons can decrease animal use

Steven Teerenstra, Radboud university medical centre

Session S445 (Symposium)

Refined Mouse Handling: Evidence, Barriers, and Solutions to Practical Use

Chairs: Megan LaFollette & Khia Dobbinson

Traditionally, research mice and rats are picked up by the tail to move them for standard procedures. However, evidence indicates that it is better for animal welfare, scientific quality, and ease of handling to refine rodent handling such as by picking animals up with tunnels or cupped hands. The scientific community is slowly but increasingly switching to these methods. In this session, participants will learn about the practical evidence, barriers, and solutions to widescale refinement of rodent handling in multiple settings. Additionally, one presentation will provide evidence for conducting translational immune research in conventional caging above IVCs.

#131 Evidence for refined mouse handling: Better for animals, people, & science

Khia Dobbinson, NC3Rs

#187 Increasing Understanding & Implementation of Refined Mouse Handling: A longitudinal, cross-sectional benchmarking survey

Megan LaFollette, The 3Rs Collaborative

#216 Changing handling practices to improve animal welfare and scientific outcomes

Judy Murray, Charles River Laboratories

#628 Academic transition lessons: involving stakeholders, time trials, and breeding results

Elizabeth Nunamaker, Charles River Laboratories, ;North American 3Rs Collaborative

#630 Industry Implementation of Refined Mouse Handling: A roadmap, challenges, & solutions

Erin Straley, AstraZeneca

#576 Milestone based handling reduces stress and facilitates animal-experimenter interaction

Michael Marcotte, Campbell Family Mental Health Research Institute of CAMH, Toronto, ON, Canada

#225 Housing matters – Realistic human model systems depend on realistic exposure to pathogens

Agnes Ellinghaus, Julius Wolff Institute, Berlin Institute of Health at Charité – Universitätsmedizin Berlin, Germany

A person wearing a white lab coat is holding a glass beaker filled with a bright yellow liquid. The background is a soft, out-of-focus laboratory setting. The text is overlaid on a semi-transparent yellow banner across the middle of the image.

21st Century Predictive Toxicology

- S446 - Chems-on-Chips: MPS for Organ Tox & Chemical Risk Assessment
- S447 - What's in the Mix? New Approach Methods for Chemical Mixtures Risk Assessment
- S448 - Tipping Point in Omics: Transcriptomic Points of Departure (tPODs) and QIVIVE in Regulatory Decision-Making
- S449 - ASPIS: From Molecular Toxicology to Regulatory Acceptance, the Next Step for Animal-free Testing
- S450 - New Approach Methods for Developmental and Reproductive Toxicity Testing
- S451 - Physiologically-Based Pharmacokinetic Modelling for Chemical Risk Assessment
- S452 - On the Runway: Interactive Predictive Tox Models
- S453 - New Approaches to Genotoxicity Testing and Risk Assessment
- S454 - Predictive Toxicology: Data, Development, Delivery, and Application
- S455 - Progress in Quantifying Adverse Outcome Pathways to Support Next Generation Risk Assessment
- S456 - Advances in NAMs for EcoTox Testing & Risk Assessment, Part 1: Biological Models and Techniques
- S457 - Advances in NAMs for EcoTox Testing & Risk Assessment, Part 2: Computational Tools and Frameworks
- S458 - Artificial Intelligence (AI): Current Advancements and Applications in Advancing the 3Rs
- S459 - What's New in Skin Sensitization?

Session S446 (Symposium)

Chems-on-Chips: MPS for Organ Tox & Chemical Risk Assessment

Chairs: Nicole Kleinstreuer & Suzanne Fitzpatrick

Organoid and microphysiological system (MPS) are two emerging new approach techniques that both recapitulate key organ features and human physiological complexity at scale. There are many efforts worldwide to evaluate MPS for their utility and predictive capacity for human safety and efficacy, but thus far, potential regulatory use of MPS has focused on the drug industry. However, there also several important contexts of use for MPS in the chemical risk assessment arena. Presentations in this session will highlight work ongoing globally to use these new approach methods for chemical risk assessment, both in terms of industrial implementation and regulatory acceptance.

