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# Lake Louise Tandem MS Workshop Program

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December 4 – 7, 2024

Fairmont Chateau Lake Louise  
111 Lake Louise Drive  
Lake Louise, AB, Canada

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# Welcome to the Lake Louise Tandem MS Workshop

Dear Colleagues,

Welcome to the 36th edition of the Tandem MS Workshop. We hope that you will enjoy the presentations and the social events we have organized for you this year. Held annually at the Fairmont Chateau Lake Louise, Lake Louise, Alberta, the Workshop focuses on scientific exchange and dissemination of technical aspects of tandem mass spectrometry.



## 36th Annual Tandem Mass Spectrometry Workshop

### General Information

#### Registration

Registration Opens on Wednesday, December 4 at 16:00 in the Victoria Ballroom Foyer. Please come to pick up your packages and badges.

#### Posters

Poster presenters should have their posters up by 20:00, Wednesday, December 4. Posters must be taken down by noon on Friday, December 6.

#### Meals

Please note: If you order beverages other than tea or coffee at ANY meal, you will be charged. If anyone has special dietary requirements, please contact Janette Champ, if you have not already done so. Vouchers are available for lunches on Friday and Saturday for those wishing to ski or hike. Please obtain the Lunch-to-Go Vouchers at dinner the night before. Vouchers are to be used at the Chateau Deli located in the Lobby of the Hotel. If you take a voucher, you may NOT join in the sit-down lunch as well.

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## Wednesday, December 4

- 16:00 to 17:25 Meet & Greet  
Pick up program package, name tags, drink tickets.  
**Victoria Ballroom Foyer**
- 17:25 Introductory Remarks: **Lars Konermann**, The University of Western Ontario, London, ON, Canada
- 17:30 to 18:15 Plenary Lecture - Victoria Ballroom  
**Michel L. Gross**, Washington University, St. Louis, MO  
*Lake Louise and Tandem Mass Spectrometry: A 36-Year Record of Breathtaking Change*
- 19:00 to 23:00 Dinner  
**Victoria Ballroom**

## Thursday, December 5

- 07:00 Breakfast  
**Louiza, Lower Level**
- 07:30 Registration Opens for Late Badge Pickup  
**Victoria Ballroom Foyer**
- Ion Chemistry and Ion Structures  
Chair: **Jon Amster**, University of Georgia, Athens, USA
- 08:00 **Peter Armentrout**, The University of Utah, Salt Lake City, USA  
*Challenges for Conformational-Space Calculations by Density Functional Theory and First Measurements of the Energetics of Peptide Conformers*
- 08:25 **Michael Duncan**, University of Georgia, Athens, GA  
*Photodissociation Spectroscopy of Metal Ion Complexes*
- 08:50 **Anouk Rijs**, Agathe Depraz Depland, Andrea Istrati, Sjors Bakels, May Constabel, Iuliia Stroganova, Ariadni Geballa-Koukoula, Vrije Universiteit, Amsterdam, The Netherlands  
*Unraveling Amyloid Oligomer Structures: Ion Mobility Mass Spectrometry Coupled with IMRPD Spectroscopy*
- 09:15 **Elvin Cabrera**, Brian H. Clowers, Perdita Barran, University of Manchester, UK  
*Techniques for Ultra-Fast IM-MS Experiments and Structural Characterization of Large Protein Complexes*
- 09:40 Discussion & Coffee Break  
**Victoria Ballroom**

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## Thursday, December 5, cont.

