58th Symposium/58e Symposium

December 06 to 08, 2026

Chateau Lacombe Hotel
Edmonton, AB

The New Era of Toxicology: Intelligent, Predictive, and Globally Connected

La nouvelle ère de la toxicologie : intelligente, prédictive et connectée à l'échelle mondiale

Organized by/Organisé par:

SOCIETY OF TOXICOLOGY OF CANADA
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Society of Toxicology of Canada Welcome Message

On behalf of the Society of Toxicology of Canada, it is my pleasure to welcome you to the 58th Annual Symposium, "The New Era of Toxicology: Intelligent, Predictive, and Globally Connected."

We meet in the midst of an inflection point for toxicology. One defined by accelerating scientific innovation, increasing global interdependence, and evolving expectations for how safety evidence is generated, interpreted, and applied. Across regulatory, academic, and industry settings, there is a growing consensus that the future of toxicology must be more predictive, more integrated, and more connected to real-world decision-making.

Central to this transformation is the expanding role of New Approach Methodologies (NAMs). These approaches reflect a shift in mindset, from observing outcomes to understanding mechanisms, from isolated studies to integrated evidence, and from local solutions to globally aligned frameworks. NAMs offer the promise of higher-quality, human-relevant data, improved efficiency, and more transparent decision support for regulators and risk assessors.

This symposium will explore that journey. We begin with the foundational science underpinning NAMs, focusing on the biological tools that generate robust and reliable data. From there, we move into computational and predictive toxicology, where artificial intelligence, modelling, and systems-based approaches are reshaping how hazards are anticipated rather than retrospectively assessed.

Understanding risk, however, requires more than hazard alone. Dedicated sessions on exposure science and risk assessment will examine how human exposure, dose modelling, and data integration strengthen the relevance of NAM-derived evidence. These discussions naturally progress into safety assessment and regulatory perspectives, where integrated testing strategies, method validation, and real-world experience with NAM data submissions highlight both progress made and challenges ahead within global regulatory frameworks.

The programme also addresses the ethical and strategic transition toward the 3Rs, examining how efficiency, scientific confidence, and regulatory responsibility must be carefully balanced as we reduce reliance on animal testing, while acknowledging contexts where traditional in vivo approaches remain necessary. Finally, we turn to global alignment and the future direction of toxicology, focusing on data sharing, international collaboration, and the development of roadmaps to advance predictive toxicology over the next decade.

The meeting will be held on Treaty 6 territory, the traditional lands of the Cree, Saulteaux, Blackfoot, Métis, Dene, and Nakota Sioux Peoples. This acknowledgment reinforces a shared responsibility to ensure that scientific progress serves communities equitably, ethically, and with long-term stewardship at its core.

As we engage in these discussions, we invite you to reflect on how this new era of toxicology can strengthen public trust, support regulatory agility, and ultimately improve protection of human health and the environment.

Welcome, and thank you for contributing your expertise and leadership to this important dialogue.

Sincerely,

Ria Falvo, BSc, DABT
Chair, Programme Committee, 58th Annual STC Symposium
Altasciences

Message de Bienvenue de la Société de Toxicologie du Canada

Au nom de la Société de toxicologie du Canada, j'ai le plaisir de vous souhaiter la bienvenue au 58e Symposium annuel, intitulé « La nouvelle ère de la toxicologie : intelligente, prédictive et mondialement connectée ».

Nous nous réunissons à un moment charnière pour la toxicologie. Une période définie par l'accélération de l'innovation scientifique, l'interdépendance croissante à l'échelle mondiale et l'évolution des attentes quant à la manière dont les données de sécurité sont générées, interprétées et appliquées. Dans les milieux réglementaires, universitaires et industriels, un consensus se dégage de plus en plus : l'avenir de la toxicologie doit être plus prédictif, plus intégré et davantage connecté à la prise de décision dans le monde réel.

Au cœur de cette transformation se trouve le rôle grandissant des nouvelles approches méthodologiques (NAM). Ces approches témoignent d'un changement de perspective : passer de l'observation des résultats à la compréhension des mécanismes, d'études isolées à des données intégrées, et de solutions locales à des cadres harmonisés à l'échelle mondiale. Les NAMs offrent la promesse d'obtenir des données plus pertinentes et de meilleure qualité pour l'être humain, tout en améliorant l'efficacité et la transparence du processus décisionnel des organismes de réglementation et des évaluateurs des risques. Ce symposium explorera ce parcours. Nous commencerons par les fondements scientifiques qui soutiennent les NAMs, en mettant l'accent sur les outils biologiques qui produisent des données robustes et fiables. Nous aborderons ensuite la toxicologie computationnelle et prédictive, où l'intelligence artificielle, la modélisation et les approches fondées sur les systèmes transforment la manière dont les dangers sont anticipés plutôt qu'évalués de façon rétrospective. Toutefois, la compréhension du risque exige plus que la seule caractérisation du danger. Des séances consacrées à la science de l'exposition et à l'évaluation des risques examineront comment l'exposition humaine, la modélisation des doses et l'intégration des données renforcent la pertinence des preuves issues des NAMs. Ces discussions mèneront naturellement aux perspectives en matière d'évaluation de l'innocuité et de réglementation, où les stratégies intégrées d'essais, la validation des méthodes et l'expérience concrète acquise lors de la soumission de données issues des NAMs mettront en lumière à la fois les progrès accomplis ainsi que les défis qui demeurent dans les cadres réglementaires mondiaux.