#58 Japan's approach for applying MPS as a wet-simulator in chemical risk assessment

Seiichi Ishida, Sojo University; National Institute of Health Sciences

#85 Development of a microphysiological skin-liver-thyroid Chip3 and its application to evaluate the effects on thyroid hormones of topically applied cosmetic ingredients under consumer-relevant conditions

Leopold Koenig, TissUse GmbH

#242 Technical evaluation of an oral irritation assay using 3D constructs

Elijah Petersen, NIST

#261 A Human Integrated Organ System (MPS) for Developing Pharmacokinetic and Organ Toxicity Data In Vitro.

James M. McKim, LifeNet Health-IONTOX

#673 Novel in vitro tri-culture hepatic model to evaluate human relevance of chemical-induced thyroid toxicity

Shadia M. I. Catalano, Corteva Agriscience, Newark, DE, USA

#712 3D Placental Trophoblast Fusion and Invasion Model for Drug Toxicity Studies

Sonya Kouthouridis, Department of Chemical Engineering, McMaster University

#778 Advanced In Vitro Models for Nephrotoxicity Risk Assessment

Adam Pearson, NIEHS

#787 Hepatotoxicity-in-a-Dish: Microphysiological System to Model Drug Induced Liver Injury

Lucas Vajko Siddall, Canadian Centre for Alternatives to Animal Methods

#793 In vitro cell models for identifying potential metabolic disrupting chemicals

Ella Atlas, Health Canada

Session S447 (Symposium)

What's in the Mix? New Approach Methods for Chemical Mixtures Risk Assessment

Chairs: Suzanne Fitzpatrick

#228 Roadmap for NAMs-mixtures Assessment: Environmental pollutants

Jose V. Tarazona, Spanish National Environmental Health Center. Instituto de Salud Carlos III

#229 Chemical mixture risk assessment in Europe

Philip Marx-Stoelting German Federal Institute for Risk Assessment

#246 Using NAMs for Registration and Hazard Evaluation of Complex Substances

Ivan Rusyn, Texas A&M University

#287 Risk Assessment of Mixtures of Data-Poor Chemicals: A Roadmap Based on the EuroMix Approach

Alan Boobis, National Heart and Lung Institute, Imperial College London

#324 Using Zebra Fish for Chemical Mixtures Risk Assessment

Robyn Tanguay, Sinnhuber Aquatic Research Laboratory; Oregon State University

#479 A Call for a Human Exposome Project

Thomas Hartung, Johns Hopkins CAAT

#709 Preliminary metabolomic and toxicological studies of environmental contaminants – organophosphates (OPs), brominated flame retardants (BFRs) and poly-fluoroalkyl substances (PFASs) - detectable in waste of electrical and electronic equipment (WEEE) plants – the VAISAL project

Stefano Lorenzetti, ISS - Istituto Superiore di Sanità

#736 New approaches to comparing potencies and hazards of emerging BPA alternative chemicals

Geronimo Matteo, Department of Biology, University of Ottawa, ;Environmental Health Science and Research Bureau, Health Canada

#762 High-Throughput BMC Analysis of Global Gene Expression in Human Liver Spheroids Suggests PFAS have Additive Effects in Mixtures

Gregory C. Addicks, Environmental Health Science and Research Bureau, Healthy Environments and Consumer Safety Branch, Health Canada

Session S448 (Symposium)

Tippling Point in Omics: Transcriptomic Points of Departure (tPODs) and QIVIVE in Regulatory Decision-Making

Chairs: Anthony Reardon & Carole Yauk

Transcriptomics is recognized as a key tool in 21st-century toxicology testing. International efforts have advanced methods that harness transcriptomics to identify points of concerted molecular change (i.e., transcriptomic points of departure, tPODs). Such tPODs are converted into species-relevant administered equivalent doses through in vitro to in vivo extrapolation (IVIVE) for use in risk assessment applications. This symposium will review the latest advances in this field, providing updates from efforts to establish best practices in different contexts of use, summarize approaches being used by international regulatory agencies, and describe the outcomes of the most recent case studies applying these methodologies.