### Proteomics

Chair: **Peter Verhaert**, ProteoFormiX BV, BEL

- 10:10 **Marie A. Brunet**, Université de Sherbrooke, Sherbrooke, QC  
*Learning translation: deep learning-guided proteogenomics*
- 10:30 **Daniel Hermanson**, Eugen Damoc, Cristina Jacob, Philip Remes, and Scott Peterman, Thermo Fisher Scientific, San Marcos, CA, USA  
*Translating omics discoveries into quantitative insights*
- 10:50 **Jennifer Geddes-McAlister**, Ben Muselius, Florence Roux-Dalvai, Melanie Alpaugh, Arnaud Droit, University of Guelph, Guelph, Canada  
*Organ atlas proteome mapping of cryptococcosis defines novel putative biomarkers and promising druggable targets for personalized health management*
- 11:10 **Meinusha Govindarajan**, Shahbaz Khan, Anish Puri, Vladimir Ignatchenko, Ximing Li, Matthew Waas, Amanda Khoo, Lydia Y Liu, Nazanin Tatari, Nhu-An Pham, Chitra Venugopal, Laurie Ailles, Ming-Sound Tsao, Sheila Singh, Thomas Kislinger, University of Toronto, Toronto, Canada  
*Pan-cancer N-glycoproteomic atlas of patient-derived xenografts for therapeutic target discovery*

### **Legends of Lake Louise Travel Award Winner**

- 11:30 **Margret Thorsteinsdottir**, Unnur A Thorsteinsdottir, Hrafnhildur L. Runolfsdottir, Finnur F Eiriksson, Vidar O. Edvardsson, Runolfur Palsson, Faculty of Pharmaceutical Sciences, University of Iceland  
*Implementation of UPLC-MS/MS assay for therapeutic monitoring in patients with APRT deficiency*
- 11:50 **Ian K. Webb**, Ashlyn N. Dollar, Ankita B. Gurav, Indiana University, Indianapolis, USA  
*Discerning the Structural Dynamics of the Dark Proteome with Tandem Mass Spectrometry*

12:10 Discussion & Group Photo

12:30 - 14:00 Lunch

**Louiza, Lower Level**

### Biological Applications

Chair: **Jeff Smith**, Carlton University, Ottawa, Canada

- 14:00 **Broc Glover**, Waters Limited, Mississauga, Canada  
*Going Faster: Leveraging MRT Analyzers for High-Throughput, No-Compromise Omics*
- 14:20 **Christopher Thibodeaux**, McGill University, Montreal, Canada  
*An interesting lipid-modifying enzyme involved in bacterial virulence and antimicrobial resistance*
- 14:40 **Steffen Lindert**, Ohio State University, Columbus, USA  
*Energy Resolved Mass Spectrometry Data from Surfaced Induced Dissociation Improves Prediction of Protein Complex Structure*
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## Thursday, December 5, cont.

15:00 *Amir Khajavinia, Deborah Michel, Udoka C. Ezeaka, Randy W. Purves, Shawn N. Whitehead, Robert B. Laprairie, Anas El-Aneed, College of Pharmacy and Nutrition, University of Saskatchewan*  
*Development of quantification and imaging mass spectrometric methods for the analysis of psilocin in plasma and brain tissues*

**Winner of a CSMS Travel Award**

Sponsored by:



15:20 *Yury Vasilev, Agilent Technologies*  
*Electron Capture Dissociation of Ion Mobility Selected Proteins*  
**AGILENT Sponsored Talk**

15:40 Discussion & Coffee Break  
**Victoria Ballroom**

Proteins

Chair: **Gary Glish**, University of North Carolina, Chappel Hill, USA

16:10 *Rachel Loo, Joseph Loo, UCLA, Los Angeles, USA*  
*How to Break Up Married Subunits*

16:30 *Bradley T. V. Davis, Anisha Haris, Alex Keszei, Algirdas Velyvis, David Bruton, Kevin Giles, Mohammad Mazhab-Jafari, Siavash Vahidi, University of Guelph, Canada*  
*Charge Detection Mass Spectrometry Meets Cryo-EM: Insights into Proteasome Activator Complexes*

**Winner of the Margaret Northcott Lake Louise Travel Award**

16:50 *Elyssia Gallagher, Michael S. Cordes, Madeline G. Bannon, Alexis N. Edwards, Baylor University, Waco, USA*  
*Exploring the effects of ionization mode on the analysis of proteins in native mass spectrometry*

17:10 *Mike Bowers, Steven Burratto, Ambuj Singh, Yingying Jin, UCSB, USA*  
*Parkinson's Disease: Search for Therapeutic Agents: An Update*

