



**MSB 2016**

**32nd International Symposium on  
Microscale Separations and Bioanalysis**

Niagara-on-the-Lake, ON, CANADA 🍁 April 3-7, 2016

  
www.msb2016.org

April 3-7, 2016  
Niagara-on-the-Lake, Ontario  
Canada

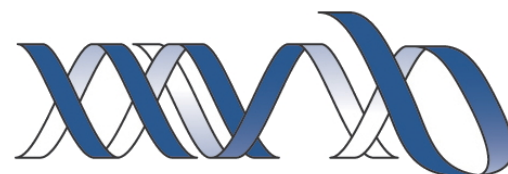
# Conference Program

Hosted by,

Philip Britz-McKibbin, McMaster University – Conference Chair

Sergey Krylov, York University  
Karen Waldron, Université de Montréal  
Conference Co-Chairs

Updated: 2016-03-31



**MSB 2016**  
Niagara-on-the-Lake, Canada  
April 3-7, 2016

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# Welcome

On behalf of the scientific and organizing committees, we invite you to join us for the 32<sup>nd</sup> International Symposium on Microscale Separations and Bioanalysis (MSB 2016) being held at Queen's Landing in Niagara-on-the-Lake, Canada from April 3-7, 2016.

Since the inaugural High Performance Capillary Electrophoresis (HPCE) conferences, started in Boston in 1989 and the later Microscale Bioseparations (MSB) series, the format of MSB 2016 has evolved into an interactive forum for the discussion of cutting-edge research on the *frontiers of separation science*. MSB 2016 will continue this trend and be the leading conference on microscale separations and bioanalysis that spans new advances in separation theory and method development to novel applications relevant to human health and the environment. If you are currently incorporating microscale separations like capillary electrophoresis, micro- and nano-HPLC, GC, ion mobility, microfluidics and lab-on-a-chip devices into your research, *then this is a meeting you will not want to miss!*

MSB 2016 encourages exchange of ideas on recently accepted or unpublished original research on microscale separations in a confidential setting. The symposium aims to create a "smaller meeting" ambience that ensures vigorous scientific exchange among delegates. About seventy percent of the program has been built from contributed abstracts, where a double blind peer process strives to ensure that the highest caliber of science is presented from a new generation of scientists and students. The venue, which is situated in a scenic and historic location considered to be the *"the loveliest town in Canada"*, is close to Niagara Falls and local wineries, offering excellent social program activities.

MSB 2016 will feature stimulating pre-symposium short courses, an affordable all-inclusive registration fee including catered meals/gala dinner, a single parallel session featuring renowned invited speakers along with a special focus on young investigators, such as

our inaugural Future Stars in Microseparation and 3 Minute Talk (3MT) presentations. We have organized a stimulating scientific program that includes diverse session topics organized by leading researchers in the field.

The organizers wish to thank you for your important contributions and hope that you will thoroughly enjoy the scientific program, comfortable ambience and lively discussions at MSB 2016. We look forward to hosting a memorable conference and welcoming you in Niagara-on-the-Lake.

Sincerely,

Philip Britz-McKibbin (McMaster University),  
Conference Chair

Sergey Krylov (York University)  
Karen Waldron (Université de Montréal)  
Conference Co-Organizers



**MSB 2016**  
Niagara-on-the-Lake, Canada  
April 3-7, 2016

# Committee Members

## LOCAL ORGANIZING COMMITTEE

Philip Britz-McKibbin, McMaster University  
Jeff Chapman, SCIEX  
Sergey Krylov, York University  
James Landers, University of Virginia  
Karen Waldron, Université de Montréal

## CHAIR

Philip Britz-McKibbin, McMaster University

## CO-CHAIRS

Sergey Krylov, York University  
Karen Waldron, Université de Montréal

## STRATEGIC PROGRAM COMMITTEE

Jeff Chapman (USA)  
Michael Lämmerhofer (Germany) Committee Secretary  
James Landers (USA) Committee Chairman  
Herbert Lindner (Austria)  
Sergey Krylov (Canada)  
Jorg Peter Kutter (Denmark)  
Koji Otsuka (Japan)  
Gerard Rozing (Germany) Webmaster  
Julie Schappler (Switzerland)  
Marina Tavares (Brazil)

## SESSION CHAIRS

### Advanced Column Technologies

Luis Colon, University of Buffalo  
Charles Lucy, University of Alberta

### Biologics & Glycan Analysis

Lynn Gennaro, Genentech  
Govert Somsen, Free University of Amsterdam

### CE-MS & Novel Detection Strategies

David Chen, University of British Columbia  
Norman Dovichi, University of Notre Dame

### Clinical Diagnostics & POC Devices

Angelika Niemz, Keck Institute  
Oleg Mayboroda, Leiden University Medical Center

### Comprehensive “-OMICS”

Rawi Ramataur, Leiden University  
Oleg Mayboroda, Leiden University Medical Center

### Environmental Analysis

Chris X. Le, University of Alberta  
Karl Jobst, Ontario Ministry of the Environment

### Food, Nutrition & Health

Michel Aliani, University of Manitoba  
Philip Britz-McKibbin, McMaster University

### Fundamentals & Biointeractions

Sergey Krylov, York University  
Steve Weber, University of Pittsburg

### Future Stars in Microseparations

Philip Britz-McKibbin, McMaster University  
Sergey Krylov, York University  
Karen Waldron, Université de Montréal