#151 Towards a Mechanistic Characterization of Metabolic Disruption using Proteomics

Alexandra Schaffert, Institute of Medical Biochemistry, Medical University of Innsbruck, Innsbruck, Austria

#305 Leveraging in vitro transcriptomic points of departure in chemical safety evaluation

Logan J. Everett, U.S. Environmental Protection Agency, ORD, Research Triangle Park, NC

#377 Advancing data interpretation approaches to support the use of transcriptomic points of departure for prioritization and assessment of chemical substances

Anthony Reardon, Existing Substances Risk Assessment Bureau, , Health Canada, Canada

#442 Application of in vitro transcriptomics point of departure and IVIVE in early agrochemical discovery programs.

Enrica Bianchi, Corteva Agriscience

#458 Quantitative in vitro-in vivo extrapolation (QIVIVE) in chemical risk assessment

Stephan Schaller, esqLABS GmbH

#631 Transcriptomic points of departure for fertilized Japanese quail embryos exposed to seven pesticides using the EcoToxChip Test Method

Niladri Basu, McGill University

#698 Characterizing the Cytotoxic and Molecular Effects of Environmentally Relevant Pesticides on Human Caco-2 and HepG2 Cell Lines

Ke Xu, McGill University

#774 Integrating Transcriptomics, Quantitative Adverse Outcome Pathways, In Vitro and In Vivo Kinetics to Predict Amiodarone Toxicity

Nynke Kramer, Wageningen University, Wageningen, The Netherlands

Session S449 (Symposium)

ASPIS: From Molecular Toxicology to Regulatory Acceptance, the Next Step for Animal-free Testing

Chairs: Bob van de Water & Mathieu Vinken

#220 ASPIS Strategy Towards Animal-Free Safety Assessment of Chemicals

Jonathan Freedman, University of North Carolina - Chapel Hill

#328 From academia to the shopping cart: how to use new methods in real life chemical risk assessment

Costanza Rovida, CAAT-Europe

#457 Towards regulatory acceptance of qAOP-based NGRA through integration with a qualified open-source PBK framework

Stephan Schaller, esqLABS GmbH

#526 TXG-MAPr tools: gene co-expression network analysis of toxicogenomic data to provide quantitative mode-of-action assessment and prediction of drug-induced toxicity

Bob van de Water, Leiden Academic Centre for Drug Research (LACDR), Leiden University

#585 Toxicity by descent: Using phylogenetic relationships to predict interspecies differences in toxicity pathways

Joseph R. Shaw, O'Neill School of Public and Environmental Affairs, Indiana University, ;PrecisionTox Consortium

#601 Virtual Human Platform for Safety Assessment (VHP4Safety)

Anne Kienhuis, Utrecht University; National Institute for Public Health and the Environment (RIVM)

#614 Linking Exposure to Effect: The role of Toxicokinetics in ASPIS

Sylvia Escher, Fraunhofer ITEM

Session S450 (Symposium)

New Approach Methods for Developmental and Reproductive Toxicity Testing

Chairs: Lena Smirnova & Jessica Palmer

Developmental and Reproductive Toxicology (DART) is one of the most complex fields of toxicology. The complexity of effects caused by chemical exposure during the entire reproductive cycle and pre- and postnatal development requires repeated exposures and cannot be fully evaluated with just one test. This session brings together researchers working in different DART fields, from the male and female reproductive system to fetal development and quantitative in vitro/in vivo extrapolation. Assay developers, industry users, and regulators will come together to discuss the current situation for applying NAMs in DART testing and identify the current gaps and shortcomings in this field.

#137 Developmental toxicity Test using human iPS cells based on signal disruptions induced by chemical substances

Yusuke Okubo, National Institute of Health Sciences

#249 A liver and testis multi-organ-chip: towards a systemic male reprotoxicity model

Ilka Maschmeyer, TissUse GmbH

#355 Robotic device for fully automated high-content screening on *C. elegans* as a novel NAMs platform for chemical toxicity assessment

Laurent Mouchiroud, Nagi Bioscience SA

#402 Development of a Quantitative In Vitro to In Vivo Extrapolation (QIVIVE Workflow for Assessing Potential Developmental Toxicity

Harvey Clewell, Ramboll US Consulting, Inc.