17:30 Discussion

18:00 to 19:15 Dinner  
*LAGO, located on the main floor in the Mount Temple Wing*

**PICK UP LUNCH-TO-GO VOUCHERS.** Please ask a server

Ion Mobility

Chair: **Derek Wilson**, York University, Toronto, Canada

19:30 *Brandon Ruotolo, University of Michigan, Ann Arbor, USA*  
*Collision Induced Unfolding: High-throughput, Information-rich Stability Measurements of Biological Macromolecules*

**Winner of The Ken Standing Award**

Sponsored by:



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## Thursday, December 5, cont.

- 19:55 **John McLean**, Benjamin K. Blakely, Jody C. May, Vanderbilt University, Nashville, USA  
*Refining the landscape of high dimensional molecular phenomics - strategies for enantiomer separations with high resolving power ion mobility-mass spectrometry*
- 20:15 **Christian Bleiholder**, Fanny C. Liu, Jusung Lee, Kaira A. Mayberry, Mark E. Ridgeway, Christopher A. Wootton, Alina Theisen, Erin M. Panczyk, Benjamin J. Jones, Lea Nienhaus, Melvin A. Park, Florida State University, Tallahassee, USA  
*Are atomic-level protein structures amenable with ion mobility/mass spectrometry?*
- 20:35 **Erin Baker**, Guozhi Zhang, Artur McMillian, Abigail Gancz, Pieter Dorrestein, Tessa Andermann, Casey M Theriot University of North Carolina at Chapel Hill, Chapel Hill, USA  
*What Can Your Poop Tell You About Your Health?*

## Poster Session

20:55 to 23:00 Authors are asked to be present until 23:00

**Annie Ha**, Amanda Khoo, Jaron Arbet, Zhuyu Qiu, Stanley K Liu, Julius O Nyalwidhe, Oliver John Semmes, Paul C Boutros, Thomas Kislinger, University of Toronto, Toronto, Canada  
*Racial differences of the urinary proteome in Black men with localized prostate cancer.*

**John Headley**, Rio G Bouwers, Erin Pedersen, Ian J Vander Meulen, Dena W McMartin, Cassidy VanderSchee, University of Saskatchewan, Saskatoon, Canada  
*Tandem mass spectrometry of oil sands naphthenic acid-metal interactions in water samples*

**Mahsa Dolatkahh**, Lars Konermann, University of Western Ontario  
*Operation of an Electrospray Source Studied by Molecular Dynamics Simulations*

**Nathan Ghafari**, Athanase C, Lacroix M, Sleno L, University of Quebec in Montreal  
*Correlation analysis to improve metabolome coverage for studying different disease models*

**Ayesha Chaudhry**, Cristina Lento, Derek Wilson, York University, Toronto, Canada  
*Understanding the misfolding of Tau protein using Time-resolved Hydrogen-Deuterium Exchange Mass Spectrometry*

**Jennifer Kolwich**, Jessie F. Deng, Lainey K. Ennett, Kyla Toshack, Richard D. Oleschuk, and Avena C. Ross, Queen's University, Kingston, Canada  
*Monitoring spatiotemporal dynamics of soil microbe co-culture metabolites using ambient mass spectrometry.*

**Chau Nguyen**, Tao Huan, University of British Columbia, Vancouver, Canada  
*Alternation of ionization efficiency and its consequence to quantitative comparison in untargeted metabolomics*

**Richard Oleschuk**, Jian Yu, Jess Deng, Haidy Metwally, Jennifer Kolwich, Hailey Tomm, Martin Kaufmann, Rachel Klotz, Chang Liu, J.C. Yves Le Blanc, Thomas R Covey, John Rudan, Avena Clara Ross, Queens University, Kingston, Canada  
*Rapid and robust workflows using different ionization, computation and visualization approaches for spatial metabolome profiling of microbial natural products*

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## Thursday, Dec. 5 Poster Session, cont.

