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 **The Gain Law of Evolving Networks: How Interface Perturbations Are Amplified to Rewire Ecology and Resistance**
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 E. 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, Republic of 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), Republic of 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:

13:30–13:55 **Integrating Human and Environmental Data Streams to Support Safety Decisions**
Bruno Campos, Unilever – Safety, Environmental and Regulatory Science, UK

13:55–14:20 **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

14:20–14:45 **Knowledge-Driven Artificial Intelligence as an Effective Approach to Overcome the "Black Box" Dilemma**
Wei Shi, School of Environment, Nanjing University, China

14:45–15:10 **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

15:10–15:30 **Next - Generation Risk Assessment (NGRA) Practice for Innovative Drugs via New Approach Methodologies (NAMs): Applying Alternative Methods in Preclinical Safety Evaluation**
Xiaoyan Yuan, Medicilon Preclinical Research Co., Ltd. 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 **High-Throughput Technologies to Elucidate Effects of Heavy Metals on Early-Life Neuro development and Airway/Lung Maturation**
Hideko Sone, Yokohama University of Pharmacy, Japan

16:20-16:40 **Metabolism of Chalcogen Elements in Animals**
Yasumitsu Ogra, Chiba University, Japan

16:40-17:00 **Serum Metabolome Associated with Occupational Multi-Metal Mixture Exposure and ECG Conduction Disturbances in Lead Smelter Workers**
Fankun Zhou, Nanchang University, China

17:00-17:15 **Research on the Toxicity and Underlying Mechanism of Poorly Soluble Metal Oxide Nanomaterials**
Zhangjian Chen, Peking University, China

17:15-17:30 **Lead Contamination in African Countries**
Mayumi Ishizuka, Hokkaido University, Japan

17:30-17:45 **Respiratory Toxicity and Biomarkers of Chromates: Insights from Multi-Omics Analysis**
Guiping Hu, Beihang University, China

17:45-18:00 **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 | Guojin 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