### Ion Mobility Spectrometry

John McClean, Vanderbilt University  
Brian Clowers, Washington State University

### Microfluidics/Lab on a Chip

Aaron Wheeler, University of Toronto  
Ravi Selvaganapathy, McMaster University

### Multidimensional Separations

Tadeusz Gorecki, University of Waterloo  
Mike Bowser, University of Minnesota

### Nucleic Acids, Biosensors & Forensics

Feng Li, Brock University  
Bruce McCord, Florida International University

### Pharmaceutical & Chiral Analysis

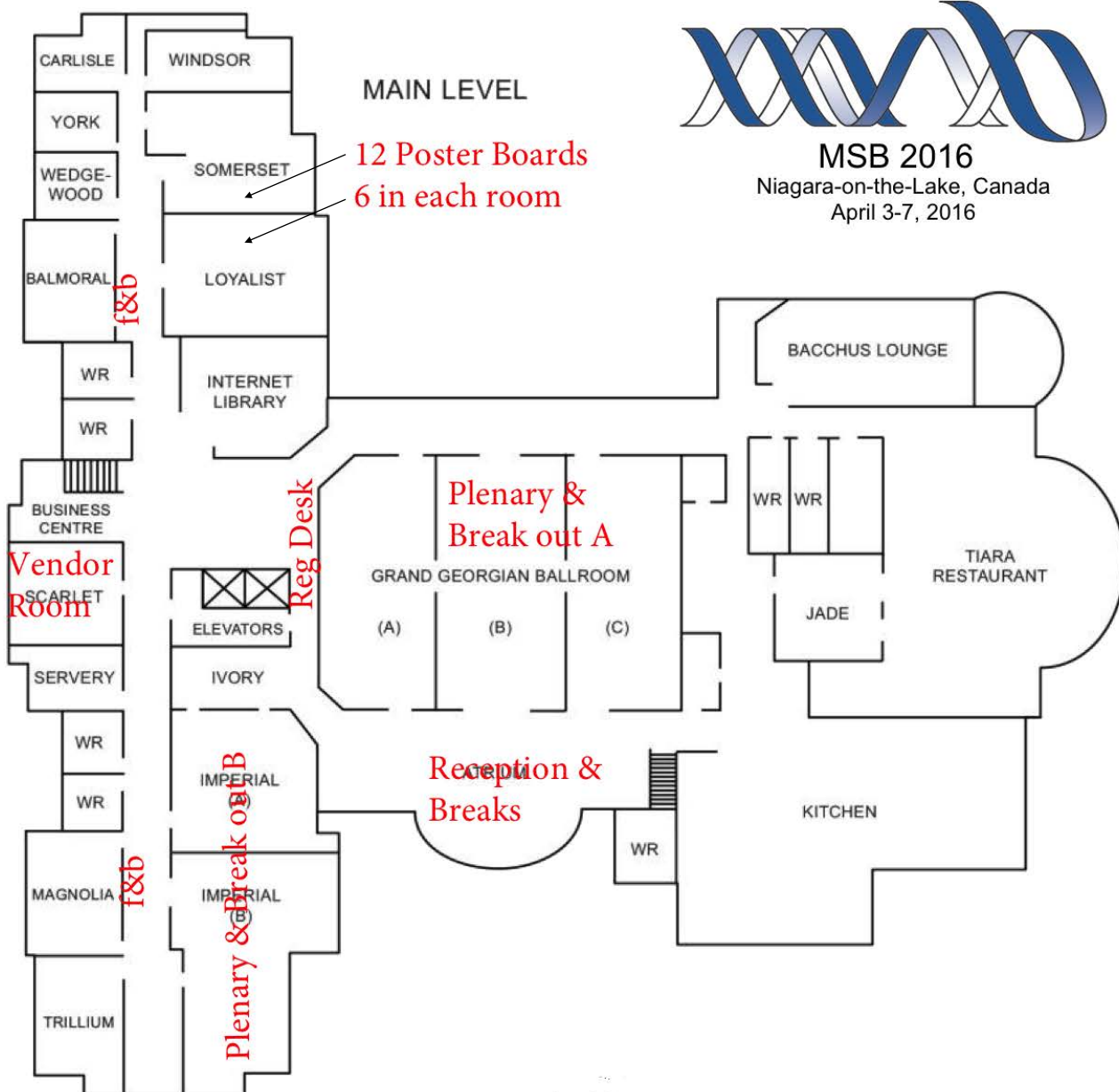
Julie Schappler, University of Geneva  
Deirdre Cabooter, KU Leuven

### Sample Preparation

Karen Waldron, Université de Montréal  
Dajana Vuckovic, Concordia University

# Queen's Landing

## Floor Plans



# General Information

## Registration Hours

The registration desk will be open from 8:30 am to 5:pm daily. Our staff will be there to answer any questions or assist with any sightseeing activities.

Late registration for short courses may be done on site. Fee is \$100 Canadian paid in cash only.

## Local Transportation

The Niagara Parks Shuttle to Niagara Falls only operates May to October. If there is a large enough group interested. ETP would be pleased to coordinate a bus to Niagara Falls. The best date for this would be Wednesday, April 6 starting at 6:30 pm with a return of 11:00 pm. Cost of the bus service will be borne equally by all passengers. Please let us know at the Registration Desk by Monday noon.

## Things to Do

Please review the booklet provided by Niagara Tourism for interesting things to see and do in and around the area.

## Science Cafe

We are planning four Science Cafe sessions at MSB 2016, three lunch seminars (Monday, Tuesday, Wednesday) and a morning coffee break on Thursday. These sessions are presented by SCIEX, Agilent Technologies, LUMEX Instruments and Advanced Electrophoresis Solutions, respectively.

Each vendor will have the use of the Scarlett Room for the entire day to host private meetings and presentations. Hours are 8:30 am to 5:00 pm

## Posters

If you are presenting a poster, we kindly ask that you set up your poster on the assigned board prior to 8 am on the day of presentation. Posters are to be taken down after 5:30 pm of the same day. Please refer to the Poster Section for your assigned day and number.