**Paul Mayer, Sofia Zaman, Andras Bodi**, University of Ottawa, Ottawa, Canada  
*To bond or not to bond: the temperature is the question (and the answer)*

**Yuen Ki Ng, Elnaz Aliyari, Caroline Cui and Lars Konermann**, University of Western Ontario, London, Canada  
*Enzyme Catalysis in the Gas Phase Revealed by ESI-IMS/MS/MS*

**Derek Wilson, Esther Wolf, Vimanda Chow, Alex Listigovers, Cristina Lento**, York University, Toronto, Canada  
*Rapid Characterization of Protein Interactions Using Automated Millisecond Hydrogen Deuterium Exchange Mass Spectrometry*

**Zeynab Azimychetabi, Erin N. Morrison, Anna B. Kisiala, Scott C. Farrow, R. J. Neil Emery**, Trent University, Peterborough, Canada  
*The Relationships Among Phytohormones And Benzylisoquinoline Alkaloids During Early Development Of Papaver Rhoeas L.*

**Joshua Maliepaard, Dr. Karli R. Reiding**, Biomolecular Mass Spectrometry and Proteomics, Utrecht University, Utrecht Netherlands  
*Towards MS-based identification and quantification of glycopeptide isomers*

**Syed Ghulam Musharraf**, H.E.J. Research Institute of Chemistry, ICCBS, University of Karachi  
*Dereplication of Polyherbal formulation using mass spectrometry-based targeted and untargeted metabolomic*

**Tao Huan**, University of British Columbia, Vancouver, Canada  
*Influence of Ionization Efficiency Variability on Quantitative Metabolomics*

**Kasra Hanifi, Lars Konermann**, The University of Western Ontario, London, Canada  
*Mobile Proton MD Simulations for Determining Protein Charge State Distributions in Aqueous Ammonium Acetate Droplets During Native ESI-MS*

**Evelyn MacKay-Barr, Lars Konermann**, The University of Western Ontario, London, Canada  
*Oxidative Modifications During Thermal Protein Unfolding and Their Implications for Thermodynamic Stability Measurements*

**Randall Clark, Younis Abiedalla**, Auburn University, Auburn, USA,  
*EI-MS and MS/MS Fragmentation Studies on Regioisomeric Ether Substituted Aromatic Esters and Ketones*

**Arthur Zastepa, Judy A. Westrick, Paul W. MacKeigan, Zofia Ecaterina Taranu, Todd R. Miller, Anqi Liang, Irene Gregory-Eaves, Justin D. Chaffin**, Environment and Climate Change Canada, Burlington Canada  
*Bioactive metabolites produced by cyanobacterial blooms in Canadian freshwaters*

**Elisabeth Schwiebert**, Georgia Institute of Technology, Atlanta, USA  
*Metabolomics of Papanicolaou Tests for the Discovery of Ovarian Cancer Biomarkers*

**David Schriemer, Bruno Amaral, Andrew Michael**, University of Calgary, Calgary, Canada  
*Click-linking: an approach to in situ crosslinking that improves sampling of protein interactions*

**Thomas Kislinger**, Princess Margaret Cancer Centre, Toronto, Canada  
*Droplet-based proteomics for low-input proteomics*

**Shannon Lemmens, Arthur E. Lee, Christian Ieritano, W. Scott Hopkins**, University of Waterloo, Waterloo, Canada  
*Fragmentation Behaviour of Short-Chain Perfluoro Sulfonic Acids: Mechanisms and Pathways of SO<sub>3</sub><sup>-</sup> and FSO<sub>3</sub><sup>-</sup> Formation in the Gas Phase*

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## Thursday, Dec. 5 Poster Session, cont.

