2025 IUTOX ICTXVII
BEIJING • CHINA
Oct 15-18, 2025

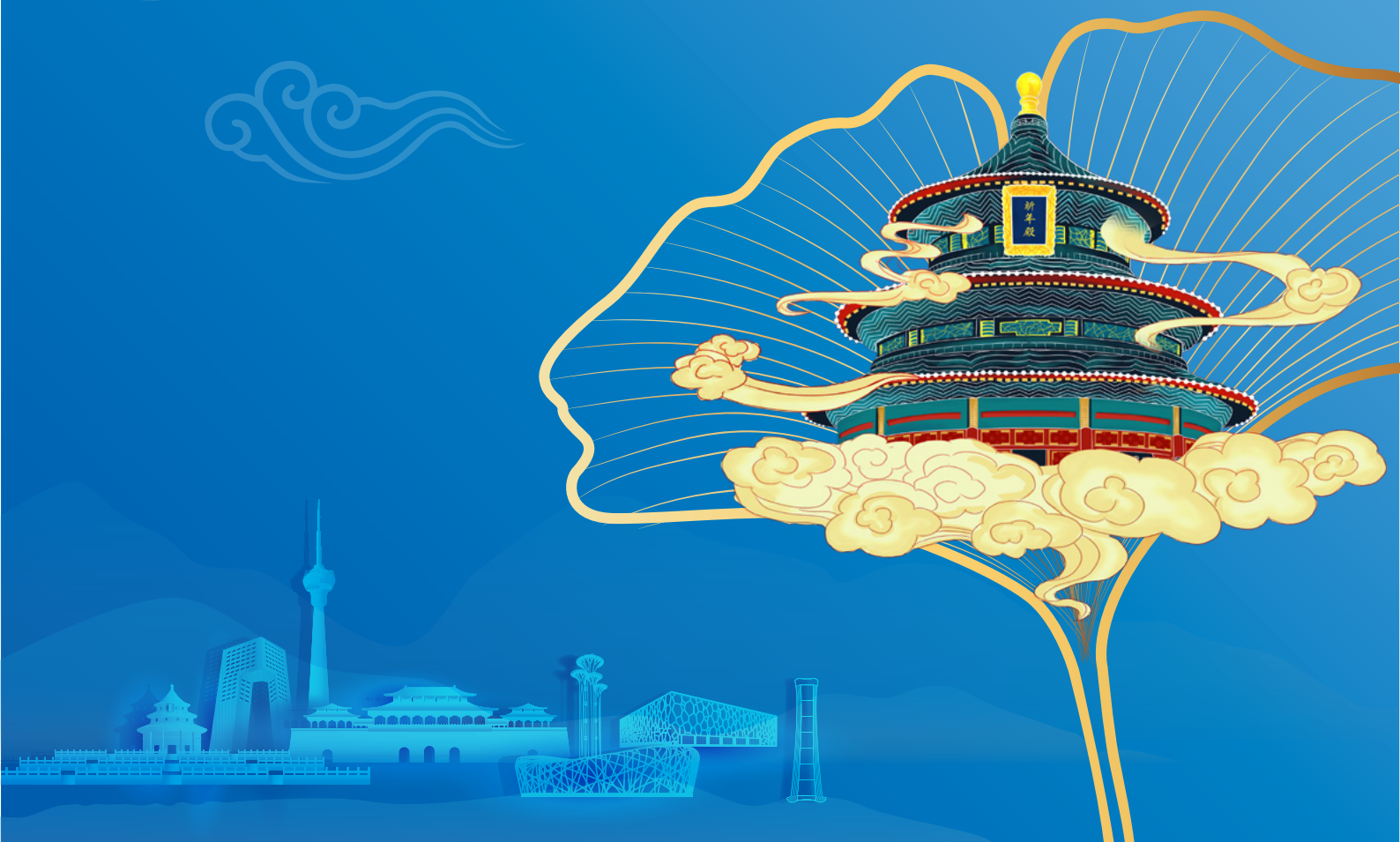
iutox INTERNATIONAL UNION OF TOXICOLOGY

Chinese Society of Toxicology

IUTOX 17th International Congress of Toxicology

Toxicology for Safe Environment & Healthy Life

Final Program



Wednesday, October 15

Continuing Education Course

October 15 | 10:00–12:00 | Guojin Hall

CEC01: Advancing Scientific Excellence and Increasing Confidence in NAMs through Good In Vitro Method Practices (GIVIMP)

Chairs:
- *Robert Landsiedel, BASF SE, Germany*
- *Amanda Ulrey, Institute for In Vitro Sciences, Inc., USA*

Summary:
The landscape of pre-clinical testing is shifting with the introduction of novel test systems like microphysiological systems and other cell-based models, instead of relying on animal models. In response to regulatory imperatives for transitioning to these human-relevant models, scientists are turning to the development and routine use of New Approach Methodologies (NAMs). This continuing education course is designed to acquaint professionals with the principles and practices outlined in the OECD guidance document 286 – Good In Vitro Method Practices (GIVIMP). Starting with an exploration of the foundational principles shaping GIVIMP, the course emphasizes its role not only in ensuring high standards for study performance but also in influencing the design and development of NAMs. Participants will be presented with a summary of topics such as roles and responsibilities; facility design; apparatus, materials, and reagents; test systems; standard operating procedures; and the recording and reporting of results. The course illustrates the integration of GIVIMP recommendations into a variety of laboratory settings through the use of several case studies. The overarching goal is to empower scientists with the knowledge and tools essential for navigating the intricacies of in vitro methods, thereby upholding the highest standards of quality and reliability across diverse laboratory settings.

Schedule:

10:00–10:20 **Founding Principles of GIVIMP**
Erin Hill, International Collaboration on Cosmetics Safety (ICCS), USA

10:20–10:50 **Good In Vitro Method Practices (GIVIMP) Overview**
Amanda Ulrey, Institute for In Vitro Sciences, Inc., USA

10:50–11:10 **Test System Strategies: Applying GIVIMP to Improve NAMs**
Samuel Constant, Epithelix, Switzerland

11:10–11:40 **Taking Advantage of GIVIMP During Method Development**
Robert Landsiedel, BASF SE, Germany

11:40–12:00 **Application of GIVIMP Principles to a Laboratory in China**
Jing Sang, Zhejiang Institute for Food and Drug Control, China

12:00–12:20 **Impact of Increased Confidence in NAMs on Acceptance in China and Beyond**
Quanshun Zhang, Institute for In Vitro Sciences, Inc., China

October 15 | 10:00–12:00 | Guoxiu Hall

CEC02: From the Past to the Present: Does Particle Toxicology Really Change?

Chairs: ● *Flemming R. Cassee, Institute for Risk Assessment Sciences, Utrecht University & National Institute for Public Health and the Environment (RIVM), The Netherlands*

Summary:
Particle toxicology investigates the harmful effects of particles and fibres on living organisms, primarily human health. These materials originate from diverse sources, including industrial processes, pollution, construction, and natural environments. Understanding their toxicological properties is essential for risk assessment, regulatory development, and protective measures. Particles are found in air, food, water, and other matrices, leading to various exposure routes. Airborne particles, classified by size, can be coarse (2.5-10 µm), fine (<2.5 µm), or ultrafine (<0.1 µm). The latter two are particularly concerning due to their ability to penetrate deep into the respiratory system. Fibers, elongated particles, can be natural (e.g., asbestos) or synthetic (e.g., carbon nanotubes). Certain fibres are linked to severe health conditions, such as lung cancer. Particles and fibres induce toxic effects depending on their physicochemical characteristics, exposure concentration, and dose. Adverse health effects include respiratory and gastrointestinal problems, cardiovascular diseases, cancer, and neurological disorders. This course aims to provide up-to-date information on critical aspects of particle toxicology, including sample preparation, dosimetry, biodistribution, and toxicity at the port of entry and secondary organs. By understanding these aspects, we can develop effective risk management strategies and promote human health.

Schedule:

10:00–10:30 **From Reactionary to Anticipatory Toxicology, We Have Come a Long Way**
Johan Øvrevik, Norwegian Institute of Public Health (NIPH) & University of Oslo, Norway

10:30–11:00 **From Exposure to Dose: The Use of Dosimetry Models for In Vivo and In Vitro Studies and Information on Biodistribution Upon Inhalation**
Flemming R. Cassee, Institute for Risk Assessment Sciences, Utrecht University & National Institute for Public Health and the Environment (RIVM), The Netherlands

11:00–11:30 **Toxicology of Ingested Particles**
Roel P.F. Schins, Department of Pharmacology and Toxicology, School for Nutrition and Translational Research in Metabolism (NUTRIM), Maastricht University, The Netherlands

11:30–12:00 **Developmental Toxicity of (Nano)Particles: The State of the Science**
Luisa Campagnolo, University of Rome Tor Vergata, Italy

October 15 | 10:00–12:00 | Guocui Hall

CEC03: Utilizing Computational Methods and Tools for Inferring and Predicting Reference Dose (RfD) in Chemical Risk Assessment

Chairs: ● *Kan Shao, Indiana University School of Public Health, USA*
● *Chao Ji, Office of Innovation and Analytics, Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention, USA*

Summary:
Computational methods are increasingly vital in modern chemical risk assessment, offering innovative approaches to infer dose-response relationships. The next-generation chemical risk assessment paradigm seeks to supplement and eventually supplant traditional animal-based toxicity testing

through New Approach Methodologies (NAMs). This continuing education course session highlights recent advancements in leveraging computational tools to improve chemical safety evaluation. The first presentation introduces a mode of action (MOA)-based probabilistic dose-response modeling framework that integrates data from multiple sources to estimate reference doses (RfDs). The second presentation demonstrates the application of quantitative in vitro-in vivo extrapolation (IVIVE) to translate in vitro data into in vivo equivalent doses using the Integrated Chemical Environment (ICE) tool. The third presentation explores Bayesian benchmark dose (BMD) estimation of toxicogenomics data, providing insights into deriving genomic points of departure. The final presentation showcases mechanistic modeling of complex toxicity endpoints by organizing high-throughput screening (HTS) data into adverse outcome pathway (AOP) models. Together, these presentations illustrate how computational methods enhance chemical risk assessment by integrating diverse data streams, improving dose-response modeling, and addressing uncertainty and variability.

Schedule:

10:00–10:30 **An MOA-Based Dose-Response Modeling Framework to Integrate Data from Multiple Sources for Reference Dose (RfD) Estimation**
Kan Shao, Indiana University School of Public Health, USA

10:30–11:00 **Application of Quantitative In Vitro-In Vivo Extrapolation (IVIVE) to Estimate Reference Doses from NAM Data**
Xiaoqing Chang, Integrated Laboratory Systems, LLC, USA

11:00–11:30 **Bayesian Benchmark Dose Estimation of Genomic Data**
Chao Ji, Office of Innovation and Analytics, Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention, USA

11:30–12:00 **Mechanistic Modeling of Complex Toxicity Endpoints Using Public Concentration-Response Metadata**
Hao Zhu, Tulane University, USA

October 15 | 13:00–15:00 | Guojin Hall

CEC04: Episkin Academy Training

Chairs: ● *Lizao Chen, L'Oréal Research and Innovation Center, China*
● *Tairan Xing, L'Oréal Research and Innovation Center, China*

Summary:

Episkin Academy Training is a course that gives attendees a tour of reconstructed tissue models and covers the best ways to use them in applications and validated methods. Attendees will have the opportunity to realize by themselves skin and eye irritation tests with unknown products. The course is taught by highly experienced scientists from L'OREAL and includes lectures (inspired by OECD guidelines (TG431, TG439, TG492), SOPs) and hands-on exercises that provide real-world experience. It will also integrate an introduction on next-generation risk assessment process (NGRA), which is an exposure-led, hypothesis-driven risk assessment approach that integrates existing knowledge with in silico, in chemico, and in vitro approaches. Participants will have an overview of each step of the next-generation risk assessment process (NGRA) applied on cosmetics safety.

Schedule:

13:00–13:40 **The Integration of New Methods and Approaches in the Safety Assessment of Cosmetic Ingredients in Europe in the Context of Animal Testing Ban**
Fabrice Nesslany, L'Oréal Research and Innovation Center, France

13:40–14:10 **Overview of Integrated Approaches to Testing and Assessment (IATA) Process and Its**

Application in Regulatory Toxicology
Xiaofeng Fang, L'Oréal Research and Innovation Center, China

14:10–14:40 **Introduction of SkinEthic™ RHE Skin Irritation Method and the Stand-Alone New Approach Methodology for Eye Hazard Identification Validated by OECD**
Chunmei Ding, L'Oréal Research and Innovation Center,China

14:40–15:00 **On Site Operation Demonstration and Hands-on Training of SkinEthic™ RHE Irritation & Corrosion Testing and SkinEthic™ HCE Eye Irritation Testing**
Lizao Chen, L'Oréal Research and Innovation Center, China

October 15 | 13:00–15:00 | Guoxiu Hall

CEC05: The Emerging Psychoactive Drugs: Epidemiology, Consumption Modes, and Toxicities

Chair: • *Bruno Mégarbane, European Association of Poisons Centres and Clinical Toxicologists (EAPCCT), France*

Summary:
The panorama of the new psychoactive drugs is enriched day by day with emerging toxicities and novel mechanisms of drug action. Some come from the diversion of drugs sold in pharmacies and others come directly from chemical synthesis carried out in clandestine laboratories. The opioid overdose epidemic alone killed 120,000 people in the United States in 2023. But other similarly dangerous substances are spreading worldwide despite surveillance and restrictive legislation. The objective of this CEC is to make an updated review of these new psychoactive substances, the involved chemistry structures and toxic consequences of their use. Scientists and clinical toxicologists need to adopt novel ways of capturing data on the epidemiology of use and potentials for toxicity related these novel substances. This session will be focused on a translational approach covering areas from mechanistic and epidemiological studies through to clinical data from poisoned patients. We will give an overview of the approaches used to investigate the patterns of toxicity of these molecules sweeping the spectrum of the novel stimulant, sedative and hallucinogenic drugs.

Schedule:

13:00–13:20 **The Synthetic Cathinones**
Davide Lonati, Poison Control Centre and National Toxicology Information Centre – Laboratory of Clinical & Experimental Toxicology, Toxicology Unit, Istituti Clinici Scientifici Maugeri IRCCS, Maugeri Hospital, Italy

13:20–13:40 **The Synthetic Cannabinoids**
Knut Erik Hovda, Department of Acute Medicine, Oslo University Hospital; Institute of Clinical Medicine, University of Oslo; Norwegian Poisons Information Centre, National Institute of Health, Norway

13:40–14:00 **The NBOMe and New Hallucinogenic Designer Drugs**
Jones Chan, Poison Treatment Centre, Prince of Wales Hospital, Hospital Authority, Hong Kong SAR

14:00–14:20 Gamma-Hydroxybutyrate and Analogues
Shaun Greene, Victorian Poisons Information Centre, Australia

14:20–14:40 **The Fentanyloids and Non-Fentanyl Synthetic Opioids**
Bruno Megarbane, Paris Cité University, Department of Medical and Toxicological Critical Care, Lariboisière Hospital, France

14:40–15:00 **Ketamine and the Novel Arycyclohexamines**
Paul I. Dargan, Guy's and St Thomas' NHS Foundation Trust and King's College London, UK

October 15 | 13:00–15:45 | Guocui Hall

CEC06: Advanced Toxicological Topics for Study Directors of Nonclinical Studies

Chairs: ● *William J. Brock, American College of Toxicology, USA*
● *Alan Hoberman, American College of Toxicology, USA*

Summary:
An introductory study director course was held in China in 2019 and was developed to provide continuing education for Study Directors with up to five years of experience. Study Directors are conducting more complex studies with new modalities and with new methodologies that include gene or cell therapies, complex biological products, oligonucleotides, drug conjugates, etc. The outcome of nonclinical studies requires the Study Director to have an in-depth knowledge of the complexity of these drugs and drug products as well as the biological response to the administration of these substances. The tentative topics to be covered include nonclinical testing for biologics, gene and cell therapies, developmental and reproductive toxicology, carcinogenicity and advanced topics for study directors at all levels. Although this course is directed towards toxicologists and related professional in toxicological testing laboratories, this course would be valuable to a broad range of nonclinical, clinical, management and regulatory personnel across all industrial and governmental sectors. Regulatory and managerial personnel will gain a thorough working knowledge of preclinical development to facilitate planning, project management and development nonclinical regulatory strategies. The course will cover practical topics that apply to the interpretation, summarization and reporting of study results for any data collected and will include a separate lecture on the requirements of the Chinese FDA. If time permits, a panel discussion will be convened at the end of the session.