# 32nd International Symposium on Microscale Separations and Bioanalysis

Queen's Landing  
155 Byron Street, Niagara-on-the-Lake,  
Ontario, Canada

## AGENDA

**Sunday, April 3, 2016**

<b>Sunday, April 3, 2016</b>		
<b>10:00 - 18:00</b>	<b>On-Site Registration (cash only) and Badge Pick-up Lower Lobby</b>	
<b>13:00 - 16:30</b>	<b>SHORT COURSES</b> Short Course Fee on Site: \$100 Canadian (cash only please)	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
<b>13:00 - 14:30</b>	Option B  <i>B1 - Quality by Design for Analytical Method Development,</i>  presented by: Cari Sanger, Kantisto BV	Option A  <i>A1 - Sampling and Sample Preparation for Bioanalysis,</i>  presented by: Janusz Pawliszyn, University of Waterloo
<b>14:30 - 15:00</b>	<b>COFFEE BREAK</b>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
<b>15:00 - 14:30</b>	Option B  <i>B2 - New Advances in Biologics/Biopharmaceutical Characterization using CE and CE-MS,</i>  presented by: G.W. Somsen, R. Haselberg, Vrije Universiteit - Amsterdam	Option A  <i>A2 - Bioinformatics and Statistical Methods for Metabolomics,</i>  presented by: David Wishart, University of Alberta
	<b>Grand Georgian Ballroom</b>	
<b>17:00 - 17:15</b>	<b>OPENING REMARKS</b>	
<b>17:15 - 17:50</b>	<i>Plenary 1 - Elaine Holmes, Imperial College, London (UK)</i> <i>Systems Biology in Clinical Medicine</i>	
<b>17:50 - 18:30</b>	<i>Plenary 2 - Stephen Rappaport, University of California, Berkeley (USA)</i> <i>An Untargeted Adductomics Pipeline for Cys34 of Human Serum Albumin</i>	
	<b>Atrium - Foyer of Grand Georgian Ballroom</b>	
<b>18:30 - 20:00</b>	<b>Reception, select Wines and Hors D'oeuvres</b>	



MSB 2016  
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**Monday, April 4, 2016**  
**Morning Session**

07:00 - 08:30	<b>Breakfast - Tara Restaurant</b>	
08:00 - 18:00	<b>On-Site Registration (cash only), Badge Pick-up - Lower Lobby</b>	
07:50 - 8:40	<b>Grand Georgian Ballroom:</b> <i>Plenary 3 - Arnold O. Beckman Award Presentation, TBA</i>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
08:45 - 12:00	<b>Multidimensional Separation Session - Sponsored By U Waterloo, Organizers: Tadeusz Gorecki/Mike Bowser; Ion Mobility Session:- Organizers:: John Mcclean/Brian Clowers</b>	<b>Future Stars in Microseparations</b> <b>Session Organizers: Philip Britz-McKibbin</b>
08:45 - 09:15	<b>Keynote - Frédéric Lynen, Ghent University (Belgium)</b> <i>Microscale Analysis of Therapeutic Oligonucleotides via Comprehensive Liquid Chromatography and Capillary Electrophoresis</i>	<b>(8:45 - 9:05) Deirdre Cabooter, Leuven University (Belgium)</b> <i>Detailed Evaluation of Mass Transfer Phenomena in Hydrophilic Interaction and Reversed-Phase Liquid Chromatography under Identical Packing Conditions</i>
09:15 - 09:35	<b>Alexander Johnson, University of Minnesota (USA)</b> <i>Capillary Electrophoresis Coupled with Micro Free Flow Electrophoresis for High Speed Two Dimensional Separations of Biological Samples</i>	<b>(9:05 - 9:25) Jesse Greener, Laval University (Canada)</b> <i>Laminar Flow Separation of Bacterial Biofilms Coupled with Optical and Chemical Visualization for Analysis of Bio-catalytic Products</i>
09:35 - 09:55	<b>Wim de Boer, Vrije Universiteit Amsterdam (Netherlands)</b> <i>Program Curfit2D: Two-Dimensional Alignment of GC-GC Chromatogram</i>	<b>(9:25 - 9:45) Takayuki Kawai, RIKEN Quantitative Biology Centre (Japan)</b> <i>High Performance CE-MS System for Single Cell Analysis</i>
09:55 - 10:15	<b>Claudio Brunelli, Pfizer Global Research &amp; Development (UK)</b> <i>Peaks Behaving Badly: Demonstrating On-column Reactivity by Means of 2D-LC and Other Mode of Separation in the Analysis of Innovative Pharmaceutical Products Under Development.</i>	<b>(9:45 - 10:05) Rawi Ramautar, Leiden University (Netherlands)</b> <i>Two Birds with One Stone: A Single CE-MS Approach for Anionic and Cationic Metabolic Profiling</i>
10:15 - 10:30	<b>(10:15 - 10:30) COFFEE BREAK</b>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
10:30 - 11:00	<b>Keynote - Stephen J. Valentine, West Virginia University (USA)</b> <i>Developing IMS and HDX Techniques/Models for Characterizing Protein Complex Structure</i>	<b>(10:20 - 10:40) Karl Jobst, Ontario Ministry of the Environment (Canada)</b> <i>A Quadrupole TOF-MS Coupled to GCxGC Using Atmospheric Pressure Chemical Ionization: Characterization of Environmental Samples by GCxGC-MS using an LC-MS Instrument</i>
11:00 - 11:20	<b>Brandon T. Ruotolo, University of Michigan (USA)</b> <i>Collision Induced Unfolding: A New Paradigm in Protein Stability Measurements</i>	<b>(10:40 - 11:00) Emily Grace Armitage, Universidad San Pablo (Spain)</b> <i>Metabolomics as a Tool to Explore the Mechanisms of Action of Anti-leishmanial Compounds</i>
11:20 - 11:40	<b>Brian Clowers, Washington State University (USA)</b> <i>Isolation of Chemical Classes using Drift Gas Modifiers and Ion Mobility Mass Spectrometry</i>	<b>(11:00 - 11:20) Dajana Vuckovic, Concordia University (Canada)</b> <i>Dispersive Solid-phase Microextraction for Untargeted LC-MS Metabolomics of Human Plasma</i>
11:40 - 12:00	<b>Rafael Montenegro-Burke, Vanderbilt University (USA)</b> <i>High Dimensional Separation Strategies in Analysis of Complex Biological Samples using Ion Mobility-Mass Spectrometry</i>	<b>(11:20 - 11:40) Gabor Jarvas, University of Pannonia (Hungary)</b> <i>Introducing GUcal: A New Application for Capillary Electrophoresis-based Glycan Analysis</i>  <b>(11:40 - 12:00) Heather Bean, Arizona State University (USA)</b> <i>Discovering Biomarkers using GCXGC-TOFMS for the Detection of Infection Phenotypes Directly from Lung Samples</i>
12:00 - 13:00	<b>Grand Georgian Ballroom</b> <i>Presentation: Capturing the Best Selectivity in a Water-fall of Ions; Differential Ion-Mobility Enabled Mass Spectrometry, Presented by: Edna Betgovargez, Marketing Development Manager, SCIEX (USA) &amp; Brigitte Simons, Technical Applications Specialist, SCIEX (Canada)</i>	<b>Science Cafe, Presented by SCIEX</b>  <b>Lunch will be served.</b>
8:30 - 5:00	<b>SCIEX Presentation Room</b>	<b>Scarlet Room</b>