Le programme aborde également la transition éthique et stratégique vers les 3R (Remplacement, Réduction et Raffinement), en examinant comment l'efficacité, la confiance scientifique et la responsabilité réglementaire doivent être soigneusement équilibrées afin de réduire la dépendance aux essais sur les animaux, tout en reconnaissant les situations où les approches traditionnelles in vivo demeurent nécessaires. Enfin, nous nous tournerons vers l'harmonisation mondiale et l'avenir de la toxicologie, en mettant l'accent sur le partage des données, la collaboration internationale et l'élaboration de feuilles de route destinées à faire progresser la toxicologie prédictive au cours de la prochaine décennie.

La réunion se tiendra sur le territoire couvert par le Traité no 6, terres traditionnelles des peuples Cris, Saulteaux, Pieds-Noirs, Métis, Dénés et Nakotas Sioux. Cette reconnaissance rappelle la responsabilité collective que nous partageons de veiller à ce que le progrès scientifique serve les communautés de manière équitable, éthique et durable.

Au cours de nos échanges, nous vous invitons à réfléchir à la façon dont cette nouvelle ère de la toxicologie peut renforcer la confiance du public, soutenir l'agilité réglementaire et, ultimement, améliorer la protection de la santé humaine et de l'environnement. Bienvenue, et merci de contribuer, par votre expertise et votre leadership, à cet important dialogue.

Cordialement,
Ria Falvo, BSc, DABT, Présidente du comité du programme, 58e Symposium annuel de la STC
Altasciences

Sponsors Acknowledgement/Remerciements de Sponsors

We would like to extend our sincere gratitude to the following organizations for their valuable contributions to the Society of Toxicology of Canada. We are grateful for your generosity and commitment to help us fulfill our mission of promoting and advancing the field of toxicology in Canada. Your partnership is truly appreciated, and we look forward to continuing our collaboration in the future.

Nous souhaitons exprimer nos sincères remerciements aux organisations suivantes pour leurs précieuses contributions à la Société de toxicologie du Canada. Nous sommes reconnaissants de votre générosité et de votre engagement à nous aider à remplir notre mission de promouvoir et de faire progresser le domaine de la toxicologie au Canada. Votre partenariat est vraiment apprécié et nous sommes impatients de poursuivre notre collaboration à l'avenir.

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Symposium Programme

Day 1 – December 06, 2026

2:00-3:30 **STC Board of Directors Meeting – Meeting Room - To be confirmed**
4:00-5:00 **ICT-2028 Vancouver 2nd Planning Meeting**
6:30-10:00 **Meet & Greet @ To be confirmed**

Day 2 – December 07, 2026

Poster Boards
Meeting Room - To be confirmed

Virtual Attendance
Zoom Webinar access for the upcoming STC event: To be confirmed
Passcode: To be confirmed
Webinar ID: To be confirmed

8:15: 8:30 **Welcome and Opening Remarks**

Session I. The Foundational Science of New Approach Methodologies (NAMs)
Focusing on the tools that generate high-quality biological data
Chair and Co-chair: To be confirmed

8:30-8:55 **Vascularization: A Foundational Requirement for Predictive Toxicology NAMs**
Karolina Valente (VoxCell; Victoria, British Columbia, Canada)

8:55-9:20 **New Frontiers in NAMs Applications: Cutting Edge Strategies for Immunogenicity, Toxicology of Pharmaceutical Products and Functional Drug Safety Screening**
Simon Authier (Charles River, Quebec, Canada)

9:20-9:45 **New Techniques to Study Arsenic Binding to Proteins: From Molecular Interactions to New Approach Methodologies**
Chris Le (University of Alberta; Edmonton, Alberta, Canada)

9:45-10:15 Break

10:15-11:00 **Gabriel Plaa Award** - Dr. Mike Wade
Introduction: To be confirmed

11:00-12:00 **Plenary - Human-Relevant, Globally Connected: Toxicology's Next Chapter**
Nicole Kleinstreuer (National Institutes of Health; Bethesda, Maryland, USA)

12:00-12:15 **Angela Hofstra – ICT 2028**

12:15-1:15 Lunch

Session II. Computational and Predictive Toxicology

AI-driven hazard prediction, modelling compound behavior, systems-based approaches for toxicity assessment

Chair and Co-chair: To be confirmed

1:15-1:40 **Leveraging AI-Driven Stratification for Optimized Clozapine Safety in Treatment-Resistant Schizophrenia: Translating Real-World Evidence into Clinical Decision Support**
Lusine Tonoyan (University of Alberta; Edmonton, Alberta, Canada)

1:40-2:05 **Multi-Stage AI Workflows for Regulatory Toxicology: From Chemical Structure to Automated Risk Assessment**
Thomas Allen Bozada Jr. (Insilica Inc, USA)

Session III. Short Oral Presentations, Selected Trainee Posters

(30 min) *Chair and Co-chair:* To be confirmed

2:05-2:15 Student Presentation 1
2:15-2:25 Student Presentation 2
2:25-2:35 Student Presentation 3

2:35-2:45 Break

2:45-3:45 **Poster Session**
Meeting Room - To be confirmed

3:45-4:00 Break

Trainee-Networking Session
4:00-5:00

Concurrent STC Annual Business Meeting – All STC Members
4:00-5:00
Meeting Room - To be confirmed

Zoom Meeting link for those attending remotely: To be confirmed
Passcode: To be confirmed
Webinar ID: To be confirmed

Reception and Awards
6:30 pm All attendees are welcome – to be confirmed

Day 3 – December 08, 2026

8:25-8:30 **Opening Remarks**

Session IV. Exposure Science and Risk Assessment

Understanding human exposure, dose modelling, integrating diverse data for risk evaluation.