**Anas El-Aneed**, Maryam Alyari, Salah Almubarak, Darryl Adamko, College of Pharmacy and Nutrition, University of Saskatchewan

*Assessment of LC-MS targeted metabolomics for urgent neuroprotective cooling of hypoxic ischemic encephalopathy (HIE) neonatal*

**Chris Le**, Tetiana Davydiuk, Karen Hoy, Chester Lau, Qingqing Liu, Xiufen Lu, Hanyong Peng, University of Alberta, Edmonton, Canada

*Identification of arsenic species for studies of arsenic metabolism and health effects*

**Reshmi Karamel**, Lydia Zamlynny, Christopher O. Miles, Krista Thomas, Elliott Wright, Pearse McCarron, University of Ottawa, Ottawa, Canada

*Unimolecular Dissociative Photoionization of Terpene Radical Cations*

**Joe Anacleto**, Ebadullah Kabir, Yves LeBlanc, Cristina Lento, Derek J. Wilson, York University  
*Reducing gas-phase hydrogen/deuterium scrambling on a QTOF Mass Spectrometer equipped with electron activated dissociation (EAD) fragmentation technology*

**Sandesh Gondarry**, Paul M. Mayer, University of Ottawa, Ottawa, Canada

*Does the dissociation of guaiacol family radical cations mimic their thermal decomposition?*

**Liang Li**, University of Alberta, Edmonton, Canada

*Developing Separation Techniques and Tandem MS for Expanding and Characterizing the Metabolome, Lipidome, and Exosome in Biological Systems*

**Wei, Zhou**, Janusz Pawliszyn, University of Waterloo, Waterloo, Canada

*High throughput analysis in complex samples by coated blade spray-mass spectrometry*

**Dajana Vuckovic**, Reza Maulana, Lise Cougnaud, Ana Carolina dos Santos, Concordia University, Montreal, Canada

*Impact of adduct and internal standard selection on accuracy of semi-quantification in lipidomics*

**Thomas Velenosi**, Victor Lee, Khanh Nguyen, Linglan Zhu, Chloe White, Tao Huan, University of British Columbia, Vancouver, Canada

*DIATAGeR: Triacylglycerol Annotation of Data-Independent Acquisition based Lipidomics*

**Pierre Chaurand**, Rachel Pryce, Catherine Argyriou, Nancy Braverman, Samy Omri, Université de Montréal, Montreal, Canada

*Lipidomic Alterations in the Retina of a mouse model of Zellweger Spectrum Disorder Investigated by Mass Spectrometry Imaging*

**Jared Shaw**, Sachin Tennakoon, University of Nebraska-Lincoln, Lincoln, United States

*Characterization of ribosome heterogeneity by complex-up and top-down mass spectrometry*

**Jeffrey Smith**, Christian A. Rosales, Noah A. Lepinsky, Wondewossen Gebeyehu, Fraser Colquhoun, Karl V. Wasslen, Benjamin B. Warnes, Jasmine Chihabi, Jeffrey M. Manthorpe, Carleton University, Ottawa, Canada  
*Improved LCMS detection of opioids, amphetamines, and psychedelics using TrEnDi*

**Francisco Fernandez Lima**, Florida International University, Miami, USA

*Top/middle/bottom TIMS-ExD/UVPD histone proteoform identification of unknown coral species*

**Scott Hopkins**, Christian Ieritano, Mila Abaeva, Derek Schipper, University of Waterloo, Waterloo, Canada  
*Symmetry (in)action: How protonation can induce pseudochirality within achiral molecules*



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## Thursday, Dec. 5 Poster Session, cont.

**Katherine Tschirhart**, Emir Nazdrajic, Scott Hopkins, Larry Campbell, Domenico Santoro, University of Waterloo, Kitchener, Canada  
*Comparative Analysis of Disinfection Byproducts from Chlorine, Peracetic Acid, and Performic Acid in Wastewater Using UHPLC-HRMS*

**Peter Verhaert**, Gilles Frache, Dietmar Thal, Marthe Verhaert, Raf Sciot, ProteoFormiX & University of Leuven, Leuven, BEL  
*(Tandem) Mass Spectrometry Histochemistry of FFPE tissue sections. Close to the Holy Grail in Pathology?*

**Lars Konermann**, V. Alinezhad, Y. K. Ng, S. Mehta, University of Western Ontario, London, Canada  
*Uncovering the Pathway of Serine Octamer Magic Number Cluster Formation During Electrospray Ionization: Experiments and Simulations*