**Monday, April 4, 2016**  
**Afternoon Session**

<b>13:00 - 13:30</b>	<b>3 Minute Talk (Selected from Posters)</b>	
	<b>Somerset &amp; Loyalist</b>	<b>Somerset &amp; Loyalist</b>
<b>13:30 - 14:30</b>	<b>Poster Session</b> <i>Coffee &amp; Dessert served</i>	<b>Poster Session Sponsored by Apotex</b>
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
<b>14:30 - 17:45</b>	<b>Sample Preparation Session</b> <b>Session Organizers: Karen Waldron/Dajana Vuckovic</b>	<b>Biologics &amp; Glycan Analysis Session</b> <b>Session Organizers: Govert Somsen/Lynn Genarro</b> <i>Session Sponsored by Genentech</i>
<b>14:30 - 15:00</b>	<b>Keynote - Fred Regnier, Purdue University (USA)</b> <i>Accelerating The Sample Preparation Component</i>	<b>Keynote - Christian Neusüß, Aalen University (Germany)</b> <i>Glycan and Intact Protein Analysis: from CE-MS to CE-CE-MS</i>
<b>15:00 - 15:20</b>	<b>Saara Mikkonen, KTH Royal Institute of Technology (Sweden)</b> <i>Microfluidic Isoelectric Focusing of Amyloid Beta Peptides Followed by Micropillar-MALDI-MS</i>	<b>Jason Wood, Bruker (USA)</b> <i>Automated de novo Identification and Profiling of Disulfide Bonds in Monoclonal Antibodies Including Analysis of Low Level DSB Scrambling</i>
<b>15:20 - 15:40</b>	<b>Jason Fiering, Draper Inc. (USA)</b> <i>Acoustic Bacteria Separation From Blood in Plastic Chips</i>	<b>Guinevere S.M. Kammeijer, Leiden University Medical Center (Netherlands)</b> <i>CE-ESI-MS as a tool for Glycomic and Glycoproteomic Analysis of Biopharmaceuticals</i>
<b>15:40 - 16:00</b>	<b>Julie Schappler, University of Geneva (Switzerland)</b> <i>Extraction of Polar Metabolites from CSF by Electromembrane Extraction</i>	<b>Erdmann Rapp, Max Planck Institute (Germany)</b> <i>High-Throughput Glycoprofiling via High-Performance Glycoanalysis Based on xCGE-LIF</i>
<b>16:00 - 16:15</b>	<b>COFFEE BREAK</b>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
<b>16:15 - 16:45</b>	<b>Keynote - Doo Soo Chung, Seoul National University (Korea)</b> <i>Sample Preconcentration In-line Coupled with Capillary Electrophoresis-Mass Spectrometry</i>	<b>Keynote - Andras Guttman, SCIEX (USA)</b> <i>The Measurement for Glycobiomarkers: Mining the FFPE Depositories</i>
<b>16:45 - 17:05</b>	<b>David Fuchs, University of Copenhagen (Denmark)</b> <i>The Electro Membrane Extraction Autosampler?: A Fully Automated Integration of Rapid Sample Extraction, Enrichment and LC-MS Analysis</i>	<b>Thomas Niedringhaus, Genentech (USA)</b> <i>Implementation of Microchip Electrophoresis for Quality by Design of Protein Therapeutics: Understanding the Link between Critical Quality Attributes and Process Characterization</i>
<b>17:05 - 17:25</b>	<b>Wan Aini Wan Ibrahim, University of Technology - Malaysia (Malaysia)</b> <i>Hybrid Sol-Gel Graphene-based Magnetic Nanoparticles as a Clean-up Adsorbent for Direct Analysis of Acrylamide Prior to GC-MS</i>	<b>Kiyohito Shimura, Fukushima Medical University (Japan)</b> <i>Determination of a Charge-variant Pattern of Recombinant Erythropoietin using a Unified Affinity Chromatography-CIEF Device</i>
<b>17:25 - 17:45</b>	<b>Megan Weisenberger, University of Minnesota (USA)</b> <i>In Vivo Monitoring of Branched Chain Amino Acids Dynamics Using Online Microdialysis-Capillary Electrophoresis</i>	<b>Bryan Fonslow, SCIEX (USA)</b> <i>High Resolution Analysis of APTS-labeled Glycans by CESI-MS</i>
<b>Adjourn</b>	<b>Free Time</b>	<b>Suggested activities are listed at the Registration Desk and on the conference website (<a href="http://www.msb2016.org">www.msb2016.org</a>)</b>