Chair and Co-chair: To be confirmed

8:30-8:55 **The Alberta Biomonitoring Program: Tracking Environmental Exposure in Maternal and Child Populations**
Amy MacDonald (Alberta Society for Human Toxicology; Calgary, Alberta, Canada)

8:55-9:20 **Human Health Risk Assessment of Resource Projects in Western Canada**
Karen Phillips (Alberta Society for Human Toxicology; Calgary, Alberta, Canada)

9:20-10:05 **Henderson Award -** Dr. Matthew Meier
Introduction: To be confirmed

10:05-10:25 Break

10:25-10:40 **Charting a Path Forward: Building Canada's Toxicity Testing Roadmap**
Shaarika Sarasija (Humane World for Animals)

10:40-11:05 **What the Sample Reveals: Drug Testing Data in Alberta**
Penny Colbourne (Alberta Precision Labs, Edmonton, Alberta, Canada)

11:05-12:05 **Poster session**
Meeting Room - to be confirmed

12:05-1:05 Lunch

Session V. Safety Assessment, Regulatory Perspectives, and Future Global Outlook

Exploring integrated testing strategies, validation of new methods for predictive toxicology, global regulatory frameworks and data sharing to facilitate NAMs acceptance internationally

Chair and Co-chair: To be confirmed

1:05-1:50 **Barbara Hales Award –** Dr. Carolyn Baglole
Introduction: To be confirmed

1:50-2:15 Session title be confirmed
Konst Mroncz (Altasciences, Los Angeles, USA)

2:15-2:40 **Update on Key CEPA Amendments and the Chemicals Management Plan**
Robin Churchill (Health Canada; Ottawa, Ontario, Canada)

2:40-3:05 **Deploying New Approach Methodologies (NAM) within a Computational Workflow for Enhanced Prioritization and Rapid Screening of Existing Chemicals in Canada**
Matthew Gagne (Health Canada; Ottawa, Ontario, Canada) - Virtual talk

3:05-3:15 Closing Remarks

Session Speakers

December 07, 2026
Session I. The Foundational Science of New Approach Methodologies (NAMs)



8:30-8:55

Vascularization: A Foundational Requirement for Predictive Toxicology NAMs

Karolina Valente (VoxCell; Victoria, British Columbia, Canada)

Bio: Dr. Karolina Valente is the founder and CEO of VoxCell, a biotechnology company based in Victoria, British Columbia, developing perfusable vascularized 3D human tissue constructs for preclinical drug testing. Karolina holds a PhD in biomedical engineering and is an Assistant Professor in the Department of Mechanical Engineering at the University of Victoria, where she also serves as Director of the Biomedical Systems MEng program. Under her leadership, VoxCell has established research and commercial collaborations with pharmaceutical companies, contract research organizations, and academic medical centers across North America and Europe, advancing NAMs as a credible alternative to traditional animal testing in preclinical drug development.

Abstract: New Approach Methodologies (NAMs) are increasingly being developed to improve the human relevance of preclinical safety assessment; however, many advanced in-vitro systems model parenchymal tissues without a functional vascular interface. This omission limits their ability to reproduce compound delivery, endothelial barrier function, flow-dependent signalling, tissue exposure and vascular injury processes that can determine both organ toxicity and systemic safety. VoxCell has developed a perfusable, endothelialized 3D bioprinted human tissue platform in which a branched vascular lumen is integrated directly within the tissue matrix and matured under dynamic perfusion. The system combines whole-tissue fluorescence imaging and quantitative endothelial coverage with apparent permeability (Papp) measurements to capture complementary structural and functional endpoints. To evaluate its fit-for-purpose in vascular toxicity assessment, endothelialized tissues were matured for seven days and exposed for 24 hours to clinically relevant reference compounds representing complementary injury mechanisms: fosbretabulin, a direct vascular-disrupting agent, and ponatinib, an approved multi-kinase inhibitor with established vascular safety liability. Both compounds increased vascular permeability relative to matched untreated controls and produced distinct patterns of endothelial coverage loss and structural vessel destabilization. In a complementary model, TNF-α and IL-1β were used as positive inflammatory controls, increasing permeability and confirming the assay's sensitivity to inflammation-induced endothelial barrier injury. Together, these findings support vascularization as more than a nutrient-delivery feature: it is an experimentally accessible tissue feature that enables mechanistic assessment of exposure, barrier integrity and endothelial injury. Incorporating perfused vasculature into NAM design may therefore improve biological fidelity and decision relevance for vascular toxicity screening, candidate prioritization, dose refinement and translational safety assessment.



8:55-9:20

New Frontiers in NAMs Applications: Cutting Edge Strategies for Immunogenicity, Toxicology of Pharmaceutical Products and Functional Drug Safety Screening

Simon Authier, DVM, MBA, PhD, DSP (Charles River, Quebec, Canada)

Bio: Dr. Authier obtained a doctor in veterinary medicine degree and completed a Ph.D in pharmacology followed by an MBA in corporate finances. Over the last 25 years, he supported pharma and biotech companies in the development of small & large molecules and cell & gene therapies. He co-authored +170 peer reviewed scientific articles and chapters focusing on drug safety testing assays ranging from in silico to in vitro and in vivo models. Dr. Authier has provided scientific overview as a subject matter expert for Charles River Laboratories for 1600+ non-clinical studies including +20 FDA/Health Canada approved drugs ranging from small molecules, to biologics, vaccines and cell therapies.