#468 Brain organoids for developmental neurotoxicity testing and gene / environment interactions (GxE)

Lena Smirnova, Johns Hopkins University

#517 Practical Application of New Approach Methods in Developmental and Reproductive Toxicity (DART) Testing

Iris Muller, Unilever, Safety and environmental assurance centre

#565 Evaluation of Local Tolerance of Vaginal Formulations and Medical Devices with a 3D Human Vaginal Model

Seyoum Ayehunie, MatTek Corporation

#734 Qualification of the devTOX quickPredict Assay for Regulatory Use Under the ICH S5(R3) Guidelines

Jessica Palmer, Stemina Biomarker Discovery

#740 A Path Forward for New Approach Methodologies for Developmental Immunotoxicity Testing.

Fenna C.M. Sillé, Department of Environmental Health & Engineering; Center for Alternatives to Animal Testing, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD.

Session S451 (Symposium)

Physiologically-Based Pharmacokinetic Modelling for Chemical Risk Assessment

Chairs: Andreas Schepky & Lynea Murphy

New approach methodologies (NAMs) in chemical risk assessment facilitate animal use reduction and in vitro assay readouts for quantitative hazard characterization. Next Generation Risk Assessments (NGRA) leverage NAMs to assure human safety without performing animal testing and extrapolate in vitro points of departure to external bioequivalent exposure regimes. Physiologically based kinetic (PBK) models describe the fate and integrate the knowledge on the absorption, distribution, metabolism, and excretion (ADME) of a chemical in the human body and provides a means for this extrapolation. This session will discuss the use of PBK modelling and NAMs and applicability in chemical risk assessment.

#22 Introduction to PBPK modeling for chemical risk assessment

Marjory Moreau, ScitoVation

#33 Physiologically-Based Kinetic Modelling as Fundamental for Next Generation Risk Assessment

Abdulkarim Najjar, Beiersdorf AG, Hamburg, Germany

#59 Spinosad: A Physiologically-based Pharmacokinetic (PBPK) Model in the Rat and Human including the Pregnancy Life-stage

Jeanne Domoradzki, Corteva Agriscience

#198 Integrating Enzyme Variability Into PB-K Models of Chemicals and Metabolites

Victoria Hull, Inotiv

#592 Modeling Life Stage Toxicokinetic Variability for Effective Chemical Prioritization

Barbara Wetmore, US Environmental Protection Agency

#768 Accounting for In Vitro and In Vivo Kinetics in Quantitative In Vitro to In Vivo Extrapolations of Organophosphate Pesticide Toxicity

Nynke Kramer, Wageningen University, Wageningen, The Netherlands

#474 Toward probabilistic risk assessment – the ONTOX project

Thomas Hartung, Johns Hopkins CAAT

Session S452 (Workshop)

On the Runway: Interactive Predictive Tox Models

Chairs: David Reif & Sunil Kulkarni

#152 OrbiTox: An interactive predictive toxicology and translational discovery tool

Vijar Gombar, Sciome, LLC

#179 ICE Data and Tools to Advance NAMs

Aswani Unnikrishnan, Inotiv, RTP, NC, United States

#278 ChemDIS-ZF: a computational chemical–disease inference system for zebrafish

Hung-Lin Kan, Institute of Biotechnology and Pharmaceutical Research, National Health Research Institutes, Miaoli County, 350, Taiwan

#358 Using OECD QSAR Toolbox to support regulatory safety assessments

Donna Macmillan, Humane Society International

#718 The OECD vision of a Global Chemical Knowledge Base: towards integration of tools and databases

Ester Carregal Romero, Organisation for Economic Co-operation and Development (OECD)

Session S453 (Symposium)

New Approaches to Genotoxicity Testing and Risk Assessment

Chairs: Paula Braun & Giel Hendriks

This session introduces innovative methods that have the potential to modernize regulatory genotoxicity testing and enhance human health protection without using animals. Presentations include a platform designed for multi-endpoint evaluation of genotoxicity (GeneTox21) followed by discussions regarding cutting-edge transcriptomic (TGxDDI) and mechanism-based (ToxTracker) approaches along with their current regulatory status. Recent developments on metabolically competent 3-D cell culture models used for assessing nanomaterials, cosmetics or chemicals and advancements in incorporating in silico techniques into genotoxicity risk assessment are presented. In the end an outlook for future methods is an alternative approach based on RNA transcripts.