**Tuesday, April 5, 2016**  
**Morning Session**

07:00 - 08:30	<b>Breakfast - Tara Restaurant</b>	
08:00 - 18:00	<b>Registration, Information - Lower Lobby</b>	
08:00 - 8:40	<b>Grand Georgian Ballroom:</b> <b>Plenary 4 - Jean-Louis Viovy, Institute Curie, Paris (France)</b> <i>Pushing Microfluidics towards Clinical Application</i>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
08:45 - 12:00	<b>Advanced Column Technologies</b> <b>Session Organizers: Charles Lucy/ Luis Colon</b>	<b>Clinical Diagnostics &amp; POC Devices</b> <b>Session Organizers: Angelika Niemz/Oleg Mayboroda</b>
08:45 - 09:15	<b>Keynote - Wilm de Malsche, Vrije Universiteit Brussel (Belgium)</b> <i>Achieving High Efficiencies and Peak Capacities using Pillar Array Columns</i>	<b>Keynote - Jonathan Posner, University of Washington (USA)</b> <i>Highly Sensitive Point of Care Immunoassays Using Electrokinetics on Paper</i>
09:15 - 09:35	<b>Tom Kupfer, MilliporeSigma (Germany)</b> <i>Faster Analysis of Monoclonal Antibodies using Silica Monoliths Designed for Bioanalysis</i>	<b>Christopher Dixon, University of Toronto (Canada)</b> <i>Ink-Jet Printed Digital Microfluidic Devices for Portable Diagnostics of Infectious Disease</i>
09:35 - 09:55	<b>Yehia Mechref, Texas Tech University (USA)</b> <i>Isomeric Separation of Glycans and Glycopeptides by Porous Graphitic Carbon (PGC) Columns at Elevated Temperatures</i>	<b>Radim Knob, Brigham Young University (USA)</b> <i>Affinity Monoliths and Cryogels for On-chip Extraction of Bacterial DNA for Sepsis Diagnosis</i>
09:55 - 10:15	<b>Xiuling Li, Dalian Institute for Chemical Physics (China)</b> <i>Bioinspired Saccharide-Saccharide Interaction and Smart Polymer for Specific Enrichment of Sialylated Glycopeptides</i>	<b>Nicklas N. Poulsen, University of Copenhagen (Denmark)</b> <i>Flow-Induced Dispersion Analysis for Probing Anti-dsDNA Antibody Binding Heterogeneity in Systemic Lupus Erythematosus Patients</i>
10:15 - 10:30	<b>COFFEE BREAK</b>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
10:30 - 11:00	<b>Keynote - Stephen Groskreutz, University of Pittsburgh (USA)</b> <i>Spatial and Temporal Column Temperature Changes for Enhanced Performance in Capillary Liquid Chromatography</i>	<b>Keynote - David Goodall, Paraytec Ltd (UK)</b> <i>Fluid-flow Cell-imaging for Cancer Monitoring and Diagnostics</i>
11:00 - 11:20	<b>Zuqin Xue, University at Buffalo, SUNY (USA)</b> <i>Nanodiamonds-silica Composite as Stationary Phases for Liquid Chromatography</i>	<b>Jeanne Bataille, Institut Galien Paris Sud (France)</b> <i>Toward the Development of a Miniaturized Analytical Tool for the Diagnosis of Familial Transthyretin Amyloidosis</i>
11:20 - 11:40	<b>Xiaoping Wu, Fuzhou University (China)</b> <i>Preparation of Ionic Liquid-based Hybrid Monolithic Column for CEC using Polyhedral Oligomeric Silsesquioxanes via Thiol-ene Click Reaction</i>	<b>Aliakbar Mohammadzadeh, McMaster University (Canada)</b> <i>Film Lamination-based Manufacture of a Microfluidic Device to Accumulate DNA from Samples with Potential Application in Sepsis Diagnostics</i>
11:40 - 12:00	<b>Charles Lucy, University of Alberta (Canada)</b> <i>Polar Functionalization of Carbon for Reversed Phase Liquid and Hydrophilic Interaction Liquid Chromatography</i>	<b>Noritada Kaji, Nagoya University (Japan)</b> <i>High-throughput Cell Deformability Measurements by Microfluidic Devices for Cancer Diagnosis</i>
12:00 - 13:00	<b>Grand Georgian Ballroom - Science Cafe,</b> <i>Presentation: Technical Developments on CE/MS Interfaces and its Impact on Applications</i> <i>Presented by: Martin Greiner, Agilent Technologies (Germany)</i>	<b>Science Cafe, AGILENT TECHNOLOGIES</b>  <b>Lunch will be served.</b>
8:30 - 5:00	<b>AGILENT Presentation Room</b>	<b>Scarlet Room</b>