Abstract: The rapid evolution of New Approach Methodologies (NAMs) is transforming pharmaceutical development by providing human-relevant, mechanistic, and predictive alternatives to traditional animal-based testing. This session will highlight established and emerging in vitro platforms and advanced translational technologies that are reshaping immunogenicity assessment, toxicological evaluation, and functional drug safety screening across diverse therapeutic modalities.
Key advances in in vitro immunogenicity assays will be presented, demonstrating how human primary immune cells and integrated immune models can identify immune activation pathways, cytokine responses, and anti-drug immune risk earlier in development. These approaches enable more informed candidate selection for biologics, gene therapies, and cell-based therapeutics while supporting regulatory expectations for mechanistic safety assessment.

The session will also explore advanced cell microarray technologies that facilitate high-throughput identification of human-specific receptor interactions and off-target binding profiles. These platforms provide unprecedented insight into the target specificity of monoclonal antibodies, antibody-drug conjugates, small molecules, viral vectors, and CAR-T cell therapies, enabling comprehensive characterization of potential safety liabilities before clinical evaluation.

In the area of ADME and toxicology, participants will gain insights into next-generation in vitro metabolism and barrier models, including human-derived intestinal, blood-brain barrier, pulmonary, and other tissue-relevant systems. These models improve the prediction of absorption, distribution, metabolism, excretion, and tissue-specific toxicity, supporting more accurate translation to human outcomes.

The session will also introduce the application of Human Liver Microphysiological System (MPS) as a paradigm-shifting platform for genotoxicity and safety assessment. By recapitulating key aspects of human liver physiology, metabolism, and cellular interactions, liver MPS technologies enable evaluation of small molecule drug candidates and genotoxic compounds under physiologically relevant conditions.

Together, these NAM-based approaches enhance predictive accuracy, reduce development risk, and accelerate decision-making, ultimately advancing safer and more effective pharmaceutical products while supporting the global transition toward human-centric, non-animal testing strategies.

Picture

9:20-9:45

New techniques to study arsenic binding to proteins: From Molecular Interactions to New Approach Methodologies

Chris Le (University of Alberta; Edmonton, Alberta, Canada)

Bio:

Abstract:

Picture

10:15-11:00
Gabriel Plaa Award

Dr. Mike Wade

Bio:



11:00-12:00

Plenary - Human-Relevant, Globally Connected: Toxicology's Next Chapter

Nicole Kleinstreuer (National Institutes of Health; Bethesda, Maryland, USA)

Bio: Nicole C. Kleinstreuer, Ph.D., is the Acting NIH Deputy Director for Program Coordination, Planning, and Strategic Initiatives. In this role, she leads the Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI) within the NIH Office of the Director, which oversees trans-NIH programmatic research and strategic policy initiatives, including the NIH Common Fund and offices focused on women's health, data science, AIDS research, disease prevention, behavioral and social sciences, dietary supplements, and tribal health, among others.

Dr. Kleinstreuer is internationally recognized for her leadership in developing innovative, human-relevant research strategies that advance public health protection. Prior to her current position, she served as Director of the National Toxicology Program Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM), within the National Institute of Environmental Health Sciences (NIEHS). She also served as Executive Director of the congressionally mandated Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) and as the US National Co-Coordinator for the Organization for Economic Cooperation and Development (OECD) Test Guidelines Programme. In these roles, she led interagency and international efforts to promote new approach methodologies (NAMs), reduce animal testing, and integrate computational modeling, artificial intelligence, and systems toxicology into regulatory science. Her work spans translational bioinformatics, predictive modeling, and quantitative risk assessment. She has authored over 150 peer-reviewed publications and received numerous honors, including the 2019 Society of Toxicology Achievement Award and the 2025 Enhancement of Animal Welfare Award, as well as multiple NIH Director's and NIEHS Merit Awards.

Dr. Kleinstreuer holds B.S. degrees in biomedical engineering and applied mathematics from the University of North Carolina at Chapel Hill and a Ph.D. in bioengineering from the University of Canterbury. She completed postdoctoral training in computational toxicology at the U.S. Environmental Protection Agency and holds adjunct faculty appointments at Yale University and UNC Chapel Hill. She is deeply committed to mentorship, public health protection, and scientific innovation that enhances the translation of biomedical research to real-world impact

Abstract: For decades, toxicology has relied on animal models to predict human risk. The system has served public health well but is increasingly strained by its own limitations: species differences that obscure human-specific effects, timelines too slow for the pace of chemical and pharmaceutical innovation, and a growing ethical imperative to reduce reliance on animal testing wherever science allows. Human-based methods (organoids, microphysiological systems, and computational and AI-driven models) are no longer theoretical alternatives; they are maturing into rigorous, validated tools capable of modeling human biology with precision and relevance animal models often cannot match.

This talk will explore what it means to build a toxicology field that is both human-relevant and globally connected, and the role the National Institutes of Health plays in advancing that vision. NIH is investing in

and coordinating the development, validation, and application of human-based approaches across its research portfolio, working to ensure that combining multiple platforms, such as pairing organ-on-a-chip systems with predictive computational models, can capture biological complexity that no single method achieves alone. NIH also recognizes that this transformation cannot happen in isolation: harmonized validation standards, interoperable data infrastructure, and coordinated regulatory acceptance across borders, achieved in partnership with agencies such as the FDA and international counterparts, are as essential to this next chapter as the underlying science itself.