Schedule:

13:00–13:15 **Introduction to Study Director Course**
Lijie Fu, Breakthrough Pharmaceuticals, China

13:15–13:45 **Complex Study Director Issues and Resolution**
John Kapeghian, Frontage Labs, USA

13:45–14:15 **Extrapolation: The Use and Application of In Vivo, In Vitro and In Silico Models, Artificial Intelligence and ICH S1B**
William J. Brock, Brock Scientific Consulting, LLC, USA

14:15–14:45 **The Use and Application of In Vivo, In Vitro and In Silico Models, Artificial Intelligence and ICH S1B**
David Woolley, ForthTox, UK

14:45–15:15 **Complex Methods and Study Designs for Developmental and Reproductive Toxicology**
Alan Hoberman, Charles River Laboratories, USA

15:15–15:45 **Scientifically Sound Data Interpretation and Report Writing for Toxicology Studies**
Charles Wang, InnoCare Pharma Tech Co. Ltd, China

WuXi / Elsevier Seminars

October 15 | 10:00–12:00 | Guohua Hall

SS01: WuXi Seminar – Changing Drug Development Landscape with New Modalities Such as ADC

Chair: ● *Xuanjia Peng, WuXi AppTec, China*

Schedule:

10:00–10:20 **Kickoff: Changing Drug Development Landscape with New Modalities Such as ADC**
Xuanjia Peng, Senior Vice President, WuXi AppTec, China

10:20–10:40 **Overall Introduction and ADC Background**
Leo Pan, PhD, Senior Director, Toxicology, WuXi AppTec, China

10:40–11:00 **Regulatory-Compliant Genetic and In Vitro Toxicology Assessment for ADCs**
Liwen Gao, MS, Med, DABT, DCST, ERT, Director, Genetic and In Vitro Toxicology, WuXi AppTec, China

11:00–11:20 **Overcoming the Challenges for Detecting the Antibody in ADC Drugs: Using Ligand Binding Assay and LC-MS/MS Assays for Different Cases**
Nan Jia, PhD, Preclinical SME, WuXi AppTec, China

11:20–11:40 **Pathology, Off-Target and On-Target Effects**
Rongrong Li, BAgr (Vet Med), MAgr (Vet Med), DCCVP, Senior Pathologist, WuXi AppTec, China

October 15 | 13:00–15:05 | Guohua Hall

SS02: Elsevier Seminar – Gen AI in Scientific Publishing

Chairs: ● *Jagna Gent-Aalén, Senior Publisher, Toxicology Journals, Elsevier, The Netherlands*
● *Xi Han, Publisher, Toxicology and Pharmacology Journals, Elsevier, China*

Summary:
Generative AI (GenAI) is playing a transformative role in scientific publishing and the entire research process, reshaping knowledge discovery and innovation. As researchers increasingly adopt GenAI tools to sift through vast amounts of literature, summarize findings and analyze complex datasets, the technology enables them to enhance research efficiency, facilitate knowledge discovery and communications, and foster interdisciplinary and cross-sector collaboration, paving the way for innovative insights. It is also widely utilized in editorial workflows, such as recommending reviewers, matching suitable journals, performing technical checks, and detecting plagiarism.
However, the rapid adoption of GenAI also raises unprecedented ethical questions. It is essential to promote the responsible use of AI and raise awareness of the associated policies to ensure transparency and accountability, thereby upholding research integrity. A joint commitment from the research community and key stakeholders will be crucial in mitigating potential risks, ensuring that AI serves as a reliable technology. There is a pressing need for reliable AI-powered tools based on advanced technologies but also trustworthy content to help ensure that knowledge discovery remains rigorous and reliable. With a better understanding of the challenges, opportunities, and resources in AI adoption, we can together explore how to fully realize the benefits of this powerful technology to drive scientific progress.

Schedule:

13:00–13:05 **Welcome, Opening, Introduction**
Jagna Gent-Aalén, Senior Publisher Toxicology Journals, Elsevier, The Netherlands

13:05–13:25 **Knowledge Discovery and Scholarly Publishing in the AI Era: Harnessing Tools and Navigating Responsibilities**
Yinhui Wu, Customer Success Director, Elsevier, China

13:25–13:45 **Knowledge Discovery and Scholarly Publishing in the AI Era: Harnessing Tools and Navigating Responsibilities**
Wenwen Zheng, Head of Research Integrity Group, Scientometrics and Evaluation

Research Center, Institute of Scientific and Technical Information of China, China

13:45–14:30 **Panel Discussion Including Q&A**

José Manautou, Co-Editor-in-Chief of Current Opinion in Toxicology and President of IUTOX, USA

Xiaoling Kang, Academic Relations Director, Elsevier, China

Xi Han, Publisher Toxicology and Pharmacology Journals, Elsevier, China

14:30–14:35 **Closing**

Jagna Gent-Aalén, Senior Publisher Toxicology Journals, Elsevier, The Netherlands

14:35–15:05 **Post Meeting Communication; Demo and Trial of Scopus AI, SD AI**

Opening Ceremony

October 15 | 16:00–16:40 | Guobin Hall

OW **Opening Welcome**

October 15 | 16:40–17:30 | Guobin Hall

IAL **ICT2025 Award Lecture: New Pollutants Study in China: History, Progress and Challenges**

- *Guibin Jiang, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China*

Abstract:

The governance of new pollutants has become the primary policy for environmental protection in China. New pollutant is an emerging scientific term, in analogy to contaminants of emerging concern, which refers to any synthetic or naturally occurring chemical or micro-organism that can cause significant known, or suspected toxic effects and health hazards when deposited in the environment. At present, the new pollutant analogues of extensive concern include persistent organic pollutants, endocrine disruptor compounds, and antibiotics. In general, the rapid growth in the use of synthetic chemicals is the underlying cause of the new pollutant issue. A significant number of chemical substances that are environmentally persistent, bio-accumulative and toxic are becoming a potential threat to the ecosystem and public health. International scientific research on New Pollutants has been developing rapidly in the 2000s, and it is well recognized that the rapid development of analytical instrumentation and analytical techniques has been an intrinsic driving force. As quoted from a presentative review article (Science, 2020, 367, 388): “Along with the increased use of chemicals in commerce and the advances in analytical methodology, rising attention is being paid to a variety of chemicals that have not been detected and are thereby not regulated”. It is also linked with the research on traditional environment pollutants, uniting the efforts of Chinese scholars for decades. For instance, the studies on screening and control for environmental endocrine disruptors were funded by the National 863 Program since 1999. A prospective exploration of the pollution characteristics, interfacial behavior, and health effects of emerging pollutants (i.e., PBDEs, PFAS and SCCP) has been realized with the financial support of the National 973 Program during 2003-2018. Basic research is a systemic endeavor that could be a key underpinning of the New Pollutants governance initiative. Many topics of this international toxicology conference, such as analytical toxicology, computational toxicology, biochemical and molecular toxicology, epigenetic toxicology, drug and food safety and risk assessment, as well as alternative approaches in toxicology, are elements that should be focused on for support in basic science research on New Pollutants. Along with the development of new approach methodologies such as machine learning and big data analytics, high-throughput toxicology testing, quantitative structure-property relationship modeling, and stem cell research will play a critical role. Future challenges also lie in a number of areas, for instance, the identification of key toxicants from complex matrices, the scientific assessment of the effects and

mechanisms of combined exposures, the population exposure levels and safety thresholds for new pollutants, and the causal links between environmental exposures and ecological/health risks.

October 15 | 17:30–18:20 | Guobin Hall

DL

Deichmann Lecture: Toxicology – The Now, The New and The Next

- *Thomas Hartung, Johns Hopkins University, USA & University of Konstanz, Germany*

Abstract:

Toxicology stands at a historic inflection point. In the wake of technological innovation, mounting societal demands, and a pressing need for human relevance, the discipline is undergoing a profound transformation. This keynote will reflect on the Now—the current state of toxicological science, still heavily reliant on animal testing, fragmented data, and limited human predictivity. It will then pivot to the New—emerging paradigms that redefine toxicology through new approach methodologies (NAMs), including organoid(-on-chip) systems, integrated omics, high-content imaging, and artificial intelligence. These tools are already reshaping regulatory frameworks and enabling evidence-based assessments rooted in mechanistic insights and human biology. Building trust into them and their formal validation, however, represent major challenges. Finally, the Next will be outlined: a bold vision for a predictive, preventive, and personalized toxicology. This includes the integration of microphysiological systems (MPS), exposomics, and agentic AI into a global infrastructure for health risk assessment—aiming ultimately at a Human Exposome Project and Green Toxicology, i.e., benign-by-design chemicals and early testing in product development. Emphasis will be placed on establishing reproducibility standards (e.g., GCCP 2.0, GIVReSt), trust-building in AI applications, and a shift toward probabilistic, systems-based assessments. The keynote will also highlight the organizational and cultural shifts needed to accelerate this transition—from validation bottlenecks to transdisciplinary collaboration and public-private partnerships. By connecting scientific innovation with regulatory foresight, toxicology can lead the way toward a truly 21st-century biomedical and environmental health science.

Thursday, October 16

Keynote Lecture

October 16 | 08:30–09:15 | Guobin Hall

KL01: 50 Years of Immunotoxicology: Past, Present and Future

- *Marc Pallardy, Department of Toxicology, Faculty of Pharmacy, University of Paris-Saclay, France*

Abstract:

Immunotoxicology is a discipline that studies the interactions between chemical, physical or biological substances and the immune system. Where does the term "Immunotoxicology" come from? It is commonly accepted that the origin of taking-into-account the effects on the immune system linked to exposure to environmental products is a publication from the RIVM at the end of the 1970s (Vos JG. CRC Crit Rev Toxicol. 1977). This publication primarily concerned immunosuppression and its possible consequences on human health. As a result, the bulk of research for many years concerned understanding the mechanisms of immunosuppression to environmental pollutants (dioxin, PCB, HPA, etc.) and developing assessment models. However, it is only very recently that exposure to environmental products has been linked to measurable effects on human health with PFAS and upper airborne infections but also the recent classification of PFOA in Group 1 of the IARC classification of carcinogens, partly linked to its immunosuppressive mechanisms.

But the understanding of immunity, the discovery of cytokines/chemokines and their production in recombinant form, the culture of immune cells, and the identification of numerous immune cells using monoclonal antibodies have made possible to address other aspects of immunotoxicology. This is the case for allergy mechanisms with the emergence of the pi-concept developed by W. Pichler and the identification of T lymphocytes recognizing small molecules such as beta-lactams. But understanding immunotoxic effects over time is also achieved through accidents or side effects linked to the use of products that modulate immunity: therapeutic antibodies and "cytokine release" "immune checkpoint inhibitors" and "autoimmune" diseases. Recent advances in research have finally made possible to identify the “Key Characteristics” that allow the identification of an immunotoxic product and also to define an AOP (Adverse Outcome Pathway) for skin allergy following exposure to chemical products.

October 16 | 09:15–10:00 | Guobin Hall

KL02: Nanotoxicology: Expanding the Cognitive Boundaries of Classical Toxicology

- *Yuliang Zhao, Institute of Nanotechnology And Intelligence (inAI), Jinan University, Guangzhou, China*

Abstract:

Nanotoxicology integrates fundamental chemical principles with biological insights to elucidate the mechanisms underlying the toxicological effects of materials at the nanoscale. As a rapidly evolving frontier in toxicology, nanotoxicology has reshaped our understanding of toxicity, with broad implications across toxicology, biomaterials, medicine, and drug delivery. Over the past two decades, our research has uncovered pivotal phenomena—including size-dependent toxicity, protein corona formation, the stealth effect, and the far-reaching effect—that have redefined the paradigms of nanomaterial safety assessment and the rational design of functional nanomaterials. This presentation aims to expand the boundaries of classical toxicology by addressing the mechanisms underlying nanotoxicological phenomena, with a focus on how nano-factors such as nano-sizes, nano-shapes, nano-surface (like surface defects electron transfer dynamics at nano–bio interfaces), AI-assisted theoretical modeling,

proposing and experimentally validating a comprehensive theoretical framework for nanotoxicology. This work seeks to redefine nanotoxicological principles, fostering safer biomedical nanomaterials by rational design to advance next-generation nanomedicines and biomedical applications.

October 16 | 10:30–11:15 | Guobin Hall

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KL03: A 40-Year Journey on the Neurotoxicity of Heavy Metals: From Worms to Humans

- *Michael Aschner, Department of Molecular Pharmacology, Albert Einstein College of Medicine, USA*

Abstract:
Over the past four decades, research led by Dr. Michael Aschner has fundamentally advanced our understanding of heavy metal neurotoxicity across biological systems—from simple invertebrate models to complex mammalian brains. This body of work has elucidated the molecular, cellular, and systemic effects of metals such as methylmercury, lead, manganese, and arsenic, leveraging a multidisciplinary toolkit spanning C. elegans, rodents, and human studies. Pioneering use of C. elegans enabled high-throughput insights into metal-induced oxidative stress, mitochondrial dysfunction, and dopaminergic neurodegeneration, offering mechanistic parallels to human neuropathologies such as Parkinson's disease. In parallel, translational investigations have characterized critical windows of susceptibility, neurodevelopmental impacts, and gene-environment interactions in mammalian and human populations. Through integration of molecular neurobiology, toxicogenomics, and epidemiology, this research continuum has informed risk assessment, therapeutic targeting, and public health policy. Dr. Aschner's work exemplifies the power of model organisms in uncovering conserved neurotoxic pathways, laying the foundation for precision neurotoxicology in the era of environmental health.

October 16 | 11:15–12:00 | Guobin Hall

KL

KL04: Avoiding a Reproducibility Crisis in Regulatory Toxicology – On the Fundamental Role of Standardisation and Ring Trials

- *Robert Landsiedel, BASF; German Toxicology Society, Germany*

Abstract:
The ongoing transition from chemical hazard and risk assessment based on animal studies to assessment relying mostly on non-animal data, requires a multitude of novel experimental methods, and this means that guidance on the validation and standardization of test methods intended for international applicability and acceptance needs to be updated. These so-called new approach methodologies (NAMs) must be applicable to the chemical regulatory domain and provide reliable data which are relevant to hazard and risk assessment. Confidence in and use of NAMs will depend on their reliability and relevance, and both are thoroughly assessed by validation. Validation demands, however, time and resources. As updates on validation guidance are conducted, the valuable components must be kept: Reliable data are and will remain fundamental. In 2016 the scientific community was made aware of the general crisis in scientific reproducibility - validated methods must not fall into this. In this commentary, we emphasize the central importance of ring trials in the validation of experimental methods. Ring trials are sometimes considered to be a major hold-up with little value added to the validation. Here we clarify that ring trials are indispensable to demonstrate the robustness and reproducibility of a new method. Further, that methods do fail in method transfer and ring trials due to different stumbling blocks, but these provide learnings to ensure the robustness of new methods. At the same time, we identify what it

would take to perform ring trials more efficiently, and how ring trials fit into the much-needed update to the guidance on the validation of NAMs.

Poster Viewing Session 01

October 16 | 12:30–13:30 | Poster Display Area

Poster #001 – #160

Symposium

October 16 | 13:30–15:30 | Guobin Hall-1

S01: The Serious Issue of Interference in Nanotoxicology

Chair: • *Mary Gulumian, North-West University, South Africa*

Summary:
Nanotoxicology is defined as the study of the adverse effects of nanomaterials on living organisms and the ecosystems. In vivo and in vitro test systems are implemented to characterize nanomaterial induced toxicity and elucidate mode of action involved with the aim of prevention and amelioration of such adverse effects. To this end, validated test methods that are developed for conventional chemicals are required to further be validated if they are to be used for nanomaterials. In the literature, numerous publications investigating the toxicity of nanomaterials have implemented these test systems without giving due consideration to the possibility of nanomaterials interfering with these test systems. There are different ways that nanomaterials interfere with these assay systems which include absorption, adsorption, or by interacting with the substrate and/or product. They may also enhance or quench the intensity of fluorophores or have catalytic activity. Ignoring this aspect in nanotoxicology may lead to the production of erroneous results and in turn hinder the elucidating mechanisms of toxicity to help in the prevention and amelioration of the observed adverse effects. For these reasons, time has come for scientific journals to reject work that still use assay systems that are known to produce interference by nanomaterials.

Schedule:

13:30–13:50 **In Vitro Toxicity Assays: Potential Assay Interferences by Nanomaterials**
Naouale El Yamani, The Climate and Environmental Research Institute, Department for Environmental Chemistry and Health, Health Effects Laboratory, NILU, Norway

13:50–14:10 **In Vitro Toxicity Assays: Potential Assay Interferences by Carbon-Based Nanomaterials**
José María Navas Antón, Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA), CSIC, Department of Environment and Agronomy, Spain

14:10–14:30 **Necessity of Accurate Assessment of the Rate Limiting Step in Initiation of Inflammation**
Mary Gulumian, North-West University, South Africa

14:30–14:50 **Serious Concern with Big Data: Criteria for Journals to Accept Publications Using Assay Systems with Interference**
Kailen Boodhia, North-West University, South Africa

October 16 | 13:30–15:00 | Guobin Hall-2

S02: Toxicity of Opioids: New Insights to Understand and Face the Progressing Threat

Chair: *Bruno Mégarbane, Paris Cité University, France*

Summary:
Opioid abuse and misuse are serious problems in developing countries. The increasing availability of analgesic opioids, recreational opioid-like drugs, and maintenance treatments for heroin addiction represents sources of abuse. Postmortem clinical findings and toxicological analysis in opioid-attributed deaths are very helpful to inform about the exact mechanisms of death, including the roles of tolerance, abstinence, drug abuse and drug–drug interactions. Experimental studies and clinical observations in human poisonings are able to identify possible mechanisms of toxicity, some of them being common to the different opioids, while others are specific to each marketed opioid molecule like codeine, methadone, buprenorphine and tramadol. Opioid-induced glial activation opposes opioid analgesia and enhances opioid tolerance, dependence, reward and respiratory depression. Such effects can occur, not via classical opioid receptors, but rather via non-stereoselective activation of toll-like receptor 4 (TLR4), a recently recognized key glial receptor participating in neuropathic pain as well. One recent strategy to increase opioid-related antinociceptive properties and overcome major side-effects involves the creation of multifunctional compounds which contain hybridized structures, including the combination of opioids with other bioactive neurotransmitters and peptide hormones involved in pain perception.

Schedule:

13:30–14:00 **Toxicological and Pathological Findings in Opioid-Related Deaths**
Lydia Bennedich Kahn, Department of Oncology–Pathology, Karolinska Institute & Swedish National Board of Forensic Medicine, Sweden

14:00–14:30 **Opioid-Related Mechanisms of Neuro-Respiratory Toxicity: Interindividual Variability and Drug-Drug Interactions**
Bruno Mégarbane, Paris Cité University, Department of Medical and Toxicological Critical Care, Lariboisière Hospital, France

14:30–15:00 **Engineering Hybrid Peptidomimetics for Improved Pain Treatments**
Steven Ballet, Vrije Universiteit Brussel, Belgium

October 16 | 13:30–15:30 | Guocui Hall

S03: Systemic and Next Generation Toxic Effects of Inhaled Carbonaceous Ultrafine Particles

Chair: *Flemming R. Cassee, Utrecht University, The Netherlands*

Summary:
The World Health Organization has called for more research on the implications of exposure to ultrafine particles (UFP) on human health, defined as particle < 100 nanometers. Due to the lack of air quality monitoring of UFP, hardly any epidemiological studies have been performed. UFP has been a topic for particle toxicologist since the beginning of the century with recently also more interest in other emission sources than road traffic. In addition, due to the evidence that ultrafine particles can more easily be transported across biological barriers such as the lung–blood and blood–brain barrier, the focus has shifted toward effects on other organs than those that form the port of entry (lung, gastrointestinal tract). For example, Miller et al (2017) showed that particles in the nanometer size range can accumulate at sites of vascular disease and also have a very long half time based on urinary analyses. Bongaerts et al reported carbon ultrafine particles can reach the fetus. In this session the latest findings on system effects of ultrafine particles on secondary organs after inhalation will be presented.