**Tuesday, April 5, 2016**  
**Afternoon Session**

<b>13:00 - 13:30</b>	<b>3 Minute Talk (Selected from Posters)</b>	
	<b>Somerset &amp; Loyalist</b>	<b>Somerset &amp; Loyalist</b>
<b>13:30 - 14:30</b>	<b>Poster Session</b> <i>Coffee &amp; Dessert served</i>	<b>Poster Session Sponsored by Wynsep</b>
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
<b>14:30 - 17:45</b>	<b>Nucleic Acids, Forensics &amp; Biosensors Session</b> <b>Session Organizers: Feng Li/Bruce McCord</b>	<b>Pharmaceutical &amp; Chiral Analysis Session</b> <b>Deidre Cabooter/Julie Schappler</b>
<b>14:30 - 15:00</b>	<b>Keynote - Leyla Soleymani, McMaster University (Canada)</b> <i>Developing Fully-integrated Biosensing Systems on the Laboratory Benchtop</i>	<b>Keynote - Janusz Pawliszyn, University of Waterloo (Canada)</b> <i>SPME in Bioanalysis: Where Does it Fit?</i>
<b>15:00 - 15:20</b>	<b>Xiaolong Yang, Brock University (Canada)</b> <i>Constructing a 3D-DNA Nanomachine to Achieve Rapid Isothermal Signal Amplification for Nucleic Acids Detection</i>	<b>Yoann Ladner, Montpellier University (France)</b> <i>Development of an Integrated Bioanalytical Methodology for the Analysis of Therapeutic Antibodies</i>
<b>15:20 - 15:40</b>	<b>Audrey Ric, Picometrics (France)</b> <i>Selection of Aptamers using Capillary Electrophoresis and LEDIF-UV Absorbance Detection</i>	<b>Gerlinde Grabmann, University of Vienna (Austria)</b> <i>The Influence of Buffer Components on the Binding of Cisplatin Toward 5-dGMP Studied by Means of CZE-UV and CZE-ESI-MS</i>
<b>15:40 - 16:00</b>	<b>Alexander Stasheuski, York University (Canada)</b> <i>Achieving Single-Nucleotide Specificity in Direct Quantitative Analysis of Multiple microRNAs (DQAMmiR)</i>	<b>Afsal Mohammed K M, Sultan Qaboos University (Oman)</b> <i>Enantiomeric Separation Using Micro Column and Chiral Surfactants with Microfluidic Chemiluminescence Detection</i>
<b>16:00 - 16:15</b>	<b>COFFEE BREAK</b>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
<b>16:15 - 16:45</b>	<b>Keynote - Igor Lednev, University at Albany - SUNY (USA)</b> <i>Raman Microspectroscopy and Advanced Statistics for Forensic Applications and Medical Diagnostics</i>	<b>Keynote - Joseph Chamieh, Montpellier University (France)</b> <i>Size Characterization of Commercial Micelles and Microemulsions by Taylor Dispersion Analysis</i>
<b>16:45 - 17:05</b>	<b>Francisco Castiello, McGill University (Canada)</b> <i>Impedance Biosensors as a Tool for Dynamic Monitoring of Cell Secretions</i>	<b>Stanislav Kislyuk, KU Leuven (Belgium)</b> <i>Towards the Development of a Predictive Drug Uptake Model using Zebrafish</i>
<b>17:05 - 17:25</b>	<b>Peng Wu, Sichuan University (China)</b> <i>Photocatalytic DNA-Intercalated Dye Complex for Visual Bioassays</i>	<b>Andre Kpaibe, Montpellier University (France)</b> <i>Quality Control of Snake Venoms Raw Substances: Electrophoretic and Chemometric Approach</i>
<b>17:25 - 17:45</b>	<b>Bruce McCord, Florida International University (USA)</b> <i>The Application of Alkaline Lysis and Pressure Cycling in Forensic Differential Extraction</i>	<b>Tom Kupfer, MilliporeSigma (Germany)</b> <i>Immobilization of Proteins on Silica Monoliths and their Application in Chiral Analysis</i>
<b>19:00- 23:00</b>	<b>Grand Georgian Ballroom</b>	
<b>19:00 - 23:00</b>	<b>Cocktails &amp; Gala Dinner</b>	