## Friday, December 6

- 07:00      Breakfast  
**Louiza, Lower Level**  
  
Protein Therapeutics  
Chair: **Erin Baker**, University of North Carolina, Chapel Hill, NC, USA
- 08:00      **Andy Hoofnagle**, University of Washington, Seattle, WA, USA  
*Protein analysis for clinical care, one piece at a time.*
- 08:25      **Dina Schuster** Jan Fiala, Simon Ollivier, Danique M.H. van Rijswijck, Athanasios Smyrnakis, Florian Busch, Mariangela Kosmopoulou, Stuart Pengelley, Oliver Raether, Jean-Francois Greisch, Dimitris Papanastasiou, Albert J.R. Heck, Utrecht University, Utrecht, The Netherlands  
*Novel mass spectrometry approaches for antibody analysis: repertoires, sequencing and therapeutics*
- 08:50      **Luca Fornelli**, Linda Lieu, Cynthia Nagy, Ryan Oates, Jake Kline, Christopher Mullen, Graeme McAlister, David Bergen, Vlad Zabrouskov, Kristina Srzenti, Kenneth Durbin, Rafael Melani, University of Oklahoma, Norman, Oklahoma USA  
*Simplifying to characterize: applications of proton transfer charge reduction to improve the middle-down mass spectrometry analysis of antibodies and biotherapeutics*
- 09:15      **Igor A. Kaltashov**, University of Massachusetts, Amherst MA, USA  
*Reverse Engineering of a Pathogenic Antibody Reveals the Molecular Mechanism of a Vaccine Side Effect*
- 09:40      Discussion & Coffee Break  
**Victoria Ballroom**  
  
Methods and Instrumentation, Part I  
Chair: **David Schriemer**, University of Calgary, Calgary, Canada
- 10:10      **Yehia Mechref**, Texas Tech University, Lubbock, USA  
*Isomeric Separation of Glycans and Glycopeptides with Mesoporous Graphitic Carbon Material for Effective Tandem MS Interpretation*
- 10:30      **Sylvain Letarte**, Ingenio by Phytronix, Calgary, Canada  
*Selective Water radical cation adduct formation in the analysis of Dehydroepiandrosterone*
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## Friday, December 6, cont.

10:50 *Carlos Canez, Liang Li, University of Alberta, Edmonton, Canada*  
*The adverse effects of labware leachables on lipidome analysis and the multiple sources contributing to contamination variability.*

**Winner of a CSMS Travel Award**    Sponsored by:



11:10 *Shira Joudan, Nipuna Senanayake, University of Alberta, Edmonton, Canada*  
*Redox chemistry of antioxidant environmental pollutants: In source or solution?*

11:30 *Xing-Fang Li, Qiming Shen, Tingting Zhao, K.N. Minh Chau, Emma Jin, Menglan Gao*  
University of Alberta, Edmonton, Canada  
*Nontargeted Analysis of Emerging Contaminants in Water*

11:50 Discussion

12:00 to 13:30 Lunch  
*Louiza, Lower Level*

**FRIDAY AFTERNOON - FREE TIME - ENJOY THE GREAT OUTDOORS!**

18:00 Cocktails  
*Victoria Foyer/Victoria Ballroom*

19:00 to 23:00 Banquet Dinner  
*Victoria Ballroom*

**PICK UP LUNCH-TO-GO-VOUCHERS.** Please ask a server.

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## Saturday, December 7

- 07:00 Breakfast  
**Louiza, Lower Level**  
  
Novel Techniques and Applications  
Chair: **Lars Konermann**, University of Western Ontario, London, Canada
- 08:00 **Kyle Duncan, Kiera Nguyen, Gillian Carleton, Julian J. Lum**, Vancouver Island University, Nanaimo, Canada  
*Expanding spatial metabolomics coverage with lithium doped nanospray desorption electrospray ionization mass spectrometry imaging*
- 08:20 **Malek Hassan, Haidy Metwally, Rachel Theriault, Randy Ellis, Martin Kaufmann, Kevin Ren, John Rudan, Richard Oleschuk**, Queen's University, Kingston, Canada  
*Ambient Ionization Mass Spectrometry Analysis of Formalin-Fixed Paraffin-Embedded Clinical Tissue Samples*  
  