#591 GeneTox21 – An Integrated Platform for in vitro Genetic Toxicity Assessment of New and Existing Substances

Paul White, Environmental Health Science and Research Bureau, Health Canada

#56 Transcriptomic biomarker validation efforts: lessons learned from a decade of research on the TGx-DDI biomarker for detecting DNA damaging agents

Carole Yauk, University of Ottawa

#613 OECD Validation of the ToxTracker Assay for Genotoxic Mode of Action Assessment

Giel Hendriks, Toxys

#307 Rat liver S9 incorporation into the Reconstructed Skin Micronucleus assay to address scenarios of systemic metabolism

Stefan Pfuhler, Procter & Gamble

#26 The development and application of 3D liver spheroids for Nano-safety evaluation

Shareen Doak, Swansea University

#650 Development of a 3d genotoxicity model for assessment of cosmetic formulations

Fiona Jacobs, XCellR8

#282 Incorporating in silico methods into genotoxicity risk assessment: moving beyond mutagenicity

Robert Foster, Lhasa Limited

#192 Charting the Pervasive Changes in Alternative Splicing Networks to Study Novel Modes-of-Action in Toxicogenomics

Rasim Barutcu, ScitoVation, 6 Davis Drive, Suite 146, Durham, NC, 27709

Session S454 (Symposium)

Predictive Toxicology: Data, Development, Delivery, and Application

Chairs: Ruchir Shar & Aswani Unnikrishnan

The field of predictive toxicology has grown rapidly over the past decade. Improved methods of data reporting, identification, and integration along with expansion of computational capabilities to assemble, analyze and disseminate this information has been supporting applications aimed at replacing, reducing, and refining the use of animals in human and environmental health assessments. This Session will focus on the current and future advancements in predictive toxicology, with topics ranging from data curation and annotation efforts, to predictive modeling applications, to applications aiding in implementation and establishment of scientific confidence in New Approach Methodologies.

#314 Developing Open-Access Datasets and Predictive Toxicology Tools

Nicole Kleinstreuer NIEHS/DTT/PTB/NICEATM

#476 Annotating High-Throughput Screening Assays: Facilitating Interpretation and Data Use

Aswani Unnikrishnan, Inotiv

#739 Chronic drug-induced cardiotoxicity assessment using in vitro human iPSC-cardiomyocytes and human heart slices: a multi-platform study conducted by the HESI Stem Cell Working Group

Jessica Palmer, Stemina Biomarker Discovery

#285 Long-Read Transcriptome Sequencing as a Novel Tool for Toxicogenomics

Ralf Herwig, Max-Planck-Institute for Molecular Genetics, Dep. Computational Molecular Biology, Berlin

#634 Unbroken Physioxic Conditions for Reproducible, Predictive in vitro Human Models

Alicia Henn, BioSpherix

#391 Update on the use of New Approach Methodologies (NAMs) from the US Environmental Protection Agency's Office of Pollution Prevention and Toxics.

Kellie Fay, Environmental Protection Agency

#123 Curating chemical use and exposure predictions to contextualize chemical hazard

Victoria Hull, Inotiv

#380 Building confidence in the use of new approach methodologies for decision-making: the homosalate case study

Gladys Ouédraogo, L'Oréal R&I

#695 Leveraging Advances In 21ST Century Predictive Toxicology To Support An Evolving Risk Assessment Paradigm Under Canada's Chemicals Management Plan

Sunil Kulkarni, Existing Substances Risk Assessment Bureau, Health Canada

Session S455 (Symposium)

Progress in Quantifying Adverse Outcome Pathways to Support Next Generation Risk Assessment

Chairs: Mark Cronin & Huan Yang

Quantitative Adverse Outcome Pathways (qAOPs) apply data relating to molecular initiating and key events (MIEs / KEs) using a variety of modelling techniques. Computation of qAOPs allows for outputs from New Approach Methodologies to be applied in Next Generation Risk Assessment. The aim of this session is to report on progress in the development of qAOPs from initiatives such as the European Union ASPIS Cluster. This session will outline the main methods and challenges faced by qAOPs, as well as describing modelling approaches for in systems toxicology for human health endpoints and the inclusion of toxicokinetics and exposure.