**Wednesday, April 6, 2016**  
**Morning Session**

07:00 - 08:30	<b>Breakfast - Tara Restaurant</b>	
08:00 - 18:00	<b>Registration, Information- Lower Lobby</b>	
08:00 - 8:40	<b>Grand Georgian Ballroom:</b> <b>Plenary 5 - Oliver Fiehn, University of California, Davis (USA)</b> <i>Second-generation Metabolomics: Merging Untargeted and Targeted Data Acquisitions with MS-Data Independent Analysis and Virtual MS/MS Libraries</i>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
08:45 - 12:00	<b>Fundamentals &amp; Biointeractions</b> <b>Session Organizers: Sergey Krylov/Steve Weber</b>	<b>Comprehensive-OMICS</b> <b>Session Organizers: Rawi Ramataur/Oleg Mayboroda</b> <i>Session sponsored by Human Metabolome Technologies</i>
08:45 - 09:15	<b>Keynote - Gert Desmet, Vrije Universiteit Brussel (Belgium)</b> <i>What Causes the High Efficiency and Speed of Core-shell Particles and How Can Micro-scale Separations Benefit From This Knowledge</i>	<b>Keynote - Liang Li, University of Alberta (Canada)</b> <i>High-Performance Chemical Isotope Labeling LC-MS for Comprehensive and Quantitative Metabolomics</i>
09:15 - 09:35	<b>Masayasu Kuwahara, Gunma University (Japan)</b> <i>Xenonucleic Acid Aptamers: Development Towards In Vitro Delection of Artificial Biopolymer Ligands/Receptors</i>	<b>Michael Laemmerhofer, University of Tuebingen (Germany)</b> <i>Lipidomics Approach to Study Lipid Oxidation Products as Markers of Oxidative Stress</i>
09:35 - 09:55	<b>Frederic Ginot, Picometrics Technologies (France)</b> <i>micro-LAS: A Technological Breakthrough to Perform Size Analysis of DNA with Unrivalled Sensitivity and Robustness</i>	<b>Alicia DiBattista, McMaster University (Canada)</b> <i>High-throughput Metabolomics Discovery for Early Detection of Cystic Fibrosis in Newborn Screening</i>
09:55 - 10:15	<b>Vladislav Dolnik, Alcor BioSeparations LLC (USA)</b> <i>Trace and Ultratrace Analysis by Isotachophoresis/Zone Electrophoresis on Chip</i>	<b>Andrey Andriyanov, Lomonosov Moscow State University (Russia)</b> <i>Detection of Low Molecular Weight Organic Compounds: Potential Biomarkers of Colorectal Cancer in Exhaled Breath Condensate</i>
10:15 - 10:30	<b>COFFEE BREAK</b>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
10:30 - 11:00	<b>Keynote - Michael Breadmore, University of Tasmania (Australia)</b> <i>Electrokinetic Size and Mobility Traps for Extraction, Concentration and Separation of Pharmaceuticals and Proteins</i>	<b>Keynote - Alexander Ivanov, Northeastern University (USA)</b> <i>Enabling Deep Proteomic Profiling of Small Populations of Rare Cells Isolated from Whole Blood and Other Tissue Samples</i>
11:00 - 11:20	<b>David Hage, University of Nebraska (USA)</b> <i>Analysis of Drug-Protein Interactions using High-Performance Affinity Microcolumns: Recent Developments for Clinical Samples and Personalized Medicine</i>	<b>Adriana Nori de Macedo, McMaster University (Canada)</b> <i>Metabolomics Characterization of Sweat from Screen-positive Cystic Fibrosis Infants</i>
11:20 - 11:40	<b>Mirzo Kanaotov, York University (Canada)</b> <i>Simultaneous Determination of Protein Concentration and Equilibrium Constant</i>	<b>Christoph Borchers, UVic-Genome BC Proteomics Centre (Canada)</b> <i>Combining Targeted and Untargeted LC-MS-based Metabolomics for Comprehensive Profiling of Bile Acids in Human and Mouse</i>
11:40 - 12:00	<b>Svetlana Krylova, York University (Canada)</b> <i>Analysis of DNA- and Protein-Modifying Enzymatic Reactions by Micellar Electrokinetic Chromatography</i>	<b>Nathan Magarvey, McMaster University (Canada)</b> <i>Graphing and Fingerprinting Microbial Natural Product Chemical Space</i>
12:00 - 13:00	<b>Grand Georgian Ballroom, Science Cafe</b> <i>Presentation: How to drastically improve run-to-run reproducibility in CE: controlling of streaming potential, Presented by: Vadim M. Okun, Project Manager Lumex Instruments (Canada)</i> <i>Presentation: CE-UV Analysis of a microRNA and Protein with LUMEX' Capel 205 Instrument, Presented by: Maxim V. Berezovsky, Associate Professor, University of Ottawa (Canada)</i>	<b>Science Cafe, LUMEX INSTRUMENTS</b>  <b>Lunch will be served.</b>

**Wednesday, April 6, 2016**  
**Afternoon Session**

13:00 - 13:30	<b>3 Minute Talk (Selected from Posters)</b>	
	<b>Somerset &amp; Loyalist</b>	<b>Somerset &amp; Loyalist</b>
13:30 - 14:30	<b>Poster Session</b> Coffee & Dessert served	<b>Poster Session sponsored by Merck</b>
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
14:30 - 17:45	<b>Environmental Analysis</b> Session Organizers: Karl Jobst/Chris Le	<b>Microfluidics &amp; Lab-On-A Chip</b> Session Organizers Aaron Wheeler/Ravi Selvaganapathy
14:30 - 15:00	<b>Keynote - Frank Dorman, Pennsylvania State University (USA)</b> Why is Firefighting Dangerous?: Characterization of Mixed-Halogen and Furans in Fire Debris using GCXGC-TOFMS and APGC-MS/MS	<b>Keynote - Jean-Louis Viovy, Institut Curie Paris (France)</b> Using Microfabrication to Build Complex and Functional Cell Arrays
15:00 - 15:20	<b>Sam Li, National University of Singapore (Singapore)</b> Environmental Metabolomics of Freshwater Phytoplankton	<b>Brendon Seale, University of Toronto (Canada)</b> Digital Microfluidic Immunoprecipitation for the Microscale Targeted Analysis of Proteins from Biological Samples using Mass Spectrometry
15:20 - 15:40	<b>Fardin Ahmadi, University of Waterloo (Canada)</b> Time Weighted Average Concentration Monitoring based on Thin Film Solid Phase Microextraction	<b>Adelina Smirnova, University of Tokyo (Japan)</b> Gradient Separations in Extended Nanospace: Amino Acid Analysis
15:40 - 16:00	<b>Nadine Wellington, McMaster University (Canada)</b> Firefighter Exposure to Wood Smoke: Novel Markers for Improved Risk Assessment and Mitigation	<b>Paresa Modarres, McGill University (Canada)</b> Modeling and Analysis of a Novel Approach for Particle Separation Using Time-Varying Amplitude Dielectrophoresis
16:00 - 16:15	<b>COFFEE BREAK</b>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
16:15 - 16:45	<b>Keynote - Eric Reiner, Ministry of Environment &amp; Climate Change of Ontario (Canada)</b> Strategies and Techniques for Identifying Target and Non-target Compounds in Environmental Samples	<b>Keynote - Jed Harrison, University of Alberta (Canada),</b> High Efficiency Molecular Sieving of Biomolecules in Self Assembled Nanoporous Media
16:45 - 17:05	<b>Kamal Ahmad, Jamia Millia Islamia (Malaysia)</b> Phylogenetic Analysis of Bacterial Diversity of Heavy Metal-affected Soil	<b>Khalil Leon Heileman, McGill University (Canada)</b> Microfluidic Device for Dielectric Spectroscopy Measurement of Pancreatic Islets of Langerhans and Secretion Analysis
17:05 - 17:25	<b>Vincent Bessonneau, University of Waterloo (Canada)</b> In Vivo Tissue Sampling using Solid-phase Microextraction for Non-lethal Exposome-wide Association Study of CYP1A Induction in <i>Catostomus Commersonii</i>	<b>Narges Shaabani, University of Alberta (Canada)</b> Size based Proteins Separation using Polymer Stabilized Colloidal Self-assembled Nanoparticles Bed on Microfluidics Chip
17:25 - 17:45	<b>Xavier Ortiz, Ministry of Environment &amp; Climate Change of Ontario (Canada)</b> Analysis of Microcystins in the Great Lakes by LC-MS/MS: Results of the Ontario Drinking Water Surveillance Program from the Last 11 years.	<b>Michael Bowser, University of Minnesota (USA)</b> High Peak Capacity, Two Dimensional Separations Using Micro Free Flow Electrophoresis
<b>Adjourn</b>	<b>Free Time</b>	<b>Suggested activities are listed at the Registration Desk and on the conference website (<a href="http://www.msb2016.org">www.msb2016.org</a>)</b>