Drawing on NIH's ongoing efforts to coordinate development, validation, and regulatory translation of these approaches across NIH and with international partners, this talk will examine the progress made and the work still ahead scientifically, technically, and institutionally. Our goal is to leave the audience not only with a clearer picture of where predictive, human-relevant toxicology stands today, but with a shared sense of possibility for where our field can go next, together.



12:00-12:15
ICT 2028

Angela Hofstra, Syngenta

Bio: Angela Hofstra is a senior principal scientist and team lead at Syngenta where she and her team are responsible for the mammalian toxicity assessment of new and existing pesticide active ingredients and products. Angela received a BScPhm and a PhD from the University of Toronto, and an MBA from Wilfrid Laurier University. She worked in pre-clinical toxicology in the pharmaceutical industry prior to joining Syngenta. As a regulatory toxicologist Angela is a strong proponent of using the most predictive and applicable toxicity studies to assess potential human health risk. A member of STC since she was a graduate student, Angela has had various volunteer roles within the society and is currently engaged in planning the International Congress of Toxicology which STC will host in Vancouver, June 11 to 14, 2028.

December 07, 2026
Session II. Computational and Predictive Toxicology



1:15-1:40

Leveraging AI-Driven Stratification for Optimized Clozapine Safety in Treatment-Resistant Schizophrenia: Translating Real-World Evidence into Clinical Decision Support

Lusine Tonoyan (University of Alberta; Edmonton, Alberta, Canada)

Bio: Dr. Lusine Tonoyan is a mathematician and interdisciplinary scientist at the University of Alberta in Edmonton. She serves as the Executive Lead of the Advanced Radical Metabolite Analysis (ARMA) laboratory and as an Adjunct Professor in the Faculty of Pharmacy and Pharmaceutical Sciences.
Dr. Tonoyan completed her B.Sc. and M.Sc. in Mathematics from Yerevan State University, Armenia, and her Ph.D. from Moscow State University, specializing in nonlinear elliptic equations and optimal control theory. She subsequently pursued postdoctoral training in artificial intelligence and machine learning, expanding her expertise into data-driven biomedical research.

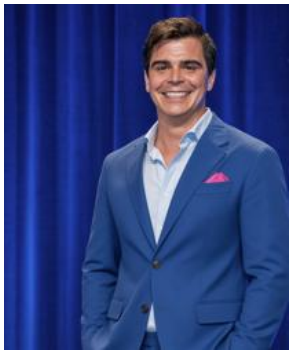
Her research integrates machine learning, toxicology, and biomedical data science to advance understanding of drug safety, pharmacokinetics/pharmacodynamics, and adverse drug reactions. She leverages large-scale real-world health data and multi-omics approaches to investigate complex conditions, particularly in mental health, including schizophrenia and treatment-related outcomes, with a focus on predictive biomarkers and risk stratification. Her research emphasizes the development of interpretable and clinically relevant models that support decision-making in healthcare. In addition to her research, Dr. Tonoyan has played a leading role in academic innovation, being among the first faculty members to introduce machine learning expertise into curriculum development, including designing and teaching new courses and supervising student research projects that incorporate real-world data and AI methodologies. She is an invited speaker at conferences spanning toxicology, artificial intelligence, and biomedical science.

Abstract: Clozapine remains the most effective treatment for treatment-resistant schizophrenia (TRS), yet its use is limited by serious and sometimes unpredictable adverse outcomes and by monitoring strategies that remain largely focused on individual laboratory thresholds. Real-world health data provide an opportunity to move toward more individualized, dynamic risk assessment throughout treatment.

We are developing an AI-driven framework to stratify risk and support safer clozapine use using longitudinal, linked administrative health data. The approach integrates laboratory measurements, medication dispensations, hospital and emergency encounters, physician claims, diagnostic information, and mortality data to characterize evolving patterns associated with clinically important clozapine-related outcomes. Initial work focuses on establishing robust real-world phenotypes for severe neutropenia/agranulocytosis, myocarditis, pneumonia and serious respiratory infection, gastrointestinal hypomotility and related complications, and mortality. Outcomes are classified using multisource evidence and tiered levels of certainty to improve ascertainment beyond single administrative codes.

Longitudinal statistical and machine-learning models will then evaluate whether trajectories and temporal combinations of laboratory, medication, diagnostic, and healthcare-use signals can identify patients whose near-term risk is increasing. Models will emphasize discrimination, calibration, interpretability, temporal validation, and clinically meaningful lead time. Where appropriate, risk estimates will be dynamically updated as new patient information becomes available. External clinical cohorts will provide opportunities to assess transportability, recalibration, and workflow relevance.

By moving from population-level associations to patient-specific and time-varying risk stratification, this work aims to establish a practical framework for earlier warnings of serious adverse outcomes while supporting continued access to clozapine for patients most likely to benefit.