Schedule:

13:30–14:00 **Investigation of the Priming Effect of Inhaled Carbon Nanoparticles on the Lung**
Roel P.F. Schins, Department of Pharmacology and Toxicology, NUTRIM, Maastricht University, The Netherlands

14:00–14:30 **Small Particles, Big Impact: Neurotoxic Effects of Early-Life Exposure to Ultrafine Carbonaceous Particles**
Kenneth Vanbrabant, Centre for Environmental Sciences, Hasselt University, Belgium

14:30–15:00 **Early-Life Exposure to Ultrafine Particles from Air Pollution Affects Proximal Tubular Epithelial Cells Development and Resilience**
Alessandra Tammaro, Department of Pathology; Amsterdam Cardiovascular Sciences; Amsterdam Infection and Immunity
Amsterdam UMC, University of Amsterdam, The Netherlands

15:00–15:30 **Aircraft Cabin Air Quality Assessment of Pulmonary and Neurological Effects of Contaminants Including Ultrafine Particles**
Flemming R. Cassee, Institute for Risk Assessment Sciences, Utrecht University & National Institute for Public Health and the Environment (RIVM), The Netherlands

October 16 | 13:30–15:30 | Guohua Hall

S04: Modernising Approaches to Safety Assessment Through Use of In Silico Approaches in Decision-Making

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

Summary:
In silico/computational approaches can provide useful information to inform chemical safety assessment. These methods are being increasingly used across all sectors for internal decision-making and there are moves towards application within a regulatory context. These approaches have the potential to decrease the current reliance on traditional toxicity testing in animals (e.g. through use for screening and/or prioritization) but can also be used to inform and/or improve studies that may still need to be conducted in animals (e.g. to inform dose or species selection). In silico approaches are higher-throughput and less resource-intensive and therefore are associated with reduced animal use. They can also increase testing and predictive capacity to improve safety assessments. This session will showcase collaborative examples of how developers and industry-users have worked together to increase confidence in, and acceptance of, in silico-based approaches for safety assessment.

Schedule:

13:30–14:00 **Opportunities for the Use of In Silico NAMs Within Next Generation Risk Assessment of Cosmetic Ingredients**
Bruno Campos, Unilever Safety & Environmental Assurance Centre, UK

14:00–14:30 **Development of In Silico Tools Based on Curated Toxicological Databases**
Sylvia E. Escher, Fraunhofer Institute for Toxicology and Experimental Medicine, Germany

14:30–15:00 **An End-User Perspective on Supporting the Development of a QSAR Model to Predict Human Respiratory Irritancy of Single Compounds and Mixtures**
Chantal Smulders, Shell

15:00–15:30 **Drug Safety and Efficacy Evaluation Using AI-Informed Modelling & Simulation**
Blanca Rodriguez, Department of Computer Science, University of Oxford, UK

October 16 | 13:30–15:30 | Guobin Hall-1

S05: Unlocking the Future of Safety: NAMs and MPS

Chairs: ● *Paul L. Carmichael, Unilever Safety & Environmental Assurance Centre (SEAC), UK*
● *Jose Manautou, University of Connecticut, USA*

Summary:
New approach methodologies (NAMs) can provide the necessary information for chemical risk assessment without using animal tests. Significant advancements have been made in developing tools like computational models, microphysiological systems, and 'omics' technologies. However, there is often a lack of confidence in applying these methods within a regulatory setting. This symposium aims to raise awareness of NAMs and explore how their regulatory application can be accelerated by overcoming significant barriers. Key objectives include showcasing current uses of NAMs, identifying barriers and scientific gaps, and exploring ways to speed up validation and qualification. Many guidelines exist for developing and adopting new in vitro toxicological test methods, which are now routinely used to evaluate drug and chemical safety. Microphysiological systems (MPS) or tissue chips may address shortcomings in drug development by improving clinical efficacy and eliminating the need for animal-to-human extrapolation. Despite their promise, the complexity and cost of these models' present adoption challenges. This symposium will bring together experts to discuss building confidence in using microphysiological systems as decision-informing tools in regulatory science.

Schedule:

13:30–14:00 **Fit for Purpose Evaluation of a NAM-Based Systemic Toxicity Toolbox**
Paul L. Carmichael, Unilever Safety & Environmental Assurance Centre (SEAC), UK

14:00–14:30 **The Significance of Mechanistic Evidence in NGRA: Is Key Characteristics-Structuralized NAMs a Reasonable Approach?**
Jingbo PI, China Medical University, China

14:30–15:00 **A Pharma Perspective on the Use and Utility of MPS for Drug Safety Assessment**
Remi Villenave, Pharma Research and Early Development, Switzerland

15:00–15:30 **Perspective on Qualification of the Microphysiological Systems for Regulatory Use**
Yoko Hirabayashi, National Institute of Health Sciences, Japan

October 16 | 13:30–15:30 | Guoxing Hall

S06: Safety Assessments for Dietary Supplements and Herbal Products

Chairs: ● *Ayşe Nurşen Başaran, Başkent University, Turkey*
● *Nan Mei, United States Food and Drug Administration (FDA), USA*

Summary:
According to the WHO report, Traditional and Complementary Medicine (T&CM) is an important health resource in many countries, especially in Asian countries. T&CM products include herbs, herbal preparations, and herbal products. There is an increasing global interest in the use of botanicals or derivative products because people believe that such products as "natural" may be beneficial to health. However, the complex chemical nature of herbal dietary supplements makes it difficult to evaluate their efficacy and safety. The reported adverse effects have raised concerns of public health risks regarding the concentration, composition, and individual contaminants of herbal supplements. The WHO Traditional Medicine Strategy has announced to strengthen quality assurance, safety, proper use, and effectiveness of T&CM; and the International Agency for Research on Cancer (IARC) has assessed the carcinogenicity

of some herbal products, and part of them are classified as Group 2B (possibly carcinogenic to humans). Since little has been done to determine the potential risks associated with prolonged or high-dose use of herbal products, toxicological profiles of many herbal products that are currently on the market need to be scientifically evaluated. In this proposed symposium, safety issues about the herbal products will be discussed by scientists from different countries.

Schedule:

13:30–14:00 **The Serious Adverse Reactions Due to the Adulteration of Herbal Products with Chemicals and Synthetic Drugs**
Ayşe Nurşen Başaran, Başkent University, Turkey

14:00–14:30 **ecNGS Reveals Increased Hepatocarcinogenic Risk of Aristolochic Acid Under Steatohepatitis Inflammation**
Yang Luan, Shanghai Jiao Tong University, China

14:30–15:00 **The Balance Between Safety and Efficacy for the Approvement of Dietary Supplements in Korea**
Mihi Yang, Sookmyung Women's University, Republic of Korea

15:00–15:30 **Malaysia's Safety Framework for Herbal and Dietary Products**
Ami Fazlin Binti Syed Mohamed, National Institutes of Health (NIH), Ministry of Health Malaysia, Malaysia

October 16 | 16:00–17:40 | Guobin Hall-1

S07: Organoids and Organ-on-a-Chip in Toxicology

Chair: *Zhongze Gu, Southeast University, China*

Summary:

This session is dedicated to presenting reports on the technological advancements and applications of cutting-edge analytical platforms in the field of toxicology, with a particular emphasis on organoid and microphysiological system (MPS) platforms, as well as integrations with AI technology. Microphysiological systems, recognized as one of the World's Top 10 Emerging Technologies at the Davos Forum in 2016 and endorsed by the FDA 2.0 and FDA 3.0 frameworks, represent the forefront of in vitro toxicological research systems. This forum aims to assemble a distinguished panel of experts in MPS research, comprising Prof. Dan Tagle, the director of the US MPS Consortium, Prof. Uwe Marx, the chief scientist at TissUse, a pioneering German organ-on-a-chip enterprise, Prof. Thomas Hartung from Johns Hopkins University, Professor Jay Hickman affiliated with both Cornell University and Hesperos Inc., Prof. Seiichi Ishida from NIEH in Japan, and Dean and Prof. Gu Zhongze from Southeast University in China. These esteemed scholars will introduce novel technological paradigms for toxicological research and application, encompassing various microphysiological systems that mimic different human organs and spanning multiple model frameworks.

Schedule:

16:00–16:20 **The Innovation of Organ-on-a-Chip in Toxicology Research**
Zhongze Gu, Dean of State Key Laboratory of Digital Medical Engineering, Southeast University, China

16:20–16:40 **MPS: Looking Forward to Regulatory Acceptance**
James Hickman, Hesperos, Inc., USA

16:40–17:00 **Introduction of the Development of MPS in Japan and Their Way to the Regulatory Acceptance**
Seiichi Ishida, National Institute of Health Sciences, Japan

17:00–17:20 **Human Multi-Organ-Chips Advancing from Toxicology Testing Toward Preclinical**

"Safficacy" Evaluation In Vitro
Uwe Marx, CEO & CSO, TissUse GmbH, Germany

17:20–17:40 **Qualifying the Soluble and Mechanical Environments of Microphysiological Systems for Enhanced Regulatory Utility**
Alastair Stewart, ARC Training Centre for Personalised Therapeutics Technologies, Department of Biochemistry and Pharmacology, School of Biomedical Sciences, University of Melbourne, Australia

October 16 | 16:00–18:00 | Guobin Hall-2

S08: Pesticide and Herbicide Exposure: From Risk Assessment to Morbi-Mortality Reduction

Chairs: ● *Martin F. Wilks, University of Basel, Switzerland*
● *Bruno Mégarbane, Paris Cité University, France*

Summary:
The use of pesticides/herbicides still seems necessary to feed humanity, especially in overcrowded or developing countries. In the developing countries, pesticide-free agriculture has also failed to prevail. The use of these chemicals is associated with vital risks in acute exposure and a health hazard in chronic exposure, particularly in exposed workers. The whole toxicological scientific community tries by multiple approaches to understand the mechanisms of toxicity involved and to limit their scope by regulatory measures, risk assessment and monitoring, and measures to improve intoxicated patient management. The objective of this symposium is to make an updated inventory of the scientific progress in each of these areas and to verify its effectiveness on morbidity and mortality possibly induced by pesticide/herbicide exposure.

Schedule:

16:00–16:30 **Mixed Organophosphate Poisoning: An Emerging Toxicological Crisis in LMICs**
Fazle Rabbi Chowdhury, Centre for Cardiovascular Science, University of Edinburgh, UK

16:30–17:00 **Acute Pesticide Exposure & Antidote Therapy**
Bruno Mégarbane, Paris Cité University, Department of Medical and Toxicological Critical Care, Lariboisière Hospital, France

17:00–17:30 **Glyphosate: Toxicity, Cancer Risk and the Role of the Formulation**
Martin F. Wilks, University of Basel, Switzerland

17:30–18:00 **Pesticide Regulations & Impact on Mortality by Suicide**
Michael Eddleston, Centre for Pesticide Suicide Prevention, Centre for Cardiovascular Science, University of Edinburgh, UK

October 16 | 16:00–18:05 | Guocui Hall

S09: Interdepartmental Alternatives, Reductions, and Optimizations of Acute Toxicity Tests

Chair: ● *Fiona Sewell, UK National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs), UK*

Summary:
Acute toxicity tests are conducted as part of global regulatory risk assessment and hazard classification packages for industrial chemicals and agrochemicals. Often referred to as the acute toxicity 'six-pack', tests address the following endpoints: acute oral toxicity, acute dermal toxicity, acute inhalation toxicity, eye irritation/corrosion, skin irritation/corrosion and skin sensitization. These tests are carried out in

vertebrates for the assessment of ecological safety (where fish and birds are largely used), and effects on human health (using rodents). Historically, the aim of acute toxicity tests has been to determine the dose/concentration, which is lethal to 50% of the animals treated, therefore associated with suffering. Large numbers of animals can be used for this purpose and there is great scope to apply 3Rs principles – reduction, refinement and replacement of animals – in this area of testing. This symposium brings together toxicologists from different sectors and geographies to share experience of applying the 3Rs within acute toxicity testing.

Schedule:

16:00–16:30 **Refining and Removing Global Requirements for Mammalian Acute Toxicity Testing Across Sectors**
Mark Blee, UK National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs), UK

16:30–17:00 **Applying the 3Rs in Fish Acute Toxicity Tests for Chemicals Safety Assessments**
Adam Lillicrap, Norwegian Institute for Water Research (NIVA), Norway

17:00–17:30 **Case Studies for Assessing Acute Oral Toxicity Without Animal Testing for Cosmetic Ingredients**
Hajime Kojima, Sanyo-Onoda City University, Japan

17:30–18:00 **Progress with Assuring Consumer Safety of Cosmetics Without Animal Testing**
Carl Westmoreland, Independent & the Former Director of Science & Technology Science, Unilever, UK

October 16 | 16:00–18:00 | Guohua Hall

S10: PARC – New Approaches to Model Kinetic Properties

Chair: *Doris Marko, University of Vienna, Austria*

Summary:

The PARC project (Partnership for the Assessment of Risks from Chemicals) aims to close data and knowledge gaps for priority compounds by developing NAM based assessments. The understanding of the absorption, distribution, metabolism and excretion of xenobiotic compounds a central assessment element in vitro to in vivo extrapolation and therefore of high importance for next generation risk assessment. Organised in four presentations, the symposium will provide insights into physiological based kinetic modelling approaches, which will evaluate the kinetic properties of Alternaria toxins and enniatins. To date, there are no PBK models for these emerging mycotoxins in any species. The talk will present a first modelling attempt using in vitro and in silico data (NAMS). It will discuss how bottom-up PBK modelling, as presented here, will facilitate the scientific community to adopt alternative ways to improve the assessment of ADME, whether common or specific to each of these toxins.
-Develop a tiered testing strategy for volatile compounds. Different in vitro barrier models will be compared to model their absorption within the different regions of the respiratory tract.
-Assess the impact of the human microbiome on the biotransformation of chemicals and their uptake into the systemic circulation.

Schedule:

16:00–16:30 **A Tiered Testing Strategy to Assess Absorption of Volatile Compounds**
Sylvia Escher, Fraunhofer ITEM, Germany

16:30–17:00 **First Physiologically Based Modeling of Alternaria Toxins**
Doris Marko, University of Vienna, Austria

17:00–17:30 **Quantifying the Gut Microbiome's Impact on Toxicokinetics by Physiologically Based**

Kinetic (PBK) Modeling
Georg Aichinger, Laboratory of Toxicology, Department of Health Science and Technology, ETH Zürich, Switzerland

17:30–18:00 **PBK Model-Based QIVIVE for a NAMs Based Assessment of Emerging Mycotoxins**
Nynke Kramer, Toxicology Chair Group, Wageningen University, The Netherlands

October 16 | 16:00–18:00 | Guobin Hall-1

S11: The Westward Movement of Botanicals

Chairs: ● *Kelly Magurany, NSF International, USA*
● *Shannon Cousineau, NSF International, USA*

Summary:
Humans have been looking after their health for thousands of years. From ensuring the balance of 'humors' to cold-water therapy, our understanding of health continues to evolve. While health and ill health were initially "dictated by the Gods", the ancient Greeks were the first to look at human biology. Eastern medicine refers to various organically integrated practices encompassing spiritual, social, and temporal health determinants and underscores illness prevention. Standardized formulations of botanical mixtures and herbal extracts, informed by centuries of use, are adjusted to novel indications and to respond to specific patient characteristics and lifestyles. Here, the future may lie in the improved recapitulation of ancient Eastern approaches married to modern Western technology informed by ancient experience. This session aims to provide an overview of the westward movement and the scope of key botanicals being promoted for improved health. In addition, safety considerations and regulatory pathways that allow for premarket approval in the European Union and North America, including US FDA GRAS (generally recognized as safe) and NDI (new dietary ingredient) paradigms, will be discussed.

Schedule:

16:00–16:30 **The Western Movement**
Sakan Warinhomhoun, Rangsit University, Thailand

16:30–17:00 **Generally Recognized as Safe/New Dietary Ingredients**
Shannon Cousineau, NSF, USA

17:00–17:30 **Regulatory Perspectives**
A. Wallace Hayes, University of South Florida, USA

17:30–18:00 **Botanicals and Herbal Medicines**
Peter Pressman, University of Maine, USA

October 16 | 16:00–18:30 | Guoxing Hall

S12: The Science, Application and Management in Risk Assessment

Chair: ● *Ying Wang, Procter & Gamble Technologies (Beijing) Ltd., China*

Summary:
In the past several years, many new regulations and standards have been issued for the safety/risk assessment of chemicals and consumer goods in China, such as multiple guidelines for cosmetic safety assessment issued by the National Medical Products Administration (NMPA), the technical guidelines for environmental and health hazard assessment of chemical substances (trial) issued by the Ministry of Environmental Protection, etc. Meanwhile, new approaches like NAMs, NGRA and IATA have been developed and gradually transformed for safety assessment. From regulatory agencies, higher attention

has been paid to the safety of chemicals and products, and higher requirements have been put forward for safety assessors. Therefore, to advance science and better enable the practice of risk assessment in China, we will conduct a symposium plus roundtable discussion afterwards for theme of “the science, application and management in risk assessment”, which will invite both international and domestic speakers to share and exchange the challenge and opportunity together. Hopefully this will strengthen the confidence of risk assessment practice in China.