#416 Status of Quantifying Adverse Outcome Pathways to Support Next Generation Risk Assessment

Mark Cronin, Liverpool John Moores University

#338 Overcoming Challenges in the Development of quantitative AOPs

Richard Currie, Syngenta

#473 Methods2AOP: An International Collaboration Advancing AOP Key Event Descriptions

Agnes Karmaus, Inotiv

#553 Systems-Biology Modelling of Steatosis and Uncertainty Quantification Towards NGRA

Huan Yang, esqLABS GmbH

#448 Secondary pharmacology: strategies, deployment, and impact on the safety of new medicines

Jean-Pierre VALENTIN, UCB Biopharma

#63 Critical role of Toxicokinetics and ADME methods in Quantifying Exposure for Next generation Risk Assessment

Andreas Schepky, Beiersdorf AG, Global toxicology

#512 The Role of qAOPs in Exposure-Led NGRA: Benefits and Limitations

Alistair Middleton, Unilever

Session S456 (Symposium)

Advances in NAMs for EcoTox Testing & Risk Assessment, Part 1: Biological Models and Techniques

Chairs: Gina Hilton & Ksenia Groh

Environmental risk assessment of chemicals traditionally relies on extensive testing with vertebrate animals. Animal tests are, however, ethically controversial and resource-intensive. Therefore, similarly to human toxicology, a shift toward New Approach Methodologies (NAMs) is sought in ecological toxicity testing as well. The twin sessions covering this area aim to highlight recent developments in the NAMs-based approaches that help ensure adequate protection of the environment and are 6R-compliant, i.e., embrace the Relevance, Reproducibility, and Regulatory acceptance, in addition to the original 3Rs. This session—Part 1—focuses on empirical research, including omics, cell-based models and refined testing in fish and amphibians.

#113 EcoToxChip Test System: A Toxicogenomic New Approach Method (NAM) for Chemical Prioritization and Environmental Management

Niladri Basu, McGill University

#536 Novel assay to monitor phosphorylation-based signaling in cultured fish cells

Ksenia Groh, Eawag, Swiss Federal Institute of Aquatic Science and Technology

#532 Strategies to build a modular, cell culture-based approach toward the replacement of fish in environmental risk assessment

Kristin Schirmer, EPF Lausanne, School of Architecture, Civil and Environmental Engineering; ETH Zürich: Department of Environmental Systems Science, Swiss Federal Institute of Aquatic Science and Technology/Utox

#558 In vitro Screening of Three UV Stabilizers and a UV filter: Cytotoxicity, CYP1A Activity, and mRNA Expression in An Immortalized Embryonic Double-Crested Cormorant Cell Line

Tasnia Sharin, McGill University; Environment and Climate Change Canada

#295 Fish and amphibian eleutheroembryo assays as alternatives to animal tests for regulatory assessment of endocrine activity of chemicals

Laurent Lagadic, Bayer AG Crop Science R&D, Germany

#340 Reducing the number of controls in fish early-life stage toxicity tests when solvents are required

Christopher Fassbender, PETA Science Consortium International e.V.

#578 Acute Fish Cell Toxicity Testing in Real-Time with the RAINBOWflow CHIP Biosensor

Kristin Schirmer, ETH Zurich, ;Eawag, ;EPFL

Session S457 (Symposium)

Advances in NAMs for EcoTox Testing & Risk Assessment, Part 2: Computational Tools and Frameworks

Chairs: Fiona Sewell & Kristin Schirmer

Environmental risk assessment of chemicals traditionally relies on extensive testing with vertebrate animals. Animal tests are, however, ethically controversial and resource-intensive. Therefore, similarly to human toxicology, a shift toward New Approach Methodologies (NAMs) is sought in ecological toxicity testing as well. The twin sessions covering this area aim to highlight recent developments in the NAMs-based approaches that help ensure adequate protection of the environment and are 6R-compliant, i.e., embrace the Relevance, Reproducibility, and Regulatory acceptance, in addition to the original 3Rs. This session—Part 2—focuses on decision frameworks and computational approaches that facilitate integration and interpretation of ecotoxicological data.