1:40-2:05

Multi-Stage AI Workflows for Regulatory Toxicology: From Chemical Structure to Automated Risk Assessment

Thomas Allen Bozada Jr. (Insilica Inc, USA)

Bio: Thomas (TJ) Bozada is a Johns Hopkins Biomedical Engineer with a track record of scaling 0-to-1 health-tech products, coupling science and technology knowledge with corporate strategy. As Product Lead at Insilica, he guides product strategy and go-to-market for ToxIndex, an agentic AI platform designed to automate chemical safety assessments, and Sysrev, Insilica's evidence synthesis platform. Within the €20M EU ONTOX consortium, TJ helped the initiative leverage Sysrev and ToxIndex for automated evidence synthesis and computational hazard assessment, including training regulators (e.g. ECHA), academic researchers, and commercial stakeholders in new approach methodologies (NAMs) and computational workflows

Abstract: Next Generation Risk Assessment (NGRA) requires synthesizing multi-modal chemical, biological, and toxicological evidence into defensible regulatory decisions. Traditional computational approaches often rely on isolated QSAR models or manual evidence aggregation, creating significant bottlenecks in data harmonisation, mechanistic reasoning, and uncertainty quantification. This presentation introduces a modular, multi-stage artificial intelligence architecture designed to automate regulatory risk assessment workflows starting directly from chemical structure.

The framework addresses key data integration challenges by organizing multi-stage pipelines across four core operational phases. First, chemical structures are standardized and linked to FAIR knowledge registries that unify diverse, multi-source toxicological datasets spanning structured bioassays, historical regulatory dossiers, and open literature. Second, multi-task neural architectures predict biological activity across thousands of endpoints while specialized natural language models extract mechanistic evidence from unstructured text. Third, the system dynamically constructs Adverse Outcome Pathways (AOPs) by connecting molecular initiating events to organ-level adverse outcomes through structured AOP knowledge graphs. Fourth, supervised read-across models and self-conditioning generative architectures synthesize weight-of-evidence hazard profiles with explicit applicability domain boundaries and confidence metrics.

Rather than relying on predictions alone, this architecture aggregates and harmonises raw experimental bioassays, historical study reports, and extracted literature findings into a unified analytical pipeline. By embedding continuous data provenance, audit trails, and abstention boundaries into every step, the multi-stage workflow transforms disparate empirical and computational inputs into transparent, audit-ready weight-of-evidence packages. We demonstrate how modular AI architectures enable regulatory risk assessors to accelerate comprehensive evidence synthesis while maintaining rigorous standards for auditability, reproducibility, and human oversight.

December 08, 2026
Session IV. Exposure Science and Risk Assessment



8:30-8:55
The Alberta Biomonitoring Program: Tracking Environmental Exposure in Maternal and Child Populations

Amy MacDonald (Alberta Society for Human Toxicology; Calgary, Alberta, Canada)

Bio: Amy MacDonald is a Senior Scientist at the Alberta Centre for Toxicology in Calgary, Alberta, and has been working in the field of human biomonitoring for over 17 years. Amy received her PhD in analytical chemistry from the University of Alberta. She is a member of the International Human Biomonitoring Guidance Value (i-HBM) working group and the current President of the Alberta Society for Human Toxicology.

Abstract: The Alberta Biomonitoring Program (ABP) was established in 2005 to characterize baseline levels of exposure to environmental chemicals in pregnant women in Alberta. Over the past twenty years, the program has expanded to include exposure surveillance in children and maternal/newborn pairs, as well as targeted studies of cannabis and related exposures in pregnant women following federal cannabis legalization. The ABP provides regional exposure data on these vulnerable populations that complement national biomonitoring programs. The next phase is currently in planning and will provide further data on trends in exposure over time.

This presentation will highlight each phase of the program, including differences in study populations, sampling approaches, and the range of chemical classes investigated such as persistent organic pollutants, metals, pesticides, per- and polyfluoroalkyl substances (PFAS), plasticizers, flame retardants, phytoestrogens, as well as markers of tobacco smoke, cannabis, and alcohol exposure. The use of residual specimens and sample pooling will be discussed as approaches for efficiently characterizing population-level exposures. Key findings across the completed phases will be presented, including geographic and age-related differences and temporal trends in exposure. Challenges and lessons learned across the phases will also be discussed. Future directions will include continued monitoring and approaches for placing biomonitoring results in a health-based context through comparison with available human biomonitoring guidance values.



8:55-9:20
Human Health Risk Assessment of Resource Projects in Western Canada

Karen Phillips (Alberta Society for Human Toxicology; Calgary, Alberta, Canada)

Bio: Karen Phillipps is part of the Canadian Environmental Group of Intrinsik Corp. and is located in the Calgary office. She has 25 years of consulting risk assessment and toxicology experience, with most of this experience in western Canada. Karen is a graduate of the University of Guelph, with a B.Sc. in Biomedical Toxicology and an M.Sc. in Food Safety and Toxicology. She is a Board-Certified toxicologist with the American Board of Toxicology, the United Kingdom Registry of Toxicology and the European Register of Toxicologists.

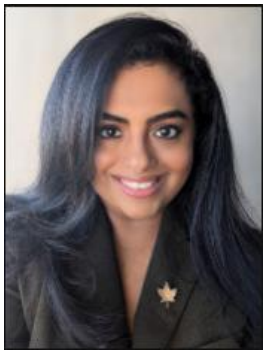
Abstract: Natural resource projects are key economic drivers in western Canada. Alberta and British Columbia both have comprehensive regulatory requirements for Environmental Impact Assessments (EIA) for such projects, and both require the assessment of human health risks. Other types of projects, such as sweet and sour gas wells, can require also assessments of health risks. This presentation will provide a high-level overview of requirements for the assessment of human health, and with an emphasis on how toxicity information is incorporated.