Schedule:

16:00–16:25 **The Future Is Now: Implementing Animal-Free Safety Assessment for Cosmetics**
David Allen, International Collaboration on Cosmetics Safety (ICCS), USA

16:25–16:50 **The Development, Challenge and Opportunity of Risk Assessment in China**
Xingfen Yang, Southern Medical University, China

16:50–17:15 **Use of NAMs to Refine and Strengthen SAR Read-Across**
Corie Ellison, The Procter & Gamble Company, USA

17:15–17:40 **Discussion on the Practice of Safety Assessment for Cosmetics Under Regulatory Framework in China**
Ni Lin, National Institutes for Food and Drug Control (NIFDC), China

17:40–18:30 **Roundtable Discussion**

Friday, October 17

Symposium

October 17 | 08:00–10:00 | Guobin Hall-1

S13: Mapping Human Immune Development and New Approach Methodologies to Test Its Vulnerability to Toxicants

Chairs: ● *Fenna Sillé, Johns Hopkins University, USA*
● *Norbert E. Kaminski, Michigan State University, USA*

Summary:
Interest in developmental immunotoxicity (DIT) has grown due to the rise in immune-mediated developmental disorders in children linked to environmental exposures. The developing immune system is particularly sensitive to chemical and environmental stressors during critical prenatal and postnatal periods, leading to long-term dysfunction. Understanding age-related vulnerability to immunotoxicants is crucial. Recent advances have filled critical knowledge gaps about the developing immune system. Efforts to map human immune development using high-dimensional cytometry, single-cell RNA sequencing, antigen-receptor sequencing, and spatial transcriptomics have provided valuable insights. Immune mapping from infancy to early adulthood has enhanced our understanding of how aging influences immune responses and disease susceptibility. Such human immune cell atlas is also vital for investigating DIT risk. Traditionally, DIT risk assessments relied on animal models, with limited endpoints and developmental windows, and limitations in scalability, high-throughput, and human translatability. Developing predictive NAMs is essential to better understand DIT and for evaluating more chemicals across a broader range of biological effects in a shorter timeframe with fewer resources. This session will convene immunologists and toxicologists to discuss the latest advances in human immune mapping, challenges in developing precise, predictive, and translatable NAMs for DIT, and explore examples with high potential for regulatory screening.

Schedule:

08:00–08:30 **Developmental Immunotoxicity Testing: Challenging the Status Quo**
Fenna Sillé, Johns Hopkins University, Bloomberg School of Public Health, Center for Alternatives to Animal Testing (CAAT), USA

08:30–09:00 **An Immune Map of Human Body Across Ages and Sexes Based on Single-Cell Deconvolution**
Xianwen Ren, Institute of Zoology, Chinese Academy of Sciences, China

09:00–09:30 **Microfluidic Models of Human Bone Marrow and Lymph Node for Immunotoxicity Studies**
Leopold Koenig, TissUse GmbH, Germany

09:30–10:00 **Human Umbilical Cord Blood Derived CD34+ Hematopoietic Stem Cells as an In Vitro Model for Investigating Developmental Immunotoxicity**
Norbert E. Kaminski, Michigan State University, USA

October 17 | 08:00–10:05 | Guobin Hall-2

S14: New Horizons in Environmental Toxicology

Chair: ● *Huan Meng, National Center for Nanoscience and Technology (NCNST), China*

Summary:
In response to the escalating release of diverse chemicals and materials into our environment, there's an urgent need for comprehensive assessments of their environmental and health risks. Join us for a dynamic exploration of "New Horizons in Environmental Toxicology," where we will delve into the latest advancements, challenges, and innovations shaping the field. This symposium will bring together leading experts and researchers to discuss emerging trends, novel methodologies, and cutting-edge findings in environmental toxicology. From understanding the impact of emerging contaminants to exploring innovative approaches for risk assessment and mitigation, attendees will gain valuable insights into the complex interactions between pollutants and ecosystems. This symposium offers a unique opportunity to engage with the forefront of environmental toxicology and contribute to the pursuit of a safer, healthier planet.

Schedule:

08:00–08:25 **Structural Differences in Oxygenated PAH Developmental Toxicity**
Daniel Schlenk, University of California in Riverside, USA

08:25–08:50 **Safe-by-Design Metal-Phenolic Network Nanocomposites for Environmental Remediation**
Monika Mortimer, National Institute of Chemical Physics and Biophysics, Estonia

08:50–09:15 **Synthesis and Characterization of Novel Antibacterial and Antifungal Silver-Chitosan Nanocomposites: A Mechanistic Study**
Kaja Kasemets, National Institute of Chemical Physics and Biophysics, Estonia

09:15–09:40 **Chronic Exposure to Titanium Dioxide Induces Commensal-to-Pathogen Transition in Escherichia coli**
Chengdong Zhang, Beijing Normal University, China

09:40–10:05 **Protein Corona and Its Toxicology Implications**
Iseult Lynch, University of Birmingham, UK

October 17 | 08:00–10:00 | Guocui Hall

S15: Airborne Micro- and Nanoplastics: Comprehensive Overview of Exposure, Toxicity and Risk Mitigation Strategies

Chair: *Robert Landsiedel, German Toxicology Society, Germany*

Summary:
In response to the escalating release of diverse chemicals and materials into our environment, there's an urgent need for comprehensive assessments of their environmental and health risks. Join us for a dynamic exploration of "New Horizons in Environmental Toxicology," where we will delve into the latest advancements, challenges, and innovations shaping the field. This symposium will bring together leading experts and researchers to discuss emerging trends, novel methodologies, and cutting-edge findings in environmental toxicology. From understanding the impact of emerging contaminants to exploring innovative approaches for risk assessment and mitigation, attendees will gain valuable insights into the complex interactions between pollutants and ecosystems. This symposium offers a unique opportunity to engage with the forefront of environmental toxicology and contribute to the pursuit of a safer, healthier planet.

Schedule:

08:00–08:30 **Green Process Value Chain Approach to Prevent Micro/Nano Plastics (MNP) From Entering the Environment**
Bernd Albert Sachweh, International Panel of Mesoscience (IPM), CAS Institute of Process Engineering, China

08:30–09:00 **Advancements in Aerosol Measurement and Aerosol Filtration: A Path Towards a Clean and Sustainable Environment**
David Y.H. Pui, University of Minnesota, USA

09:00–09:30 **Inflammation-Related Key Events Stimulated by Micro- and Nanoplastics**
Raymond Pieters, Institute for Risk Assessment Sciences, Utrecht University, The Netherlands

09:30–10:00 **Toxicological Effects of Inhaled Micro- and Nanoplastic Particles: A Study of Polystyrene and Polyamide in Rats**
Lan Man-Hock, BASF SE, Department of Toxicology and Ecology, Germany

October 17 | 08:00–10:00 | Guohua Hall

S16: AI-Empowered Environmental Computational Toxicology

Chair: *Jingwen Chen, Dalian University of Technology, China*

Summary:
The proposed symposium aims to explore the intersection of environmental science & engineering, computational toxicology, and artificial intelligence (AI). The symposium will bring together experts from academia, industry, and regulatory agencies to discuss the latest advancements, challenges, and opportunities in leveraging AI for understanding the impact of emerging pollutants on human and ecological health. The symposium focuses on the application of AI techniques in environmental computational toxicology, enabling the efficient prediction of the exposure, hazards, and risks of chemicals, and identification of emerging pollutants. Key topics to be addressed include the development of innovative computational models, integration of diverse data sources, and the use of advanced AI algorithms for chemical exposure, hazards, and risk assessment. It is also important to design and use green alternative chemicals to promote integrated social, economic, and environmental sustainability. Generative AI techniques are expected to propose innovative solutions for the design of green alternative chemicals, which remains a pivotal research topic in the symposium. Attendees will leave with interdisciplinary insights into the potential of AI-empowered environmental computational toxicology methodologies for safeguarding human and ecological health in the face of emerging pollutants, harnessing the collaboration for a sustainable world.

Schedule:

08:00–08:30 **AI-Empowered Environmental Computational Toxicology on Risk Prediction and Control of Chemicals**
Jingwen Chen, Dalian University of Technology, China

08:30–09:00 **Predictive Models for ABC Transporter Inhibition and Chemical Efflux: Data Collection, Model Development, and Application for Predicting Chemical Properties and Toxicities**
Hao Zhu, Tulane University, USA

09:00–09:30 **Unlocking Safer Futures: Computational Toxicology Models Shaping Next Generation Risk Assessment (NGRA)**
Jin Li, Unilever Safety, Environment and Regulatory Sciences (SERS), UK

09:30–10:00 **Modernizing Environmental Chemical Risk Assessment Through an AI-Powered Dose-Response Modeling System**
Kan Shao, Department of Environmental and Occupational Health, School of Public Health, Indiana University, USA

October 17 | 08:00–10:00 | Guibin Hall-1

S17: Toxicities from Traditional Pharmaceutical Drugs: New Insights into the Mechanisms and Therapeutic Approaches

Chair: ● *Bruno Mégarbane, Paris Cité University, France*

Summary:
Pharmaceutical drugs used since decades still represent the only available therapeutic solutions to manage some major pathologies. Although their benefit has been largely established, they are still representing concerns with life-threatening poisonings and persistent gaps in the understanding of their mechanisms of toxicity. Acetaminophen, lithium, metformin, and local anaesthetics are the most important examples of such drugs. New insights in toxicity, development of new applications, and identification of potential new antidotes are susceptible to modify the management strategy of poisoned patients and offer some encouraging perspectives to improve outcome. The purpose of this symposium is 1- to update the mechanisms of toxicity of these various pharmaceuticals with a focus on the novel involved pathways; and 2- to present translational data from the bench to the bedside showing how experimental data may expand their therapeutic use while improving the safety of their administration and the outcome of intoxicated patients.

Schedule:

08:00–08:30 **Acetaminophen Toxicity: Role of the c-Jun N-Terminal Kinase Pathway and Benefits of Fomepizole**
Hartmut Jaeschke, University of Kansas Medical Center, USA

08:30–09:00 **Metformin Toxicity: Understanding Mitochondria Impairment and Expanding Therapeutic Applications**
Lucie Chevillard, Paris Cité University, France

09:00–09:30 **Lithium Toxicity: Understanding Brain Distribution Variability to Improve Elimination**
Bruno Mégarbane, Paris Cité University, Department of Medical and Toxicological Critical Care, Lariboisière Hospital, France

09:30–10:00 **Local Anaesthetics Toxicity: Evidence and Controversies on Lipid Emulsion**
Michael Fettiplace, University of Illinois, USA

October 17 | 08:00–10:10 | Guoxing Hall

S18: Air Pollutants and PM2.5 – Chemical Composition and Health Consequences

Chairs: ● *Tsung-Jung Liu, National Yang-Ming Chiao-Tung University, Taiwan, China*
● *Ying-Jan Wang, National Cheng Kung University, Taiwan, China*

Summary:
Lung cancer is estimated to cause approximately 1.4 million cancer cases globally each year and has been the most common cancer in the world for more than two decades. Smoking and occupational exposure are known to contribute to an increase in lung cancer cases. Particulate matter pollution consists of a mixture of tiny solid and liquid droplets suspended in the air. These pollutants are composed of a variety of components, including SOx, NOx, NH3, organic chemicals, volatile metals, soil or dust particles, and allergens such as pollen or mold spores. Scientists have long believed there is a link between lung cancer and particulate matter pollution, specifically PM2.5. The environmental and health impacts of PM2.5 are an emerging research topic that require systematic research. However, the link between lung cancer and fine particulate pollution has not yet been studied in detail by many research institutions around the

world. Therefore, ICT2025 is a good platform to discuss the linkage between PM2.5 and lung cancer.

Schedule:

08:00–08:25 **From Air to Cells: The Genomic Impact of Environmental Carcinogens**
Hsuan-Yu Chen, Institute of Statistical Science, Academia Sinica, Taiwan, China

08:25–08:50 **Air Pollution and Chronic Obstructive Pulmonary Disease**
Hsiao-Chi Chuang, School of Respiratory Therapy, Taipei Medical University, Taiwan, China

08:50–09:20 **Novel Analytical and Bio-Analytical Concepts for Addressing the Composition as well as the Toxicological Impact of Airborne Particulate Matter (PM)**
Ralf Zimmermann, Division of Analytical and Technical Chemistry, Institute of Chemistry, University of Rostock, Germany

09:20–09:45 **An Exposome Approach to Evaluate the Biological and Health Effects of Air Pollution: Evidence from Multiple Studies**
Marc Chadeau-Hyam, Computational Epidemiology and Biostatistics, School of Public Health, Imperial College London, UK

09:45–10:10 **Study on the Mechanism of Pulmonary Injury Caused by Inhalation Exposure to Microplastics and Risk Assessment for Occupational Populations**
Qian Bian, Institute of Toxicology & Risk Assessment, Jiangsu Provincial Center for Disease Control and Prevention, China

October 17 | 10:30–11:45 | Guobin Hall-1

S19: Assessing the Exposure and Toxicity of Emerging Toxicants in Humans

Chair: *Yun Wang, Peking University, China*

Summary:
Emerging toxicants encompass chemical substances recently identified as potentially harmful to human health or the environment yet not extensively studied or regulated. These substances include microplastics, nanomaterials, per- and poly-fluoroalkyl substances (PFAS), pharmaceutical drugs, pesticides, personal care products, and other compounds. Monitoring and researching these substances are crucial to better understand their effects and develop appropriate regulations to protect public health and the environment. This symposium aims to underscore the critical importance of assessing exposure and health effects of emerging toxicants in human populations. As our environment evolves, new substances emerge, posing challenges to toxicological evaluation. This symposium will convene leading experts to delve into innovative methodologies and state-of-the-art research focusing on human population exposure assessment and associated health effects of emerging toxicants. Topics will encompass advancements in biomonitoring techniques, identification of novel toxicants, exploring toxicant exposure levels in different populations, and assessing the impact of toxicants on human health through population-based studies or human subjects' research. By fostering collaboration and knowledge exchange, this symposium seeks to deepen our understanding of emerging toxicants' impacts on human health and inform strategies for mitigating associated risks.

Schedule:

10:30–10:45 **Old and New Insights in the Respiratory Toxicity of Carbon-Based Nanomaterials**
Tobias Stoeger, Institute of Lung Health and Immunity (LHI), Comprehensive Pneumology Center (CPC), Helmholtz Center Munich, Germany

10:45–11:00 **Children's Third-Hand Smoke Exposure Assessment**

Yun Wang, School of Public Health, Peking University, China

11:00–11:15 **Rethinking Health in the Face of Modern Environmental Risks: The Role of Exposomics**
Roel Vermeulen, Institute for Risk Assessment Sciences, Utrecht University, The Netherlands

11:15–11:30 **Leveraging Pulmonary Nanotoxicological Discoveries for the Design of Inhalable Nanotherapeutics**
Huan Meng, National Center for Nanoscience and Technology (NCNST), China

11:30–11:45 **Toxicity of Electronic Cigarette Aerosols**
Xiang Wang, Department of Medicine, University of California, Los Angeles / California NanoSystems Institute (CNSI), USA

October 17 | 10:20–12:05 | Guobin Hall-2

S20: Advances in Reproductive Toxicology

Chair: ● *Yankai Xia, Nanjing Medical University, China*

Summary:
Reproductive toxicology faces growing challenges due to emerging contaminants, necessitating advanced technologies to uncover mechanisms and improve risk assessment. While existing studies offer insights, they often fall short in addressing the complexity of reproductive health. Recent advancements in genome editing, organ-on-a-chip systems, iPSCs, and artificial intelligence enable more comprehensive approaches, facilitating targeted screening, mechanistic insights, adaptive study design, multi-omics integration, and translational research. Emerging areas like synthetic biology and microbiome-host interactions also hold promise for further exploration. The future of reproductive toxicology is poised for significant progress, driven by technological innovation and evolving research paradigms. This symposium will unite experts from toxicology, genomics, exposome research, and cell biology to discuss the latest opportunities, advances, and challenges in the field. Through interdisciplinary collaboration, we aim to deepen understanding of reproductive health risks and pave the way for impactful solutions.

Schedule:

10:20–10:35 **Advancements in Reproductive Toxicology**
Yankai Xia, Nanjing Medical University, China

10:35–10:50 **Where the Exposome Meets Toxicology**
Adrian Covaci, Toxicological Center, University of Antwerp, Belgium

10:50–11:05 **Impact of a Real-Life Mixture of PFAS on Placental Health**
Ana Claudia Zenclussen, Department of Environmental Immunology, Helmholtz Centre for Environmental Research GmbH - UFZ, Germany

11:05–11:20 **Developmental Toxicology in a Dish – When Stem Cell Biology Meets Environmental Health Sciences**
Guang Hu, National Institute of Environmental Health Sciences, USA

11:20–11:35 **Constitutive Androstane Receptor Regulates Germ Cell Homeostasis, Sperm Quality, and Male Fertility via AKT-FOXO1 Pathway**
David Volle, Université Clermont Auvergne, GReD Institute, France

11:35–11:50 **Research on Reproductive and Developmental Toxicity Based on the Integration of Exposome and Metabolome Analyses**
Minjian Chen, School of Public Health, Nanjing Medical University, China

11:50–12:05 **Arsenic and the Developmental Clock: Disrupted Neurotransmission from Womb to Lifespan**

Wenjuan Wang, Guizhou Medical University, China

October 17 | 10:30–11:50 | Guocui Hall

S21: Safety of Recycled Plastic for Food Packaging

Chair: ● *Songsak Srianujata, Mahidol University, Thailand*

Summary:
Plastic packaging, rPET, is the material that causes the serious pollution. It was not permitted to be used as food packaging in Thailand for long time. Recently, private and public organizations have collaborated to preserve our environment, by considering to reduce the garbage from plastic food packaging which continue increasing. One way of reducing it, the used plastic packaging can be brought back to be processed, in order to reduce the amount of new plastic, particularly rPET, used food packaging, the law of TFDA must be allowed. However, the Thai FDA in collaboration with private sectors, food and drink industries, and the academic institutions, such as Mahidol University, formed a research group to study the possibility and feasibility to allow rPET to be used. The process was done to ament the notification of Food law, but we need the result from research team including the following processes:
-The result of study on the reuse, and method of used rPET food packaging
-The study of the safety assessment process of the recycling industries, the rPET safety assessment method to test the migration by both the laboratory result and mathematical model
-The final result was compiled and submit to the sub-committee on food packaging of Thai FDA to draft the notification of food packaging to include the recycled plastic to be allowed to use
Finally, now we have the new notification on plastic to be used as food packaging. The symposium will describe some detail of the regulation items in the notification and the standards for safety. Furthermore, the process of safety assessment including the result of laboratory analyses and the mathematical model of the possible migration of chemical into food to make sure that it is safe for human consumption.