#685 A platform for identification of chemicals for which fish have high sensitivity

Christer Hogstrand, King's College London

#511 Cross-taxa Predictive Ecotoxicology: Data, Splitting, Performance

Kristin Schirmer, EPF Lausanne, School of Architecture, Civil and Environmental Engineering; ETH Zürich: Department of Environmental Systems Science, Swiss Federal Institute of Aquatic Science and Technology/Utox

#107 Strengthening the weight of evidence for Fish Embryo Toxicity (FET) data to replace Acute Fish Toxicity (SWiFT)

Adam Lillicrap, NIVA

#215 Data-driven Decision-making Using Advanced High-throughput Environmental Risk Assessment of Fragrance Materials

Aurelia Lapczynski, Research Institute for Fragrance Materials

#117 The Ecological Risk Classification Approach for Prioritizing Organic Substances in Canada: One Giant Leap for NAM-kind

Mark Bonnell, Environment & Climate Change Canada

#69 Leveraging big data & distribution approaches for environmental risk assessment

Kristin Connors, The Procter & Gamble Company

#749 EAS-E Suite: an integrated platform for New Approach Methodologies to facilitate hazard, exposure, and risk assessment.

Alessandro Sangion, University of Toronto; ARC Arnot Research and Consulting Inc.

Session S458 (Symposium)

Artificial Intelligence (AI): Current Advancements and Applications in Advancing the 3Rs

Chairs: Weida Tong & Nicole Kleinstreuer

#478 Is it time for Tox-21c 2.0 thanks to AI?

Thomas Hartung, Johns Hopkins CAAT

#316 AI on the CompTox Continuum: Applications in Environmental Chemical Assessment

Nicole Kleinstreuer, NIEHS/DTT/PTB/NICEATM

#181 Deep Learning Profile QSAR Modeling to Impute In Vitro Assay Results and Predict Chemical Carcinogenesis Mechanisms

Alexandre Borrel, Inotiv, United States

#301 Next Generation Artificial Intelligence-Assisted Tools for Excelling Regulatory Acceptance, Global Harmonization and Research Evaluation in the Life Sciences

Giulia Panzarella, Dipartimento di Scienze della Salute, Università Magna Græcia di Catanzaro, Italy

#317 A SafetAI Initiative: AI based prediction initiative to assist reviewers with predicting toxicity end point

Shraddha Thakkar, Center for Drug Evaluation and Research, FDA

#477 Addressing the yearly \$53B problem for pharma companies, using 'Patient-on-a-chip' technology and innovative AI.

Isaac Bentwich, Quris AI

#589 Organoid Intelligence (OI): the new frontier in biocomputing and intelligence-in-a-dish

Lena Smirnova, Johns Hopkins University

Session S459 (Symposium)

What's New in Skin Sensitization?

Chairs: TBC

#90 Evaluating Skin Sensitization Hazard of Diverse Chemicals Using GARDskin

Emily N Reinke, Inotiv-RTP

#208 In vitro determination of a point of departure for Next Generation Risk Assessment (NGRA) of skin sensitizers: Reproducibility and precision of the GARDskin Dose-Response assay.

Andy Forreryd, SenzaGen AB

#259 Experience with gravimetric testing in the DPRA data: comparison to in vivo reference data

Kolle Susanne, BASF SE

#274 Defined Approaches for Skin Sensitization for Diverse Chemical Sets

Judy Strickland, Inotiv, Inc.

#600 The SARA-ICE Model for Predicting Skin Sensitizer Potency

Gavin Maxwell, SEAC, Unilever

#690 Towards NGRA: Skin Sensitization blazes a trail

Nathalie Alepee, L'Oreal

#763 Hazard and risk assessment of a new cosmetic ingredient using validated methodologies and New Approach Methodologies (NAMs): a case study

Carolina Motter Catarino, Safety Assessment Management - Grupo Boticário