Picture

9:20-10:05
Henderson Award

Dr. Matthew Meier

Bio:



10:25-10:40

Charting a Path Forward: Building Canada's Toxicity Testing Roadmap

Shaarika Sarasija (Humane World for Animals)

Bio: Shaarika (Shaar) Sarasija, PhD, is the Program Director of Research and Regulatory Science at Humane World for Animals Canada. A former CIHR Postdoctoral Fellow and neuroscientist, she works at the intersection of science, policy, and regulation to advance New Approach Methods (NAMs) and animal-free science in Canada. She leads national multi-stakeholder initiatives focused on modernizing toxicity testing and accelerating the regulatory adoption of innovative, human-relevant methods



10:40-11:05

What the Sample Reveals: Drug Testing Data in Alberta

Penny Colbourne (Alberta Precision Labs, Edmonton, Alberta, Canada)

Bio: Dr. Penny Colbourne is a Clinical Toxicologist working at the University of Alberta Hospital Toxicology Laboratory, a major referral site for therapeutic drug monitoring, clinical toxicology testing and trace elements analysis. She is also a Clinical Professor at the University of Alberta in the Faculty of Medicine and Dentistry. Dr. Colbourne has a B.Sc. in Medical Laboratory Science and a Ph.D. in Pharmaceutical Sciences, both from the University of Alberta. She is a Fellow of the American Board of Forensic Toxicology, a Board Member of the Alberta Society for Human Toxicology and is a member of Alberta Precision Laboratories' provincial Toxicology Working Group.

Dr. Colbourne is an inspector for the National Laboratory Certification Program, a U.S based program, inspecting forensic drug testing laboratories and has presented at both national and international conferences and makes scientific presentations to the medical and technical community, the business sector and to government groups. She has several publications to her credit and has testified in both Family Court of Alberta and Alberta Court of Queen's Bench as an Expert Witness. Dr. Colbourne has worked on laboratory improvement projects such as development of an in-house laboratory information system, clinical toxicology software enhancements and more recently improvement projects related to a provincial laboratory information management system all of which benefit the laboratory, the patient and the clinician.

Abstract: The University of Alberta Hospital Toxicology Laboratory (Alberta Precision Laboratories) receives samples for urine toxicology testing from the northern half of the province. The presentation will focus on the positivity rates associated with the various analytes in the testing panels and the trends observed. In particular, the trends and drug associations related to fentanyl and fentanyl analogues will be presented. The data will also give a glimpse into the ever-changing landscape associated with the drug supply

December 08, 2026
Session V. Safety Assessment, Regulatory Perspectives, and Future Global Outlook

Picture

1:05-1:50
Barbara Hales Award

Dr. Carolyn Baglole

Bio:

Picture

1:50-2:15
Title - Session to be confirmed

Konst Mroncz (Altasciences, Los Angeles, USA)

Bio:

Abstract:



2:15-2:40
Update on Key CEPA Amendments and the Chemicals Management Plan

Robin Churchill (Health Canada; Ottawa, Ontario, Canada)

Bio: Dr. Robin Churchill is the Director of the Existing Substances Risk Assessment Bureau in the Safe Environments Directorate of Health Canada. Over the past 21 years, Robin has worked in a number of areas related to the safety of Canadians, including the oversight of chemicals in food, natural health products and non-prescription drugs, environmental chemicals, fertilizers and supplements. Much of Robin's current work is looking at the impacts of chemicals in commerce on human health, implementation of some of the new requirements under the updated Canadian Environmental Protection Act (CEPA), and discussing issues related to Canada's Chemicals Management Plan with the broad range of partners and stakeholders interested in chemicals management in Canada.

She holds a PhD in Environmental Biology from the University of Guelph, an MSc in Biochemistry from Memorial University of Newfoundland and a BSc (Hon.) in Biochemistry from the University of Calgary.

Abstract: This presentation provides an update on the implementation of recent amendments to the *Canadian Environmental Protection Act, 1999* (CEPA) and key initiatives under Canada's Chemicals Management Plan (CMP). It highlights how the Government of Canada is strengthening chemicals management through legislative modernization, enhanced transparency, and a commitment to protecting both human health and the environment.

The presentation outlines progress on major CEPA modernization initiatives, including implementation of the right to a healthy environment, the Plan of Priorities, the Watch List, and measures to strengthen the assessment and management of toxic substances. It also describes efforts to reduce reliance on vertebrate animal testing through the adoption of new approach methodologies and innovative prioritization tools such as Health Canada's Automated Workflow for Prioritization (HAWPr).
Updates are provided on ongoing risk assessment and risk management activities for per- and polyfluoroalkyl substances (PFAS), including recent scientific assessments, proposed risk management measures, and stakeholder engagement activities. The presentation also summarizes federal actions to address other substances of interest. Finally, it highlights consultation opportunities and key milestones that will support continued engagement with stakeholders, partners, Indigenous groups, industry, and the public as implementation of modernized CEPA continues.



2:40-3:05

Deploying New Approach Methodologies (NAM) within a Computational Workflow for Enhanced Prioritization and Rapid Screening of Existing Chemicals in Canada

Matthew Gagne (Health Canada; Ottawa, Ontario, Canada) - Virtual talk

Bio: As a Senior Chemical Evaluator at Health Canada, Matthew Gagne is responsible for applying new approach methodologies (NAM) to risk assessment activities. He has represented Canada on several international projections including at the Accelerating the Pace of Chemical Risk Assessment Case Studies Group and numerous OECD Expert Panels, including the QSAR Toolbox User Group, the IATA Case Studies Project, the IUCLID Expert Working Group, and the Robust Study Summaries project. Matthew currently serves as a co-lead of the OECD Systemic Toxicity IATA Framework Project. Finally, Matthew is the lead developer of a computational workflow that integrates in silico, in vitro, and in vivo toxicity information into a decision framework for prioritizing substances on the Domestic Substances List. He also has extensive experience with, and interest in, various programming languages (R, Python, KNIME) that are essential for integrating large data sets pertaining to NAM.