Schedule:

10:30–10:50 **Regulation of Thai FDA for Recycled PET Plastic**
Jarunee Wonglek, Thai FDA, Thailand

10:50–11:10 **Safety Assessment Process of Food Contact Material Produced from rPET**
Chaniphun Butryee, Mahidol University, Thailand

11:10–11:30 **Surrogate Migration Testing Using a Mathematical Model for Safety Assessment of Recycled PET**
Dharmendra K. Mishra, Purdue University, USA

11:30–11:50 **Thailand Risk Assessment Center as the Safety Assessment Organization of Recycled Plastic for Food Packaging**
Songsak Srianujata, Mahidol University, Thailand

October 17 | 10:30–12:10 | Guohua Hall

S22: Thresholds of Toxicological Concern – Recent Developments Across Regions and at the Interface with Computational Modelling

Chair: ● *Philip Marx-Stoelting, Federal Institute for Risk Assessment, Germany*

Summary:
The PARC project (Partnership for the Assessment of Risks from Chemicals) aims to close data and knowledge gaps for priority compounds by developing NAM based assessments. The understanding of

the absorption, distribution, metabolism and excretion of xenobiotic compounds a central assessment element in vitro to in vivo extrapolation and therefore of high importance for next generation risk assessment. Organised in four presentations, the symposium will provide insights into physiological based kinetic modelling approaches, which will evaluate the kinetic properties of Alternaria toxins and enniatins. To date, there are no PBK models for these emerging mycotoxins in any species. The talk will present a first modelling attempt using in vitro and in silico data (NAMS). It will discuss how bottom-up PBK modelling, as presented here, will facilitate the scientific community to adopt alternative ways to improve the assessment of ADME, whether common or specific to each of these toxins.
-Develop a tiered testing strategy for volatile compounds. Different in vitro barrier models will be compared to model their absorption within the different regions of the respiratory tract
-Assess the impact of the human microbiome on the biotransformation of chemicals and their uptake into the systemic circulation

Schedule:

10:30–10:50 **Application of TTC in Food Safety Risk Assessment in China**
Haixia Sui, China National Center for Food Safety Risk Assessment, China

10:50–11:10 **TTC Based on Plasma Concentrations (Internal TTC)**
Corie Ellison, The Procter & Gamble Company, USA

11:10–11:30 **Development of TTC Values for Inhalable Substances**
Sylvia Escher, Fraunhofer Institute for Toxicology and Experimental Medicine, Germany

11:30–11:50 **Thresholds for Skin Sensitization**
Isabelle Lee, Research Institute for Fragrance Materials (RIFM), USA

11:50–12:10 **Application of the TTC Concept to Complex Mixtures**
Heli Miriam Hollnagel, Dow Europe GmbH, Germany

October 17 | 10:30–12:10 | Guibin Hall-1

S23: Mechanisms of Immune System Toxicity and Therapeutic Approaches for Modifying Disease

Chair: ● *Yasumitsu Nishimura, Kawasaki Medical School, Japan*

Summary:

The toxic effects of environmental and occupational exposure to particulate and fibrous matter, chemicals, and metals are global health problems, and it is necessary that immunotoxicity should be understood more, both as activation and suppression in immune response can lead to adverse health outcomes. In addition, elucidation of immune dynamics related to therapeutic responses for related diseases is also needed to guide appropriate treatment. Therefore, the Japanese Society of Toxicology proposes a symposium session with a theme focusing on molecular mechanisms of immune system toxicity induced by various materials and therapeutic approaches for modifying the related diseases on the basis of immunotoxicological knowledge. PFAS are highly bioaccumulating chemicals that induce immune suppression. Trichloroethylene is known for producing autoimmunity, sensitization, and allergy. Asbestos causes malignant mesothelioma, in which not only carcinogenicity but also immunotoxicity is involved. Particulate matter-induced inflammation in the lung and hypersensitivity responses involve an interesting mechanism of innate immunity. Arsenic is a typical metal that exhibits toxicity, but it is also known to be applied to treat malignant diseases related to immune responses. At this symposium, the latest findings will be explained by leading experts in each field.

Schedule:

10:30–10:50 **Immune Suppression by Exposure to PFAS: Focus on B Cell Development and Metabolism**

Jamie DeWitt, Oregon State University, USA

10:50–11:10 **Environmental Pollutants as Drivers of Autoimmune Disease**
Sarah Blossom, University of New Mexico, USA

11:10–11:30 **Immune Signatures of Asbestos Exposure and Mesothelioma: Biomarkers for Asbestos-Induced Immune Suppression and Immunotherapy**
Yasumitsu Nishimura, Kawasaki Medical School, Japan

11:30–11:50 **Molecular Machinery of Particle-Caused Inflammation and Allergy in Lung Immunity**
Etsushi Kuroda, Hyogo Medical University, Japan

11:50–12:10 **Arsenic Trioxide Targeting Cys213 in PML-RARa Protein to Cure Acute Promyelocytic Leukemia**
Hua Naranmandura, Zhejiang University, China

October 17 | 10:30–12:10 | Guoxing Hall

S24: Towards Next Generation Probabilistic Risk Assessment Propelled by AI and Quantitative Mode-of-Action Ontologies

Chair: *Mathieu Vinken, Vrije Universiteit Brussel, Belgium*

Summary:
At present, risk assessment of chemicals copes with uncertainty of models and results as well as with information gaps. Traditional deterministic risk assessment tackles this flaw by using uncertainty factors, worst-case approaches and thresholds. Acknowledging uncertainty necessitates embracing probabilities and accepting the remaining risk. Probabilistic methods are set to characterize uncertainties, which in turn may improve decision-making. Actual assessments of uncertainty can be more realistic than worst-case scenarios and may allow less conservative safety margins. Furthermore, this may facilitate the ongoing transition from traditional animal-based methods towards animal-free and human-centered new approach methodologies as part of next generation risk assessment. Probabilistic risk assessment as such is not new. However, a number of tools and methods have become available in recent years, which allow to reignite and leverage probabilistic risk assessment. This actually defines the scope of the present symposium. The first presentation foresees an introduction to probabilistic risk assessment and will showcase the prominent role of artificial intelligence. The second presentation will demonstrate how using chemoinformatics can improve probabilistic risk assessment. The third presentation will discuss the generation and use of mode-of-action ontologies as mechanistic frameworks that support animal-free human hazard identification. The fourth presentation will present artificial intelligence models for (eco)toxicity prediction using the adverse outcome pathway framework. The fifth presentation will revolve around exposure assessment, including the application of physiologically based kinetic models as means to quantify mode-of-action ontologies. The gender-balanced speaker line-up consists of delegates from the US, Europe and Asia with various backgrounds as well as with academic and industrial affiliations, therefore introducing a 3Is (international, interdisciplinary and intersectoral) dimension in this symposium in addition to its focus on 3Rs (replacement, reduction and refinement of animal experimentation).

Schedule:

10:30–10:50 **Probability Is the Very Guide of Life (Cicero, 106-43 B.C.) and of Toxicology (2024+)**
Thomas Hartung, Center for Alternatives to Animal Testing (CAAT), Johns Hopkins University, USA

10:50–11:10 **From Uncertainty to Clarity: Using Chemoinformatics to Improve Probabilistic Risk Assessment**

Alexandra Maertens, Johns Hopkins University, USA

11:10–11:30 **Mode-of-Action Ontologies as the Basis for Setting Up Animal-Free Test Batteries for Hazard Identification: Liver Toxicity as a Case Study**
Mathieu Vinken, Vrije Universiteit Brussel, Belgium

11:30–11:50 **Explainable Artificial Intelligence Models for (Eco)toxicity Prediction Using the Adverse Outcome Pathway Framework**
Jinhee Choi, School of Environmental Engineering, University of Seoul, Korea

11:50–12:10 **Linking In Vitro Concentrations, Internal Tissue Concentrations and External Exposure Through Physiologically-Based Models**
Susana Proença, esqLABS GmbH, Germany

October 17 | 13:30–15:30 | Guoxing Hall

S25: Novel Strategies for Safety Assessment: A Paradigm Shift for the Future

Chairs: ● *Tianyi Jiang, Pharmaceutical Sciences Department, China Innovation Center of Roche, China*
● *Fengying Liu, Project Strategy Group, Global Nonclinical Safety and DMPK Department,*
● *Boehringer Ingelheim, Germany*

Summary:
Emerging therapeutic modalities, such as bispecific antibodies, novel peptide drugs and advanced cell and gene therapies, with high specificity to human targets, often exhibit low cross-reactivity in traditional animal species and present with various complex challenges for safety assessment. At the same time, tremendous endeavors have been made to reduce, refine and replace animal experimentation (3Rs) in light of US modernization act and European Commission's intent to phase out animal testing. All these necessitate the development of innovative safety assessment approaches. This symposium aims to provide an overview of these advancements and their potential impact. Topics include strategies to minimize the use of non-human primates in drug development, the use of transgenic animals, alternative approaches including Weight of Evidence (WoE), and special considerations for the safety assessment strategy of emerging modalities such as peptide therapeutics.
The convergence of these approaches enhances safety assessments, reduces time and cost in drug development, and leads to safer therapeutic options. This symposium of speakers from multinational pharmaceutical companies associated with R&D-Based Pharmaceutical Association Committee (RDPAC) provides a platform for experts to discuss challenges and opportunities, shaping the future of drug safety evaluation.

Schedule:

13:30–14:00 **Strategies to Minimize the Use of Non-Human Primates in Drug Development**
Bianca Feyen, Johnson & Johnson Innovative Medicine, USA

14:00–14:30 **Transgenic Animal Models for Safety Assessment**
Eunice Musvasva, Roche Pharma Research & Early Development, USA

14:30–15:00 **Alternative Approaches for Safety Assessment**
Yun Zhang, Drug Safety Research & Development (DSRD), Pfizer, USA

15:00–15:30 **Nonclinical Safety Assessment of Peptide Therapeutics**
Wei Wang, Eli Lilly and Company, USA

October 17 | 16:00–17:55 | Guoxing Hall

S26: Next Generation Risk Assessment

Chairs:
- *Philip Marx-Stoelting, German Federal Institute for Risk Assessment, Germany*
- *Zhaoping Liu, National Food Safety Risk Assessment Center, China*
- *Rivière Gilles, French Agency for Food, Environment and Occupational Health & Safety (ANSES), France*

Summary:
Traditional toxicity testing based on animal experiments has served its purpose reasonably well. Yet, in light of ethics, ever-improving methods, conceptual challenges such as mixtures and large research initiatives such as Tox21 or PARC there is strong scientific and societal pressure for a paradigm shift. Although complexity and performance of in vitro and in silico methods have seen considerable progress, the incorporation of the respective approaches into regulatory assessments remains challenging. This is not the least because former projects often fell short to address specific regulatory needs. In order to overcome this, the "European Partnership for the Assessment of Risks from Chemicals" (PARC) as well as the ASPIS cluster have addressed various challenges associated with innovating chemical risk assessment. In this session, speakers will report on progress from these EU initiatives, but also taken into consideration the global perspective, how NAMs could be used to address complex endpoints like developmental and reproductive toxicity (DART) or in risk assessment of complex toxins like microcystins.

Schedule:

16:00–16:25 **PARC**
Philip Marx-Stoelting, German Federal Institute for Risk Assessment, Germany

16:25–16:50 **Using NGRA to Analyse Microcystin Toxicity**
Daniela Morais Leme, Federal University of Paraná (UFPR), Brazil

16:50–17:15 **The ASPIS Safety Profiler Algorithm (ASPA)**
Sylvia Escher, Fraunhofer ITEM, Germany

17:15–17:30 **Improving the EST for NGRA of DART Substances**
Seung-Jin Lee, Korea Institute of Toxicology (KIT), Korea

17:30–17:55 **AI-Driven Text Mining and NLP for Advancing AOP Development in Chemical Risk Assessment: A PARC Perspective**
Vikas Kumar, Universitat Rovira i Virgili (URV), Spain

Poster Viewing Session 02

October 17 | 12:30–13:30 | Poster Display Area

Poster #161 – #320

Workshop

October 17 | 13:30–15:30 | Guobin Hall-1

W01: Drug Toxicology and Drug Safety Evaluation

Chair:
- *Quanjun Wang, Drug Toxicology and Safety Evaluation Committee of the Chinese Society of Toxicology, China*

Summary:
This seminar focuses on the specialized topics of Drug toxicology and drug safety evaluation, featuring senior pharmacotoxicology experts from China and the United States, as well as professors with extensive research experience in multinational pharmaceutical companies. The event aims to analyze and discuss current hotspots and challenges in pharmacotoxicology research. Through presentations by leading experts from both China and the U.S., attendees engaged in pharmacotoxicology and non-clinical evaluation studies will gain substantial insights and inspiration to advance their work.

Schedule:

13:30–13:50 **Developing Non-Clinical Safety Assessment Strategy for New Drug Development**
Yun Zhang, Drug Safety Research & Development (DSRD), Pfizer, USA

13:50–14:10 **Special Considerations in Conducting an Enhanced Pre- and Postnatal Development (ePPND) Study in Cynomolgus Monkeys of Biotherapeutics**
Linhai Qu, Saifu Laboratories Suzhou, China

14:10–14:30 **Key Considerations and Case Studies in Non-Clinical Research of Cell Therapy Products for Solid Tumors**
Wei Yang, Chinese Society of Toxicology, China

14:30–14:50 **Safety of Immunotherapy in Cancer and Autoimmune Diseases: Preclinical to Clinical Translation**
Rakesh Dixit, Unilever Safety, Environment and Regulatory Sciences, UK

14:30–15:10 **Nonclinical Safety Strategies for Cancer Immunotherapies**
Weimin Chen, Johnson and Johnson, USA

15:10–15:30 **Current Global Regulatory Frameworks for New Approach Methodologies (NAMs) and Their Application to Better Understanding of Immunotoxicology**
James Munday, Labcorp, UK

October 17 | 13:30–15:30 | Guobin Hall-2

W03: Heavy Metal Toxicity and Human Health-1

Chairs: ● *Chuanshu Huang, Oujiang Laboratory, Wenzhou, China*
● *Bing-Hua Jiang, Academy of Medical Science, Zhengzhou University, China*

Summary:
Heavy metals, including Arsenic (As), Cobalt (Co), and Lead (Pb), among others, pose substantial health risks through various exposure routes. These elements, prevalent in the environment, can accumulate in human bodies, leading to acute and chronic toxic effects.
The workshop will gather a diverse group of participants, including leading researchers, students and postdoctoral fellows to discuss the mechanisms of heavy metal-induced oxidative stress, gene expression alterations, and their broader implications on human health. The topics will also encompass the forefront of research and practical approaches towards mitigating heavy metal exposure. By fostering dialogue among experts from diverse backgrounds, the workshop seeks to enhance understanding of heavy metal toxicity's complexities and drive forward innovations in public health interventions. The goal is to equip participants with the latest knowledge and tools necessary for addressing this pressing environmental and health challenge, ultimately contributing to safer, healthier communities worldwide.

Schedule:

13:30–13:50 **Exposure to Heavy Metals and Cancer**
Ann Olsson, International Agency for Research on Cancer (IARC/WHO), France

13:50–14:10 **Crosstalk Between NRF1 and NRF2 in Osteoclastogenesis and Osteoporosis Induced by**

Prolonged Cadmium Exposure
Jingbo Pi, China Medical University, China

14:10–14:30 **Investigating the Role of Histone Acetyltransferase MYST-Mediated NLRP3 Inflammasome Activation in Microglia During Lead-Induced Neurotoxicity**
Jianbin Zhang, Fourth Military Medical University, China

14:30–14:50 **Environmental Metal Exposure and Craniosynostosis Risk**
Aihua Gu, Nanjing Medical University, China

14:50–15:10 **The Role of Transcription Factor Nrf2 in Arsenic-Induced Malignant Transformation and Its Underlying Mechanism**
Yuanyuan Xu, China Medical University, China

15:10–15:30 **Prenatal Cadmium Exposure Drives Rapsn m6A Modification to Enhance Multigenerational Susceptibility of Male Infertility**
Hua Wang, Anhui Medical University, China

October 17 | 13:30–15:30 | Guocui Hall

W05: Understanding and Mitigating Occupational Heavy Metal Exposure: A Comprehensive Approach

Chair: • *Vanitha Thurairasu, Department of Public Health, Ministry of Health, Malaysia*
Tian Chen, Capital Medical University, China

Summary:
This workshop aims to address the critical aspects of heavy metal exposure in occupational settings and its far-reaching health and ecological impacts. Bringing together experts in toxicology, public health, environmental health, and policy, this workshop will present a multi-disciplinary overview of exposure pathways, health risks, and bioaccumulation of heavy metals such as lead, mercury, arsenic, and cadmium. Sessions will cover advanced detection and monitoring techniques for occupational exposure, emphasizing cutting-edge innovations for accurate and timely assessments. The workshop will also highlight global policy frameworks and regulatory standards governing heavy metal use, disposal, and exposure limits. Real-world case studies will offer practical insights into mitigating risks and enhancing compliance. Attendees will gain a deeper understanding of the interplay between heavy metal contamination, human health, and ecological sustainability, while also discussing sustainable interventions and regulatory challenges to foster safer industrial practices and public health protection. This workshop is geared towards researchers, practitioners, and policymakers committed to advancing occupational and environmental safety.