**Winner of the Bill Davidson Award**      Sponsored by the Davidson Family
- 08:40 **Mathieu Lavallée-Adam, Yun-En Chung, Iryna Abramchuk, Maram El-Azouni, Giorgio Freije, Jonathan Krieger, Tharan Srikumar**, University of Ottawa, Ottawa, Canada  
*Novel machine learning-guided precursor ion selection and fragmentation to improve peptide identification in tandem mass spectrometry*
- 09:00 **Lekha Sleno, Kahina Chabi**, UQAM, Montreal, Canada  
*The complex metabolism of tartrazine, a challenging molecule to study by LC-MS/MS*  
**SPONSORED BY SCIEX**
- 09:20 **Christopher Chouinard, Ralph Aderorho, Baker Garrison, Copeland Johnson, Drew Whitman**, Clemson University, Clemson, USA  
*Tandem Mass Spectrometry Approaches for Interesting Psychoactive Substances*
- 09:40 Discussion & Coffee Break  
**Victoria Ballroom**  
  
Methods and Instrumentation, Part II  
Chair: **Derek Wilson**, York University, Toronto, Canada
- 10:10 **Edgar White Buenger, Andras Bodi, Maxi A. Burgos-Paci, Paul M. Mayer**, University of Ottawa, Ottawa, Canada  
*Hidden in Plain Sight: Cyclopentene Formation in the Pyrolysis of Isoprene*
- 10:30 **Tingting Zhao, Qiming Shen, Xing-Fang Li\*, Tao Huan\***. The University of British Columbia, Vancouver, Canada (\*University of Alberta)  
*Machine Learning-Guided Identification of Halogenated Compounds in High-Resolution Mass Spectra for Exposomics Profiling*  
  
**Winner of a CSMS Travel Award**      Sponsored by: 
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## Saturday, December 7, cont.

- 10:50 *Felix Meissner, Annika Frauenstein, Benedikt Gansen, Marc Vaisband, André C Michaelis, Jose J Almagro Armenteros, Matthias Mann, Jan Hasenauer, Soren Brunak, University of Bonn - Institute of Innate Immunity, Bonn, Germany*  
*Mass spectral meta-analysis reveals human and mouse secretory protein variants with altered structures and functions*
- 11:10 *Janusz Pawliszyn, University of Waterloo, Waterloo, Canada*  
*Microextraction using chemical biopsy tool combined with convenient MS determination of free and total concentration of species including unstable species*
- 11:30 *Daniel Beach, Lydia Zamlynny, Christopher O. Miles, Krista Thomas, Elliott Wright, Pearse McCarron National Research Council, Halifax, Canada*  
*Tandem Mass Spectrometry Methods for Measuring Cyanotoxins*
- 11:50 *Gary Glish, Conner Baucom, Matthew Campbell, Tyler Larson, Russell Grant, University of North Carolina, Chapel Hill, USA*  
*Ion Optics Change the Structure of Electrosprayed Ions*
- 12:10 Discussion and Adjournment
- 12:15 to 13:30 Lunch  
*Louiza, Lower Level*
- FOR INDIVIDUAL STAYING ON:
- SATURDAY AFTERNOON - FREE TIME - ENJOY THE GREAT OUTDOORS!
- 18:00 Dinner  
*Victoria Foyer/Victoria Ballroom*

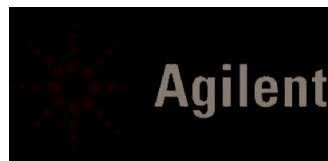
## Sunday, December 8

- 07:00 to 10:30 Breakfast  
*Louiza, Lower Level*

Thank you for joining us at the 36th Annual Lake Louise Tandem MS Workshop. We hope you will join us next year!

## Our Sponsors

We gratefully acknowledge financial support for the Lake Louise Workshop. Sponsorship levels are ranked in accordance with the Lake Louise downhill ski runs.



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