Abstract: There is increasing global momentum toward adopting New Approach Methods (NAM) that make use of non-animal approaches for the testing and assessment of chemicals. Canada is a leading country in this effort. The recently amended Canadian Environmental Protection Act (CEPA) now requires activities to replace, reduce or refine the use of vertebrate animals in toxicity testing, which have accelerated advancements in NAM research and regulatory use at Health Canada. Early efforts focused on identifying opportunities where the use of NAMs supports better informed decisions in the absence of traditional toxicity test data under CEPA. Building on the foundational Accelerating the Pace of Chemical Risk Assessment (APCRA) case study, which explored the utility of in vitro high-throughput bioactivity data as a protective estimate of in vivo adverse effects, we have developed an internal NAM workflow. This workflow was subsequently published in the Health Canada Science Approach Document for the prioritization and screening-level assessment of chemicals under the Canadian Environmental Protection Act, 1999 (March 2021; updated August 2026). We have continued to refine the approach, considering advances in methods and technologies with the aim of more robustly identifying a bioactivity-based threshold to inform a point of departure (POD) for assessment. These include additional high-content assays and more advanced pharmacokinetic modelling to derive quantitative PODs that are being incorporated into broader integrated workflows. This presentation will highlight our progressive and iterative approaches for the derivation of robust in vitro bioactivity PODs and demonstrate application in a regulatory context within a NAM-based prioritization workflow.

Poster List

Posters are to be set up in the X Meeting room on December 07, 2026 between 7:00 and 8:30 and removed during the lunch break on December 08, 2026.

Poster No.	Title and Authors
1	

Poster Presenters

Abstract and Poster No.	1
Title	
Authors	
Affiliations	
Abstract	

ICT 2028

Dear colleagues,

In 2028, for the first time in 20+ years, the International Congress of Toxicology (ICT) will be held in Canada — and, as proud host of this prestigious scientific event, the Society of Toxicology of Canada (STC) is pleased to invite you to experience "*Toxicology in a Changing World*" at ICTXVIII in Vancouver, June 11-14, 2028.

The ICT, held once every three years, is the premier event for the International Union of Toxicology (IUTOX) — the global organization connecting more than 60 national and regional societies worldwide, together representing more than 25,000 toxicologists. The SCT is a founding member of IUTOX, and ICT 2028 marks the third time the STC has been awarded the right to host the congress. Our Society hosted the very first ICT in Toronto in 1977, as well as ICTXI in Montreal in 2007. Other recent editions of the congress have been held in Merida, Seoul, Honolulu, and Maastricht, with ICTXVII scheduled for October 2025 in Beijing.

ICTXVIII in Vancouver is expected to attract some 2000 toxicologists from around the world — from academia, industry, government, and non-governmental organisations — to teach, learn, network, celebrate achievement, and showcase the latest advances in the field.

The International Congress of Toxicology — like toxicology itself — is interdisciplinary, consistently offering delegates a wide range of perspectives and presentations on a host of current and emerging issues such as: advances, and new approaches in toxicity testing including 'omics, modelling, AI, animal-free methods; assessing novel therapeutics, new technology, medical devices; emerging chemicals of concern; toxicology across the lifespan – developmental origins, genetic, epigenetic, clinical and forensic; One Health and toxicology, the interdependence of all living things -climate change, environmental contaminants, food safety, social justice; and toxicology for next generation risk assessment – cumulative, mixtures, multistressor interactions, susceptibility.

The four-day program for the 2028 ICT will provide attendees with a variety of sessions to choose from, including exciting keynotes presented by leading researchers; plenaries; short and long symposia; workshops; and special seminars addressing the state of the art in toxicology, all in one of Canada's premier event venues — the Vancouver Convention Centre — with opportunity for ancillary meetings before and after the conference. A call for proposals will be issued in 2026. Of course, the congress will also offer an array of attractive social activities to allow delegates and their guests to make and renew acquaintances and experience Vancouver's spectacular scenery and rich and diverse cultures and cuisines.

Stay tuned for more details, and we look forward to welcoming you to ICTXVIII in Vancouver!

About Vancouver: Vancouver, British Columbia is located on Canada's west coast, directly north of the US state of Washington. Nestled between the Coast Range mountains and the Strait of Georgia, the city is renowned for its natural beauty. The greater Vancouver region has a population of more than 2 million people — the third-largest metropolitan area in Canada — yet remains very much a "city of neighbourhoods," each with a distinct character. Vancouver celebrates its cultural diversity, with many residents tracing their backgrounds to

Greece, Italy, China, Japan, India, and other nations. The SCT acknowledges that the City of Vancouver is situated on the traditional and unceded territory of the Musqueam, Squamish, and Tsleil-Waututh First Nations.

www.ICT2028.com



2027 STC Annual Symposium

Montreal, Quebec, Canada

Meet and Greet Location

Sunday, December 6, 7-10 pm/Dimanche, 6 Décembre 7-9h pm

Venue

Venue Address