Schedule:

13:30–13:50 **Advancements in Heavy Metal Detection and Monitoring Techniques: Innovations, Applications, and Challenges**
Ahmad Shalihin Mohd Samin, Malaysia National Poison Centre, Universiti Sains Malaysia, Malaysia

13:50–14:10 **The Study on the Repair Effect and Mechanism of Small EVs Derived from Nasal Mucosal Mesenchymal Stem Cells in the Treatment of Manganese Poisoning**
Tian Chen, Capital Medical University, China

14:10–14:30 **Ecological and Human Health Impacts of Heavy Metal Contamination: Challenges and Mitigation Strategies**
Vanitha Thurairasu, Department of Public Health, Ministry of Health, Malaysia

14:30–14:50 **Immune Regulation Patterns in Response to Environmental Pollutant Chromate Exposure-Induced Genetic Damage: A Cross-Sectional Study Applying Machine Learning Methods**

Zekang Su, Chengdu Medical College, China

14:50–15:10 **Introduction to Occupational Heavy Metal Exposure: Pathways, Risks, and Bioaccumulation**
Indika Neluwa-Liyanage, University of Sri Jayewardenepura, Sri Lanka

15:10–15:30 **Hexavalent Chromium Inhalation Exposure Induces Metabolic Reprogramming Underlying Lung Injury and Partial Endogenous Repair**
Changmao Long, Nanchang University, China

October 17 | 13:30–15:30 | Guohua Hall

W07: Strategic Assessment and Prioritization of Chemicals for Hazard and Risk Assessment

Chair: • *Virunya Bhat, World Health Organization, Switzerland*

Summary:
Governments and public health institutions especially in developing countries often need guidance and support in identifying and prioritizing chemicals and settings for risk assessment. Navigating the existing resources can be challenging, particularly when capacity is limited. The WHO Chemical Risk Assessment Network is developing and piloting a decision-making framework to help strengthen country capacity and infrastructure to identify, prioritize, and evaluate their chemical inventories for potential toxicity and risks to human health. The framework promotes existing tools and international mechanisms for chemicals management, in user-friendly and readily accessible formats, which promotes harmonization and reduces duplication of efforts. The framework was informed by a survey of the needs, tools and capacity of some developing country institutions within the Network. This session provides an overview of the framework, highlights the value in prioritizing chemicals and settings for risk assessment, and includes illustrative case studies and lessons learned from developed and developing countries. The case studies have assessed known and listed problematic compounds in the European Union, industrial chemicals, active pharmaceutic ingredients, pesticides, inorganic compounds, metals, organic compounds, highly toxic chemicals, and more, demonstrating wide applicability and utility. Prioritization frameworks based on health risks enable more cost-effective risk management and protection of public health.

Schedule:

13:30–14:00 **A Semi-Quantitative Risk-Based Prioritization Scheme for Chemicals of Concern in Nordic Countries**
Hans Sanderson, Aarhus University, Denmark

14:00–14:30 **Multi-Country Regulatory Data-Driven Hazard Assessment for the Prioritization of Chemicals**
Salmaan Inayat Hussain, Ipieca and the Malaysian Society of Toxicology, Malaysia

14:30–15:00 **Risk-Based Prioritization of Chemicals**
Engr. Ana Trinidad F. Rivera, Food and Drug Administration, Philippines

15:00–15:30 **A Tiered Decision-Making Framework for Identifying and Prioritizing National Chemical Inventories for Risk Assessment**
Virunya Bhat, World Health Organization, Switzerland

October 17 | 13:30–15:30 | Guibin Hall-1

W09: Protecting People & Planet: Integrating Human and Environmental Safety in Next Generation Risk Assessment (NGRA)

Chairs: ● *Jin Li, Unilever Safety, Environment and Regulatory Sciences (SERS), UK*
● *Shuangqing Peng, Shanghai Medicilon Inc, China*

Summary:
Unilever and the Committee of Toxicological Alternatives and Translational Toxicology (TATT) of the Chinese Society of Toxicology (CST) are co-hosting a workshop focused on next generation risk assessment (NGRA) frameworks for human and environmental health. The event brings together industry and academic experts to discuss integrating safety assessments using New Approach Methodologies (NAMs), such as computational models, in vitro systems, and omics technologies, without animal testing.

Schedule:

13:30–14:00 **Integrating Human and Environmental Data Streams to Support Safety Decisions**
Bruno Campos, Unilever – Safety, Environmental and Regulatory Science, UK

14:00–14:30 **Phosphoproteomics: A Cutting-Edge Tool for Analyzing Low-Dose Chemical Toxicity in Next-Generation Non-Animal Alternative Toxicology**
Ping Xu, Beijing Proteome Research Center, Institute of Lifeomics, China

14:30–15:00 **Knowledge-Driven Artificial Intelligence as an Effective Approach to Overcome the "Black Box" Dilemma**
Wei Shi, School of Environment, Nanjing University, China

15:00–15:30 **PBTK-IVIVE-Enhanced Risk Assessment of EDCs Using In Vitro Effect Data**
Yiping Xu, Research Center for Eco-Environmental Sciences (RCEES), Chinese Academy of Sciences, China

October 17 | 16:00–18:00 | Guobin Hall-1

W02: Application of Synchrotron Radiation Techniques in Toxicology

Chairs: ● *Xiao He, Institute of High Energy Physics, the Chinese Academy of Sciences, China*
● *Carlos Alberto Pérez, Brazilian Synchrotron Light Laboratory (LNLS), Brazil*

Summary:
Synchrotron radiation (SR) combines high brightness, a broad energy spectrum, and tunable wavelengths, positioning it as a powerful and indispensable tool in scientific research. In the field of toxicology, SR techniques have been increasingly employed to investigate the behavior and effects of various toxic substances at the molecular and cellular levels. This workshop is designed to introduce the diverse characteristics and advantages of SR techniques and their growing applications in toxicology. By bringing together beamline experts and toxicologists, we aim to demonstrate how SR techniques can deepen our understanding of the mechanisms and effects of toxicants, particularly emerging pollutants, which present novel challenges to environmental and public health. The workshop will also introduce cutting-edge SR techniques and examine their potential applications in toxicology. Moreover, we will discuss the integration of SR data with other analytical methodologies to create a more comprehensive framework for understanding toxicological phenomena. Ultimately, this workshop seeks to stimulate interdisciplinary collaborations, inspire innovative approaches, and contribute to advancing the science of toxicology. By leveraging SR techniques, we aim to enhance our ability to assess and mitigate the risks posed by toxic substances, ultimately benefiting public health and environmental safety.

Schedule:

16:00–16:20 **Nanoscopic X-Ray Analytical Techniques with Synchrotron Radiation to Assess Toxicity Mechanisms of Metals and Nanomaterials in Ecosystems**
Carlos Alberto Pérez, Brazilian Synchrotron Light Laboratory (LNLS), Brazilian Center for Research in Energy and Materials (CNPEM), Brazil

16:20–16:40 **Synchrotron Radiation-Based Characterization of Nanomaterial Biotransformation: Environmental Degradation and In Vivo Metabolism**
Xiao He, Institute of High Energy Physics, Chinese Academy of Sciences, China

16:40–17:00 **Applications of Synchrotron-Based Scanning Transmission X-Ray Microscopy in Toxicology**
Jian Wang, Canadian Light Source Inc., University of Saskatchewan, Canada

17:00–17:20 **Synchrotron-Based X-Ray Microscopy for Cell Imaging**
Ying Zhu, Shanghai University, China

17:20–17:40 **X-Ray Investigation for Aqueous–Biomembrane Interfaces at the Beamline P08 of PETRA III**
Chen Shen, Deutsches Elektronen-Synchrotron DESY, Germany

17:40–18:00 **Synchrotron Radiation- and MS-Based Analysis of Nano-Bio Interface: Composition, Structure, and Effects**
Liming Wang, Institute of High Energy Physics, Chinese Academy of Sciences, China

October 17 | 16:00–18:00 | Guobin Hall-2

W04: Heavy Metal Toxicity and Human Health-2

Chairs:
- *Chuanshu Huang, Oujiang Laboratory, Wenzhou, China*
- *Binghua Jiang, Academy of Medical Science, Zhengzhou University, China*
- *Mazhar Iqbal Zafar, Quaid-i-Azam University, Pakistan*

Summary:
Heavy metals, including Arsenic (As), Cobalt (Co), and Lead (Pb), among others, pose substantial health risks through various exposure routes. These elements, prevalent in the environment, can accumulate in human bodies, leading to acute and chronic toxic effects. The workshop will gather a diverse group of participants, including leading researchers, students and postdoctoral fellows to discuss the mechanisms of heavy metal-induced oxidative stress, gene expression alterations, and their broader implications on human health. The topics will also encompass the forefront of research and practical approaches towards mitigating heavy metal exposure. By fostering dialogue among experts from diverse backgrounds, the workshop seeks to enhance understanding of heavy metal toxicity's complexities and drive forward innovations in public health interventions. The goal is to equip participants with the latest knowledge and tools necessary for addressing this pressing environmental and health challenge, ultimately contributing to safer, healthier communities worldwide.

Schedule:

16:00–16:15 **Risk-Based Evaluation of Heavy Metals and Disinfection Byproducts in Groundwater**
Mazhar Iqbal Zafar, Quaid-i-Azam University, Pakistan

16:15–16:30 **Effects of Metal Exposome in Pregnant Women During Pregnancy and Neurodevelopmental Impairment in Offspring**
Xiaobo Yang, Guangxi Medical University, China

16:30–16:45 **Epigenetic Mechanisms of Metal Exposure in Colorectal Cancer**
Meilin Wang, Nanjing Medical University, China

16:45–17:00 **Hexavalent Chromium Inhibits Myogenic Differentiation and Muscle Regeneration**

Hong Sun, NYU Grossman School of Medicine, USA

17:00–17:15 **Cadmium Exposure Promotes the Progress of Chronic Kidney Disease Through Hippo Pathway**
Ming Gao, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China

17:15–17:30 **Dissection and Mechanism Study of Environmental Pb on Cognition and Mood Dysfunctions**
Huili Wang, Hefei University of Technology, China

17:30–17:45 **Arsenic Discordantly Regulates H3K9me3 and H3K27me3 by Selective Bias Between PRC2.1 and PRC2.2**
Fei Chen, Stony Brook University, USA

17:45–18:00 **ER Sensor Protein PERK-Coupled Autophagy Protects the Cells from Arsenite-Induced Apoptosis**
Lun Song, Beijing Institute of Basic Medical Sciences, China

October 17 | 16:00–17:45 | Guocui Hall

W06: High-Throughput Technology and Health Effects of Heavy Metal

Chairs:
- *Guang Jia, Peking University, China*
- *Hideko Sone, Graduate School of Pharmaceutical Sciences, Yokohama University of Pharmacy, Japan*

Summary:
With the rapid advancement of technology, particularly the widespread use of high-throughput technologies in medical research, it is now possible to simultaneously detect a wide array of genes, proteins, metabolites, and other biological molecules. This has provided powerful tools for biomarker screening, early monitoring, diagnosis, and the study of mechanism for metal toxicity, including investigations into the underlying health effects and prevention strategies. Compared to traditional experimental methods, high-throughput technologies offer unique advantages, particularly in detecting metal toxicity and facilitating biological monitoring. However, challenges remain in terms of testing standards, cost, validation, and the translation of these technologies into clinical practice. In light of these issues, this workshop, organized with input from esteemed professionals in academia and specialized institutions, aims to highlight current achievements and future directions in understanding the health effects of heavy metals. The session will foster constructive dialogue and interaction, driving the field toward meaningful advancements.

The health impacts of heavy metals and industrial elements remain a critical global challenge. Heavy metals such as lead, mercury, cadmium, and arsenic pose severe risks to human health, including neurotoxicity, carcinogenicity, and endocrine disruption. These metals are encountered through sources like old paint, water pipes, cigarette smoke, contaminated soil, and industrial waste, with vulnerable populations, particularly children, facing the greatest risks. Mining and industrial activities exacerbate environmental contamination, leading to significant health and ecological impacts. Understanding the mechanisms of exposure and developing strategies to mitigate these risks are essential to safeguarding public health and ecosystems.

In parallel, the study of essential and non-essential elements, such as sulfur, selenium, and tellurium — raise concerns due to environmental pollution and health risks from their extraction and manufacturing. These metals are crucial for sustainable technologies, but managing the health risks related to their use is essential. To address these challenges, cutting-edge high-throughput technologies are being harnessed to screen the effects on biological systems, identify affected genes and pathways, and develop

early warning systems for environmental contamination. These technologies enable the monitoring of heavy metal impacts, the early detection and prevention of related diseases, and the development of detoxification methods. This workshop will present the latest research and technologies to tackle these issues and share innovative strategies for mitigating health risks from heavy metals and emerging pollutants.

Schedule:

16:00-16:20 **Metabolism of Chalcogen Elements in Animals**
Yasumitsu Ogra, Chiba University, Japan

16:20-16:40 **Serum Metabolome Associated with Occupational Multi-Metal Mixture Exposure and ECG Conduction Disturbances in Lead Smelter Workers**
Fankun Zhou, Nanchang University, China

16:40-17:00 **Research on the Toxicity and Underlying Mechanism of Poorly Soluble Metal Oxide Nanomaterials**
Zhangjian Chen, Peking University, China

17:00-17:20 **Lead Contamination in African Countries**
Mayumi Ishizuka, Hokkaido University, Japan

17:20-17:40 **Respiratory Toxicity and Biomarkers of Chromates: Insights from Multi-Omics Analysis**
Guiping Hu, Beihang University, China

17:40-18:00 **Elucidating Mechanisms of Nickel Carcinogenicity to Ensure Safe Use Through Robust Risk Assessments**
Samuel Buxton, NiPERA Inc., Nickel Institute, USA

October 17 | 16:00–18:05 | Guohua Hall

W08: Joining Forces Towards the Human Exposome Project

Chair: ● *Fenna Sillé, Johns Hopkins University, USA*

Summary:
Four decades after the Human Genome Project began, it is clear that genetics explains only a fraction of overall disease risk. The primary driver of health and disease is exposure—encompassing physicochemical, lifestyle, and environmental factors. However, a significant gap remains in the quantitative understanding of these influences. The Human Exposome Project aims to systematically explore and catalog these exposures, paralleling the genomic revolution in human biology. This initiative seeks to train a new generation of scientists dedicated to unraveling the complex environmental determinants of health. By fostering global collaboration, the project will unite researchers collecting exposome data, working toward a standardized framework to define the exposome and address critical knowledge and methodological gaps. This workshop will highlight the challenges in exposome research and outline the technological and conceptual advancements needed to drive the field forward. Through international cooperation, the Human Exposome Project has the potential to transform our understanding of disease causation and prevention, ultimately complementing genomic insights with a more holistic view of human health.

Schedule:

16:00-16:25 **A Call for a Human Exposome Project**
Thomas Hartung, Center for Alternatives to Animal Testing (CAAT), Johns Hopkins University, Bloomberg School of Public Health, USA & University of Konstanz, Germany

16:25-16:50 **Recent Advances in China National Human Biomonitoring and Exposomics Research**
Xiaoming Shi, Chinese Center for Disease Control and Prevention, China

16:50-17:15 **Rethinking Health in the Face of Modern Environmental Risks: The Role of Exposomics**
Roel Vermeulen, Utrecht University, The Netherlands

17:15-17:40 **ExposomeX: Integrative Exposomic Platform Expedites Discovery of "Exposure-Biology-Disease" Nexus**
Mingliang Fang, Fudan University, China

17:40-18:05 **Global Harmonization for Exposomics: Opportunities and Challenges**
Fenna Sillé, Johns Hopkins University, USA

October 17 | 16:00–18:00 | Guibin Hall-1

W10: Aquatic Organisms as Models for Toxicity Evaluation of Emergent Pollutants

Chairs: ● *María Fernanda Cavieres, Universidad de Valparaíso, Chile*
● *Zhengtao Liu, Chinese Research Academy of Environmental Sciences, China*

Summary:
Evaluation of toxicity has traditionally been performed using terrestrial vertebrate mammals such as rodents. However, aquatic organisms may also be used as experimental models and in fact, regulatory agencies throughout the world have implemented guidelines for environmental toxicity evaluation using sentinel species including invertebrates, fish, and algae.
Most, if not all, mechanisms of action observed in vertebrate mammals can also be studied in aquatic organisms making this a viable alternative for toxicity evaluation. Moreover, aquatic organisms may be advantageous over vertebrates due to easier and cheaper handling as well as taking up less living space and having shorter life spans.
In this continuing education course, we propose to teach about the advantages of using aquatic organisms for the study of toxicity and to discuss their application and limitations when used to predict toxicity to humans. We will share our experience in using these organisms, detailing laboratory set up and requirements for the maintenance of these species, including at least a rotifer (Brachionus plicatilis), crustaceans (ostracods and Daphnia magna), planarians (planarian spp), sea urchin (Paracentrotus lividus), clams (Corbicula fluminea), fish (Danio rerio, Oncorhynchus mykiss). We will exemplify their use to study emergent pollutants such as estrogenic compounds, pharmaceuticals, pesticides and micro and nanoplastics.

Schedule:

16:00-16:15 **Introduction to the Use of Aquatic Species for Toxicity Evaluation**
María Fernanda Cavieres, Universidad de Valparaíso, Chile

16:15-16:30 **Study of the Ecotoxic Effect, Development of PNEC and Risk Assessment of Typical Pollutants**
Xiaonan Wang, Chinese Research Academy of Environmental Sciences, China

16:30-16:45 **Rotifers as Experimental Models for the Study of Estrogenicity**
María Fernanda Cavieres, Universidad de Valparaíso, Chile

16:45-17:15 **The Use of Aquatic Trophic Chain to Study the Role of Microplastics as Vectors of Pesticides**
Gabriela Aguirre Martínez, Universidad Arturo Prat, Chile

17:15-17:30 **Neurological Damage by DEHP in Zebrafish and Its Epigenetic Mechanism**
Shuhui Men, Chinese Research Academy of Environmental Sciences, China

17:30-17:45 **Molecular Biomarkers in Fish as Tools for Environmental Monitoring**
Rodrigo Orrego, Universidad de Antofagasta, Chile

17:45-18:00 **Potential Ecological Risks of Reclaimed Water: Insights into Systemic Stress and Reproductive Threats in Earthworms Revealed by Omics and Physiological Analyses**
Xinwei Wang, School of Environment, Nanjing University, China

S32 Young Toxicologist and Rising Star Forum

October 17 | 08:00–18:20 | Guoxjing Hall

S32-01: Advance in Feed Safety and Toxicology:

Chair: ● *Junhua Yang, Shanghai Academy of Agricultural Sciences, China*

Schedule:

8:00-8:15 **Potential Toxicity and Mechanisms of AFB1 and DON Individual Exposure or Co-Contamination on the Damage of HepG2 Cells**
Junhua Yang, Shanghai Academy of Agricultural Sciences, China

8:15-8:30 **Novel Technologies for Detection of Small-Molecule Pollutants in Feedstuffs**
Feifei Sun, Anhui Agricultural University, China

8:30-8:45 **Artificial Intelligence Accelerates the Transformation of Nanotoxicity Data into Critical Information**
Xiliang Yan, South China Agricultural University, China

8:45-9:00 **From Detection to Toxicity: Unraveling Metabolic Processes and Toxicological Mechanisms of Zearalenone and Deoxynivalenol**
Zhiqi Zhang, Shanghai Academy of Agricultural Sciences, China

9:00-9:15 **Multi-Omics Revealed the Biomarkers and Potential Response Mechanism of Taihe Black-Bone Chickens to Salmonella Pullorum Invasion**
Mengjun Ye, Jiangxi Academy of Agricultural Sciences, China

9:15-9:30 **Active Detoxification of Nanoplastics-Induced Hepatic Ferroptosis with Nano-Selenium**
Shengchen Wang, Yangzhou University China

9:30-9:45 **Defatted Rice Bran Attenuates Inflammation Index and Modulates Gut Microbiota–SCFAs Axis in Colitis-Associated Colorectal Cancer**
Kansuda Wunjuntuk, Faculty of Agriculture, Kasetsart University, Thailand

9:45-10:00 **Effects of phthalate exposure on the male reproductive system and antagonism of lycopene**
Yi Zhao, Northeast Agricultural University, China

S32-02: AI-empowered Computational Toxicology

Chair: ● *Jingwen Chen, Dalian University of Technology, China*

Schedule:

10:15-10:30 **AI for Toxicology - An Case Study on Deep Learning-enabled Morphometric Analysis (DLMA) for High Throughput Toxicity Screening**
Sijie Lin, Tongji University, China

10:30-10:45 **Integrating PBTK Modeling-Based Reverse Dosimetry and In Vitro-In Silico Bioassays to Derive a Health-Based Guidance Value for 9,10-Anthraquinone: A NAMs Perspective**
Haiming Jing, Beijing Center for Disease Control and Prevention, China

10:45-11:00 **Deep Learning-based 3D Vascular Morphologic Phenomics empowered the Discovery of Vascular-disruptors**
Yanhong Wei, Sun Yat-sen University, China

11:00-11:15 **Using Environmental Mixture Exposure Triggered Biological Knowledge-Driven Machine Learning to Predict Reproductive Health Outcomes**
Bin Wang, Peking University, China

11:15-11:30 **From Specific Targets to Global Prediction: A Multi-Model Approach for Assessing PFAS Liver Toxicity**

Nan Sheng, Shanghai Jiao Tong University, China

11:30-11:45 **Integrative Systematic Evidence Mapping and In Silico Molecular Docking for Prioritizing Plastic Additives Leaching from Polymers**
Chaein Chong, School of Environmental Engineering, University of Seoul, Republic of Korea

11:45-12:00 **Machine Learning Models for Screening Hazardous Chemicals and the Applicability Domain Characterization Methodology**
Haobo Wang, Dalian University of Technology, China

12:00-12:15 **Toward Smart and Sustainable Screening of Endocrine-Disrupting Chemicals: A Knowledge-Coupled, AI-Powered Framework**
Haoyue Tan, Nanjing University, China

S32-03: Artificial Intelligence Toxicology and New Technologies and Methods

Chairs: ● *Meng Qin, West China Hospital, Sichuan University, China*
● *Yiming Lu, Academy of Military Medical Sciences, China*

Schedule:

13:00-13:10 **Multi-Organs-on-a-Chip Platform Development and Application in Toxicology Research**
Zaozao Chen, Southeast University, China

13:10-13:20 **Advancing Toxicology through AI Integration with C.elegans**
Bo Xian, Beijing Center for Disease Prevention and Control, University of Electronic Science and Technology of China

13:20-13:30 **Developmental Neurotoxicity Assessment of Consumer Product Chemicals Using Machine Learning and C. elegans Models**
Siyeol Ahn, School of Environmental Engineering, University of Seoul, Republic of Korea

13:30-13:40 **A Safety-by-Design Framework for De Novo Anti-Aging Peptides with AI Toxicity Screening in C. elegans**
Yan Pan, Beijing Center for Disease Prevention and Control, University of Electronic Science and Technology, China

13:40-13:50 **Evidence-Based Practice: Clinical Diagnosis and Treatment of Acute Diquat Poisoning**
Hao Sun, Drum Tower Hospital, Nanjing University Medical School, China

13:50-14:00 **Safe and Efficient Precision Delivery System Based on Guanidinyl Macromolecules**
Meng Qin, West China Hospital, Sichuan University, China

14:00-14:10 **Engineer advanced Microphysiological Systems for Drug Toxicology**
Shun Zhang, Institute of Zoology, Chinese Academy of Sciences, China

14:10-14:20 **Nanoengineered Red Blood Cells and Stem Cell Derivatives for Targeted Therapy**
Junnian Zhou, Academy of Military Medical Sciences, China

14:20-14:30 **Constructing a Model for Evaluating Pulmonary Toxicity of Environmental Pollutants Using Gene Editing Technology**
Hanyue Li, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China

14:30-14:40 **Computational Biology and AI-Empowered Research on Radiation Injury**
Yiming Lu, Academy of Military Medical Sciences, China

14:40-14:50 **The Repair Effects and Mechanisms of Gut Microbiota-Derived Bile Acids on Radiation-induced Intestinal Injury**
Li Guo, Air Force Military Medical University, China

14:50-15:00 **Regeneration of Intestinal Stem Cells after Radiation Injury - Main Hypotheses and Progress**
Fengchao Wang, Army Medical University, China

15:00-15:10 **Mechanism of NRP1-MAMs in Regulating Mitochondrial Metabolic Reprogramming and**

Radioresistance in Non-Small Cell Lung Cancer
Mingwei Wang, Jilin University, China

15:10-15:20 **Heatwave and Lung Inflammatory Injury: Repair Disorder Mechanism of Club Stem Cells**
Feifei Feng, Zhengzhou University, China

S32-04: Environmental Toxicology and Molecular Toxicology

Chairs: ● *Yun Zhao, Soochow University, China*
● *Xin Hai, First Affiliated Hospital of Harbin Medical University, China*

Schedule:

16:00-16:10 **F-53B Induces Renal Fibrosis through the Crosstalk between TGF-β1/Smad3 and NOTCH Signaling Pathways**
Yun Zhao, Soochow University, China

16:10-16:20 **6-PPD Quinone Disrupts the MARCHF2–EXOC7 Ubiquitin Axis, Causing Redox Dysregulation and Ferroptosis in Podocytes**
Jiajun Jing, Guangxi Medical University, China

16:20-16:30 **Phytohemagglutinin-induced NF-κB/MAPK Activation Broadly Upregulates Immune Checkpoint Expression in Human Lymphocytes**
Kewei Qin, The Sixth Medical Centre, Chinese PLA General Hospital, China

16:30-16:40 **Hemolysis Defines the Etiology of Pyrrolizidine Alkaloid-Induced Hepatic Sinusoidal Obstruction Syndrome**
Yisheng He, Hong Kong Chinese University (Shenzhen), China

16:40-16:50 **Mechanisms of Manganese-Induced Neurotoxicity and Potential Intervention Strategies: An Epigenetic Perspective**
Yu Deng, China Medical University, China

16:50-17:00 **Cross-species Molecular Docking Approaches to Predict the Susceptibility of Plastic Additives in Endangered Species**
Keon Kang, University of Seoul, Republic of Korea

17:00-17:10 **Elemental Exposure and Attention Deficit Hyperactivity Disorder Risk in Youths Aged 6-16 Years: Associations and Potential Mediation by Oxylipins**
Sainan Li, School of Public Health, Peking University, China

17:10-17:20 **Methionine Intervention in Cognitive Impairment Caused by Low-levels of Lead, Mercury and Cadmium Mixture Exposure**
Lu Ouyang, Nanchang University, China

17:20-17:30 **Potential Lead (Pb) Exposure in School: Kids Health Concern**
Deepak Dhakal, Tribhuvan University, Nepal

17:30-17:40 **Effects of Chemical Speciation on Chronic Thyroid Toxicity of Representative Perfluoroalkyl Acids**
Jing Li, Institute of Hydrobiology, Chinese Academy of Sciences, China

17:40-17:50 **Assessing the Impact of Plastic Pollution from Land to Ocean on Shorebirds**
Yingxin Zhao, Northeast Agricultural University, China

17:50-18:00 **The Toxic Effects of Microplastics on Ovarian Function and Potential Therapeutic Approaches**
Xing Duan, Southeast University, China

18:00-18:10 **ALKBH5- regulated MICU1 Methylation Participates in Precise Mitochondrial Degradation Induced by Cobalt Nanoparticles**
Fuli Zheng, Fujian Medical University, China

18:10-18:20 **Arsenic Trioxide Suppressing H3K9me3-HMOX1 Triggers Ferroptosis and Induces Cardiotoxicity**
Lijuan Yue, First Affiliated Hospital of Harbin Medical University, China

Saturday, October 18

Keynote Lecture

October 18 | 08:30–09:15 | Guobin Hall

KL05: Medical Potential of Cannabis and Psychedelics: Policy, Challenges and Future Direction

Chairs: • *Lin Lu, Peking University Sixth Hospital, China*

October 18 | 09:15–10:00 | Guobin Hall

KL06: Advancing Chemical Research in Toxicology: From Genotoxicity to Gut Microbial Metabolism

• *Shana J. Sturla, ETH Zürich, Switzerland*

October 18 | 10:30–11:15 | Guobin Hall

KL07: "Modern Toxicology" and “Poison Science” – An Inseparable Pair to Sustain Modern Civilization

• *Jun Kanno, National Institute of Health Sciences / Nissan Tamagawa Hospital, Pathology, Medical Director, Japan*

Abstract:
Since time immemorial, humans have consumed plants, animals, and other prey from the mountains and seas, and accumulated knowledge about what is safe to eat and touch. This knowledge was the beginning of the "science" of "poison ". "Poison Science" studies the biological mechanisms of poisons down to the molecular level along with the making of the Poison List. In this process, a variety of test methods have developed.
In contrast, “Modern Toxicology" is a scholarly system to prevent the new products created by civilization from causing harm to the civilized society. Modern civilization creates new products to make life better for everyone. However, such products bring harm to people and/or environment that their creators do not intend.
“Modern Toxicology” uses the knowledge and experience of “Poison Science” to identify these unintended adverse effects of the new products and provide such information to the creators/ manufacturers and consumers before the new products cause harm to the civilized society; this process brings a win-win situation to both industrial promotion and safety assurance.
Here, as an example, we would like to present the relation between asbestos (poison) and carbon nanotube (new product), and our approach to comprehensively analyzing unknown toxicities of new products (including PFAS) using Percellome Toxicogenomics.

October 18 | 11:15–12:00 | Guobin Hall

KL08: Taking Global Submissions to the Next Level

• *Marlies De Boeck, Johnson & Johnson, Belgium*

Abstract:
In the pharmaceutical industry, nonclinical submissions are essential for demonstrating the safety and efficacy of new drugs and other therapies, supporting the transition from preclinical to clinical development phases, and ultimately securing market authorization. They involve providing nonclinical pharmacology, pharmacokinetics and toxicology study data summaries, their integration and interpretation to global regulatory agencies.
The regulatory requirements are primarily driven by the International Council for Harmonisation (ICH) guidelines, yet regional differences sometimes exist in the interpretation of these guidelines. In addition, for the emerging novel modality therapies, existing guidelines may not fully inform the nonclinical testing approach. This may lead to specific nonclinical packages being prepared to adhere to country specific requirements and may require prior discussion and agreement with health authorities. An example of such specific standards is the Standard for Exchange of Nonclinical Data (SEND) needed for USA FDA submissions which are recently also being requested by some other countries.
To increase operational efficiency, consistency and robustness of these submissions, Johson & Johnson Innovative Medicine is exploring innovative solutions by integrating advanced AI/ML technologies. These tools aim to streamline the generation of nonclinical summary documents and enhance their quality control, ensuring faster, more compliant, and globally harmonized submissions. This approach represents a significant leap forward—taking nonclinical submission processes to the next level and paving the way for more agile and intelligent regulatory pathways worldwide.

Symposium

October 18 | 13:00–15:00 | Guobin Hall-1

S27: Environmental Genotoxic Effects: DNA Damage Response and Cell Death Signaling

Chairs: ● *Jose Manautou, University of Connecticut, USA;*
● *Flemming R. Cassee, Institute for Risk Assessment Sciences, Utrecht University, Utrecht, the Netherlands*

Summary:
The genomic instability, with the feature of increasing accumulation of DNA damage and mutations, is an intrinsic risk hallmark of various human diseases such as cancer, tissues degenerations and aging. A series of environmental factors, e.g., ionizing radiation, genotoxic chemical agents, and virus can induce a broad type of DNA damage. In addition, the application of radiotherapy and chemotherapy in cancer treatment is typically based on the property of inducing nucleic genomic DNA and mitochondria DNA damage which trigger cell death signaling and other DNA damage responses. Obviously, understanding the broader role and functional mechanisms of DNA damage repair involved in organisms against the genotoxic is a basic and attractive area in toxicology as well as in cancer therapies. Raising novel hypothesis or theory bases for practice on the basis of previous scientists' findings would be important for future promising druggable emerging targets for either prevention purpose or cancer therapies. In this review, we first illustrate the timeline steps for the understanding the roles of DNA damage repair and damage sensing and signaling to cell death, then we summarize and discuss the mechanisms regarding DNA damage repair associated with targeted therapy or intervention, highlighting the specific proteins, e.g., DNA-PK complex and their post-translational modifications in promoting DNA repair and cellular DNA damage response.

Schedule:

13:00-13:20 **Radiation exposure and DNA damage repair: Mechanism and application**
Pingkun Zhou, Beijing Institute of Radiation Medicine, China

13:20-13:40 **DNA Repair and Subsequent Cancer Risk — "Can DNA Repair Backfire?"**

Roger Godschalk, Department of Pharmacology & Toxicology, Maastricht University, The Netherlands

13:40-14:00 **Toxicological Assessments Based on Intestine 3D Organoids Reveal Environmental Low-Dose Nanosized Microplastics (NPs) Exposure Aggravates Radiation-Induced Intestine Injury**
Ruixue Huang, Central South University, China

14:00-14:15 **The Mechanism of ECs-HSCs Transition in Bone Marrow Hematopoiesis Repair After Irradiation**
Qian Ran, Army Medical University, China

14:15-14:30 **Tetrahydrobiopterin Metabolism in Radiation-Induced Injuries: Preclinical Studies and Phase II Trial**
Shuyu Zhang, Sichuan University, China

14:30-14:45 **Evaluation of Oxidative Stress and Genetic Instability Among Residents Near Mobile Phone Base Stations in Germany**
Igor Belyaev, Department of Radiobiology, Cancer Research Institute, BMC SAS, Slovak Republic

14:45-15:00 **The Effect of Whole Abdominal FLASH Irradiation on the Histopathology Changes in Mice and Its Potential Mechanisms**
Zhifei Cao, The Second Affiliated Hospital of Soochow University, China

October 18 | 13:00–15:00 | Guobin Hall-2

S28: RNA Dysregulations and Environmental Carcinogenesis

Chairs: ● *Yiguo Jiang, Guangzhou Medical University, China*
● *Chengfeng Yang, Stony Brook University, Stony Brook, New York, USA*

Summary:
The discovery and characterization of non-coding RNAs (ncRNAs) challenged the central dogma of molecular biology, representing a breakthrough in our understanding of RNA biology and functions. The 2024 Nobel Prize in Physiology or Medicine was awarded to two scientists who discovered small regulatory noncoding RNAs known as microRNAs, signifying the importance of noncoding RNA research. With the completion of the Encyclopedia of DNA Elements (ENCODE) Project and advances in genomic sequencing technologies, it is now known that human genome is pervasively transcribed, and a large portion of human genome is transcribed as ncRNAs. Many studies demonstrated that RNA dysregulations including ncRNAs play important roles in the development and progression of many human diseases, especially cancer although the mechanisms have not been well understood. Many chemical carcinogens are common environmental and occupational pollutants and important etiological factors for cancer and many other diseases. The effects of environmental carcinogens on RNA expressions and functions are exciting research fields in toxicology. The goals of this symposium are to introduce current research on RNA dysregulations in the field of toxicology, and to discuss the role and mechanism of RNA dysregulations in environmental carcinogenesis. To achieve these goals, this symposium convenes a panel of outstanding environmental carcinogenesis researchers. This symposium will attract an expanded ICTXVII audience of environmental carcinogenesis and other toxicology researchers.

Schedule:

13:00-13:25 **Circular RNA Dysregulation and Epigenomic Reprogramming by iAs in Carcinogenesis**
Yvonne Fondufe-Mittendorf, Van Andel Institute, USA

13:25-13:50 **Long Noncoding RNA ABHD11-AS1 Up-Regulation Promotes Hexavalent Chromium**

Carcinogenesis
Chengfeng Yang, Stony Brook University, USA

13:50-14:10 **Regulatory Mechanisms of Circular RNAs in Carbon Black Nanoparticle-Induced DNA Damage and Malignant Transformation of Human Airway Epithelial Cells**
Yun Zhou, Guangzhou Medical University, China

14:10-14:35 **Role of RNA m6A Methylation Dysregulation in Arsenic and Benzo(a)pyrene Co-Exposure-Induced Cell Transformation and Tumorigenesis**
Zhishan Wang, Stony Brook University, USA

14:35-15:00 **Mechanisms of Environmental Carcinogenesis: How Hexavalent Chromium Induces DNA Repair Dysregulation Targeting RNA and Protein**
John Pierce Wise, Sr., University of Louisville, USA

October 18 | 13:00–15:00 | Guocui Hall

S29: Environmental Toxicology on Micro- and Nano-Particulate Pollutants

Chair: ● *Sijie Lin, Tongji University, China*

Summary:
Emerging particulate pollutants, such as nanoparticles and microplastics, raise environmental health and safety concerns in the international society. Over the last two decades, great efforts have been made to generate knowledge on the toxicity potential of particulate pollutants through environmental monitoring, toxicity screening, mechanistic investigations, etc. The symposium aims to bring experts in the field to share their views on the environmental toxicology of particulate pollutants and to foster discussions on urgent scientific questions to address as well as future perspectives.

Schedule:

13:00-13:25 **Biotests and Biosensors for the Evaluation of Ecosafety of Novel (Nano)Materials**
Anne Kahru, National Institute of Chemical Physics and Biophysics, Estonia

13:25-13:50 **Immunotoxicology of 2D Nanomaterials**
Bengt Fadeel, Karolinska Institutet, Sweden

13:50-14:15 **High-Throughput Screening and Safer-By-Design and Nanomaterials**
Tian Xia, University of California, USA

14:15-14:40 **Toxicology and Health Risks of Particulate Pollutants**
Sijin Liu, Shandong First Medical University, China

14:40-15:00 **The impact of microplastics exposure on intestinal health**
Wenhui Qiu, Southern University of Science and Technology, China

October 18 | 13:00–15:00 | Guohua Hall

S30: Genetic Toxicology, Stem Cell Toxicology and Nanotoxicology

Chairs: ● *Francesco Faiola, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China*
● *Qunwei Zhang, University of Louisville, USA*

Summary:
This conference closely aligned with global advancements in genetic toxicology and nanotoxicology, industry demands, and talent cultivation, aims to promote the integration of novel concepts, knowledge,

technologies, and methodologies from life science and other toxicology fields into both genetic toxicology and nanotoxicology research and management. Currently, genetic toxicology is at a pivotal stage of its development, still grappling with significant issues such as the quantitative evaluation of genomic damage and genetic toxicity, as well as the establishment of genetic toxicity evaluation norms for nanomaterials and biological drugs. Nanotoxicology, on the other hand, faces challenges related to the safety of nanomaterials, urgently requiring the exploration of toxic mechanisms, the establishment of evaluation norms, and ensuring the safe application of nanotechnology. These challenges can only be effectively addressed through multidisciplinary infiltration, integration, collaborative efforts, and coordinated development. To this end, the conference has invited renowned experts from cancer prevention and treatment, epigenetic toxicology, nanotoxicology, and various application fields to present and discuss the latest research progress, cutting-edge theories and technologies, and strategies for achieving interdisciplinary integration. This will foster complementarity among disciplines and pave the way for further advancements in the field.

Schedule:

13:00-13:25 **Innovative Approaches to Assessing Pollutant Toxicity: From Stem Cells to AI**
Francesco Faiola, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China

13:25-13:50 **Genotoxic and Carcinogenic Effects of Metal Nanoparticles**
Qunwei Zhang, University of Louisville, USA

13:50-14:15 **The Study on Dual Effect of Tumor Radiosensitization and Normal Tissue Radioprotection Based on DNA Damage and Repair Mechanism**
Zhihui Feng, Shandong University, China

14:15-14:40 **Environmental Toxicants Induce Unexplained Miscarriage**
Huidong Zhang, The Eighth Affiliated Hospital, Sun Yat-sen University, China

14:40-15:00 **Evaluation and Regulation on the Genotoxicity of Drug Impurities**
Hairuo Wen, National Institutes for Food and Drug Control, National Center for Safety Evaluation of Drugs, China

October 18 | 13:00–15:00 | Guibin Hall-1

S31: Clinical Translation and Practice of Hepatic Toxicology

Chairs:
- *Haibo Song, National Center for ADR Monitoring of China, China*
- *Jiabo Wang, The School of Chinese Medicine, Capital Medical University, China*
- *Yufeng Qin, Nanjing Medical University, China*

Summary:

With the theme of "Clinical Translation and Practice of Toxicology", this session will deeply discuss the application of toxicology in clinical practice and its translation research from bench-to-beside. Experts throughout the world will discuss the transformation of in vitro toxicology to in vivo study, and basic research to clinical evaluation and at last regulatory approach. Additionally, the session will highlight on the application and significance of toxicology and toxicant analysis in clinical medicine. The session aims to promote the improvement of toxicological research methods and technologies, promote the expansion of the research scope of academic, industrial and clinical pharmacists, and provide safer and more effective drug treatment solutions for clinical practice.

Schedule:

13:00-13:30 **Challenges in Drug-Induced Liver Injury: Paving the Way for Precision Medicine**
Raúl J. Andrade, University of Malaga, Spain

13:30-14:00 **DILI: Molecular Biology to Clinical Application**
Guru P. Aithal, University of Nottingham, UK

14:00-14:30 **Drug-Induced Liver Injury in Children: A Nationwide Cohort Study from China**
Rongtao Lai, School of Medicine, Shanghai Jiaotong University, China

14:30-15:00 **Why Do Microplastics Aggravate Cholestatic Liver Disease? The NLRP3-Mediated Intestinal Barrier Integrity Damage Matter**
Fang Xiao, Central South University, China

Closing Ceremony

October 18 | 15:10–15:40 | Guobin Hall

ICT XVII Award Lecturer

Guibin Jiang, PhD

Professor, State Key Laboratory of Environmental Chemistry and Ecotoxicology, Research Center for Eco-Environmental Sciences

Chinese Academy of Sciences, China

New Pollutants Study in China: History, Progress and Challenges

Bio: Professor Jiang Guibin graduated from Shandong University in January 1982 and received his master's and doctoral degrees from the Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences in 1987 and 1991. From 1989 to 1991 and 1994 to 1996, he was a visiting scholar and postdoctoral researcher at the National Research Council of Canada and the University of Antwerp, Belgium, respectively. Jiang's research is mainly focused on analytical development, environmental fate, toxicology and health effects of persistent organic pollutants (POPs), endocrine disruptors, organometallic compounds, nanomaterials and new pollutants. He has contributed more than 1300 papers in peer-reviewed international scientific journals with 70,000 times of citations (web of science) and published 26 monographs. He is now a founding editor-in-chief of the ACS journal Environment & Health (E&H).

Deichmann Lecturer

Thomas Hartung, MD, PhD

Professor, Center for Alternatives to Animal Testing (CAAT), Johns Hopkins University, Bloomberg School of Public Health, USA; CAAT Europe, University of Konstanz, Konstanz, Germany

Toxicology – the Now, the New and the Next

Bio: Thomas Hartung, MD PhD, is professor at Johns Hopkins Bloomberg School of Public Health in Environmental Health & Engineering as well as Molecular Microbiology and Immunology, the Whiting School of Engineering and the School of Medicine In Cellular and Molecular Medicine, as well as Georgetown University, Washington D.C., in Environmental Metrology and Policy, and University of Konstanz, Germany, in Pharmacology and Toxicology; he also is Director of Centers for Alternatives to Animal Testing (CAAT) in the US and Europe and Field Chief Editor of Frontiers in AI. He authored 730+ scientific publications with 52,000+ citations (h-index 124) and his COURSERA toxicology classes had 22,000+ active learners.

Keynote Lecturers

Marc Pallardy, PhD

Professor, Faculty of Pharmacy

University Paris-Saclay, France

50 Years of Immunotoxicology: Past, Present and Future

Bio: Full professor and head of the Department of toxicology (Faculty of Pharmacy, University of Paris-Saclay) since 1997. Head of the team 2 "Drug and Chemical Allergy, Immunotoxicology and Immunopathology", INSERM UMR 996. Member of the EUROTOX Executive committee and chairman of the EUROTOX Education committee. Member of the HESI board of trustees and co-chairman of the "Immunogenicity Technical Committee". He has chaired the IMI ABIRISK consortium on the immunogenicity of therapeutic proteins (2012-2018). Marc Pallardy was Dean of the Faculty of Pharmacy, University Paris-Saclay from 2015 to 2025 and Vice Dean for research from 2000 to 2015. He has 185 publications in international peer-reviewed journals and more than 120 invited presentations.

Yuliang Zhao, PhD

Professor, Institute of Nanotechnology and Intelligence (inAI)

Jinan University, Guangzhou, China

Advancements in Nanotechnology and Intelligence: Bridging Science and Innovation

Bio: Professor Yuliang Zhao is the Founding Director of the Institute of Nanotechnology and Intelligence at Jinan University and an Academician of the Chinese Academy of Sciences. He currently serves as the President of the Chinese Society for Biomaterials, the President of the GBA National Institute for Nanotechnology Innovation (CanNano), and the Director of the Key Laboratory for Nanotechnology Products Evaluation and Regulation under the National Medical Products Administration (NMPA). Professor Zhao is a pioneer in nanotoxicology research, focusing on the toxicological chemistry of nano-biomaterials. His work aims to elucidate how engineered nano-biomaterials, at the nanoscale, interact with cells, tissues, and biomolecules, and how these interactions translate into biological effects in vivo. He has published 659 peer-reviewed articles in international journals, with over 85,000 citations and an H-index of 153 (Google Scholar), ranked the highest in the field of nanotoxicology. He has invented 132 patents, delivered > 530 invited plenary lectures. His work led to an ISO standard being adapted by 168 countries. He is the author of Nanotoxicology, the first global textbook on the subject, published in the United States in 2007. From 2006 to 2010, he led a team of experts from 16 universities to develop a comprehensive 10-volume book series on nanotoxicology. This seminal work has significantly advanced the understanding of nanomaterial safety and played a pivotal role in shaping evaluation protocols, particularly in facilitating the regulatory approval of nanomedicine and nano-device products by the NMPA.

Michael Aschner, PhD

Professor, Department of Molecular Pharmacology, Albert Einstein College of Medicine, USA

A 40-Year Journey on the Neurotoxicity of Heavy Metals: From Worms to Humans

Bio: Dr. Aschner will focus on several topics related to pertinent public health issues in China, namely exposures to mercury and manganese. He will address to role of: (1) modulation of C. elegans genes (aat, skn-1, daf-16) that are homologous to mammalian regulators of methylmercury (MeHg) uptake and cellular resistance will modify dopaminergic neurodegeneration in response to mercury exposure, (2) Nrf2 (a master regulator of antioxidant responses) in coordinating the upregulation of cytoprotective genes that combat mercury-induced oxidative injury, and genetic and biochemical changes that negatively impact upon Nrf2 function, (3) PARK2, a strong PD genetic risk factor, in altering neuronal vulnerability to modifiers of cellular manganese status, particularly at the level of mitochondrial dysfunction and oxidative stress. He will emphasize key findings from his 40-year scientific career that (1) shed novel mechanistic insight into metal-induced neurodegeneration; (2) identify targets for genetic or pharmacologic modulation of neurodegenerative disorders; (3) increase knowledge of the pathway involved in oxidative stress; (4) develop improved research models for human disease using knowledge of environmental sciences.

Robert Landsiedel, PhD

BASF, Germany
President, German Society of Toxicology (DGPT)

Avoiding a Reproducibility Crisis in Regulatory Toxicology – On the Fundamental Role of Standardisation and Ring Trials

Bio: Robert Landsiedel is Vice President of special toxicology at BASF SE in Ludwigshafen am Rhein, Germany. He previously worked for BASF in development, regulatory and management roles in the USA and in Japan. He is an associate professor (Privatdozent) at the Free University of Berlin and has further teaching positions in Leipzig and Landau. His team at BASF is performing more than 500 regulatory toxicological studies per year under GLP, GIVIMP and ISO17020 as well as screenings for product development. In addition, they are developing new toxicological methods and testing strategies. They have received more than 20 external grants and their work has been recognized by several awards including the German Research Award for the development of alternative methods, German GT-Toxicology Award, and the Responsible Care Award of the European Chemical Industry Council (Cefic). Robert received a doctorate degree in chemistry (Dr. rer. nat.), a postgraduate degree in toxicology, and a habilitation in pharmacology and toxicology. He is a Diplomate of DABT and a Fellow of FATS. He was appointed member of the European Commission's Scientific Committee for Occupational Exposure Levels (SCOEL) where he chaired the methodology working group until the Committee's decommissioning in 2019. Currently he is the chair for human toxicology of German National Hub within the "Partnership for the Assessment of Risk from Chemicals (PARC), the chairman of the German Toxicology Society (GT) and vice-president of the German Society for experimental and clinical Pharmacology and Toxicology (DGPT).

Lin Lu, MD, PhD

Dean, Peking University Sixth Hospital, China

Medical Potential of Cannabis and Psychedelics: Policy, Challenges and Future Directions

Bio: Prof. Lin Lu is Academician of Chinese Academy of Sciences, Chairman of Beijing Returned Overseas Chinese Federation, Director of National Medical Center for Mental Disorders, and President of Shandong First Medical University. Prof. Lin Lu also works as member of International Narcotics Control Board, the director of National Clinical Research Center for Mental Disorders in China, and Vice President of the Chinese Preventive Medicine Association. His research focuses on the clinical diagnosis and treatment techniques as well as pathogenesis of mental diseases, and has made a series of achievements of great significance. He has published over 400 peer-reviewed articles with a total citation of more than 35000 times.

Shana J. Sturla, PhD

Professor, ETH Zürich, Switzerland

Advancing Chemical Research in Toxicology: From Genotoxicity to Gut Microbial Metabolism

Bio: Prof. Shana J. Sturla leads the Laboratory of Toxicology at the ETH Zürich in Switzerland. The goal of her research is to promote chemical, food and drug safety by elucidating the chemical basis of mutagenesis and toxicity, using innovative bioanalysis strategies for in vitro testing. Key areas that could be presented address environmental toxicants related to human disease, DNA damage and mutagenesis, drug resistance in cancer therapy and biotransformation of xenobiotics by human gut microbiota. Prof. Sturla is the editor-in-chief of Chemical Research in Toxicology. Chemical Research in Toxicology provides knowledge and innovative approaches needed to promote intelligent solutions for human and environmental health on the basis of a chemical and molecular understanding of toxicity. This research relies on creating and applying cutting-edge bioanalytical tools such as mass spectrometry for metabolomics and proteomics, and genome-wide analysis.

Jun Kanno, MD, PhD

Professor, National Institute of Health Sciences; Nissan Tamagawa Hospital; University of Tsukuba; Systems Biology Institute, Japan

"Modern Toxicology" and "Poison Science" – An Inseparable Pair to Sustain Modern Civilization

Bio: From 1986, Dr. Kanno served on the faculty at Pathology Department of Tokyo Medical and Dental University and was a Visiting Scientist of NIEHS (1991–1993). In 1997, he moved to National Institute of Health Sciences (NIHS) as a section chief, and from 2002 as the Head of the Division of Cellular & Molecular Toxicology, specialize in general and experimental pathology and toxicology. He served as the Director of the Japan Bioassay Research Center (2016-2019), and from 2020, he is the Visiting Researcher/ Emeritus Researcher of the NIHS, from 2021, Medical Director of Pathology at Nissan Tamagawa Hospital, and from 2023, Visiting Senior Fellow of the Systems Biology Institute. His research includes molecular toxicology on "signal toxicity" of central nervous system, "Percellome" toxicogenomics and nanomatrials toxicology. He has served as the President of Japanese Society of Toxicology and of IUTOX.

Marlies De Boeck, PhD

Johnson & Johnson Innovative Medicine, Belgium

Taking Global Submissions to the Next Level

Bio: Dr. Marlies De Boeck is currently EU head of Submissions within Preclinical Sciences & Translational Safety at Johnson & Johnson Innovative Medicine (J&JIM), in Beerse, Belgium. She is leading a team of nonclinical scientific writers coordinating global regulatory submissions across the different regions in the context of clinical trial and marketing applications throughout the pharmaceutical development phases and covering different therapeutic indications and modalities. She combines drug development, regulatory strategy and framework expertise to drive worldwide submissions. During 20+ years at J&JIM, Marlies has filled several roles in the Preclinical Safety Department, including positions within genetic toxicology, discovery safety screening, project management, nonclinical writing and as study director, nonclinical safety project leader and people manager. Marlies holds an MS in Biology and a PhD in Sciences from the Free University of Brussels (VUB). Marlies has been active in scientific societies including the European and Belgian Environmental Mutagen Society (EEMS, BEMS) and has been involved in collaborative scientific initiatives including those led by the European Federation of Pharmaceutical Industries and Associations (EFPIA), International Workshop on Genotoxicity Testing (IWGT) and Organization for Economic Cooperation and Development (OECD).

Beijing

Beijing, the capital of China, is a vibrant metropolis blending ancient history with modernity. It has a glorious history that dates back three thousand of years. The city preserves the most magnificent imperial culture of China. The rich historical heritage is reflected in its ancient palaces, temples, fortresses and parks, such as Great wall, Forbidden City and the Temple of Heaven. Modern Beijing is a city of contrasts. While the city center retains traditional life styles, such as quadrangle courtyards (Siheyuan, 四合院) and narrow alleys (Hutong, 胡同), the new cityscape is characterized by stunning modern architectures, towering skyscrapers, museums, theatres and busy shopping streets. The rich history, culture diversity, modern landmarks, and delicious local and internation cuisines, make Beijing a unique and fascinating destination worth for exploring.

Ground Transportation

From Beijing Capital Airport (PEK): CICEC is about 4.5 km away from terminal 3 of PEK. It is recommended to take a taxi or online car-hailing (using Didi, Gaode Apps).
From Beijing Daxing International Airport (PKX): PKX is approximately 75 km away from PEK and 78 km from the Congress venue and the hotel. It is recommended to take a taxi or the combination of subway and taxi (take the Airport Express from the Daxing Airport Station to the Caoqiao Station, transfer to the Subway Line 19 from the Caoqiao Station to the Mudanyuan Station, exit from F, then take a taxi to CICEC.
From Beijing West Railway Station: Take Subway Line 10 from the Lianhuaqiao Station to the Sanyuanqiao Station. After getting off at the Sanyuanqiao Station, take a taxi to CICEC.
From Beijing South Railway Station: Take the Subway Line 4 from the Beijing South Railway Station to the Xuanwumen Station, then take the Subway Line 2 from the Xuanwumen Station to the Dongzhimen Station. After getting off at the Dongzhimen Station, take a taxi to CICEC.
From Beijing Railway Station: Take the Subway Line 2 from the Beijing Railway Station to the Dongzhimen Station. After getting off at the Dongzhimen Station, take a taxi to CICEC.

Get around Beijing

- Beijing Subway and ticketing information (https://www.bjsubway.com)
- Beijing Public Transport and ticketing information (http://www.bjbus.com)
- Beijing Taxi Service (https://cz.jtw.beijing.gov.cn)

Tourism attractions in Beijing

- Great Wall (http://www.badaling.cn)
- Forbidden City (https://www.dpm.org.cn/Home.html)
- Tiananmen Square (https://yuyue.tamgw.beijing.gov.cn)
- Summer Palace (https://www.summerpalace-china.com)
- Beihai Park (https://www.beihaipark.com.cn)
- Jingshan Park (http://www.bjjspark.com/index.jhtml)

1. Temple of Heaven (http://www.tiantanpark.com/)
2. The Thirteen Tombs and the Divine Road (https://www.mingshisanling.com/)
3. Hutong