**Thursday, April 7, 2016**  
**Morning Session**

07:00 - 08:30	<b>Breakfast - Tara Restaurant</b>	
08:00 - 12:00	<b>Registration, Information- Lower Lobby</b>	
08:00 - 8:40	<b>Grand Georgian Ballroom:</b> <b>Plenary 6 - David Sinton, University of Toronto</b> <i>Microfluidic Analysis for Energy Applications</i>	
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
08:45 - 12:00	<b>CE/MS &amp; Novel Detection Strategies</b> <b>Session Organizers: David Chen/Norman Dovichi</b> <i>Session Sponsored by CMP Scientific</i>	<b>Food, Nutrition &amp; Health Session</b> <b>Session Organizers: Michel Aliani/Philip Britz-Mckibbin</b>
08:45 - 09:15	<b>Keynote - Norman Dovichi, University of Notre Dame (USA)</b> <i>Capillary Zone Electrophoresis for Deep Bottom-up Proteomic Analysis</i>	<b>Keynote - Peter Zahradka, St. Boniface Hospital (Canada)</b> <i>Application of Bioanalytical Methods to Foods for the Optimization of Health and Nutritional Benefits</i>
09:15 - 09:35	<b>Åsa Emmer, KTH Royal Institute of Technology (Sweden)</b> <i>Capillary Electrophoretic Separation and Fractionation Combined with MALDI-MS/MS-MS for Analysis of Reproduction Proteins from Pieridae Butterflies</i>	<b>Mai Yamamoto, McMaster University (Canada)</b> <i>Urinary Markers of Anxiety Reduction Following a Probiotic Intervention in Irritable Bowel Syndrome Patients</i>
09:35 - 09:55	<b>Anna Tycova, Czech Academy of Sciences (Czech Republic)</b> <i>Novel CE-nanoESI/MS Interface for Quick analysis of Dexrazoxane from Blood Plasma</i>	<b>Rachel Harstad, University of Minnesota (USA)</b> <i>Measuring Extracellular Amino Acid Dynamics from 3T3-L1 Adipocytes Using online Microdialysis-Capillary Electrophoresis</i>
09:55 - 10:15	<b>Akiyoshi Hirayama, Keio University (Japan)</b> <i>Development of a Novel Sheathless CE-MS Interface for Metabolome Analysis</i>	<b>Andrea Edel, University of Manitoba (Canada)</b> <i>Metabolism and Biological Actions of Milled Flaxseed in Humans as a Function of Dose, Participant Age and Cardiovascular Disease Status</i>
10:15 - 10:40	<b>Grand Georgian Ballroom</b> <i>Presentation: Protein iCIEF Fractionation for MS with CEInfinite System, Presented by: Tiemin Huang, President &amp; CEO, AES Ltd (Canada), &amp; Gerard Rozing, ROZING.COM Consulting (Germany)</i>	<b>Science Cafe, Presented by Advanced Electrophoresis Solutions Ltd.</b>  <b>COFFEE BREAK</b>
8:30 - 12:00	<b>AES Presentation Room</b>	<b>Scarlet Room</b>
	<b>Imperial Ballroom</b>	<b>Grand Georgian Ballroom</b>
10:40 - 11:10	<b>Keynote - Rob Haselberg, VU Amsterdam (Netherlands)</b> <i>On-line Coupling of Capillary Electrophoresis with Surface Plasmon Resonance for the Affinity Assessment of Protein Mixture Components</i>	<b>Keynote - David Wishart, University of Alberta (Canada)</b> <i>New Resources for Enabling Food and Nutritional Metabolomics</i>
11:10 - 11:30	<b>Bettina Sarg, Medical University Innsbruck (Austria)</b> <i>Enhanced Separation and Characterization of Deamidated Peptides with CE-MS</i>	<b>Philip Marriott, Monash University (Australia)</b> <i>Multidimensional Separations and Natural Product Metabolomics: Demanding the Best Analytical Gas Chromatography Capability</i>
11:30 - 11:50	<b>Lingyu Wang, University of British Columbia (Canada)</b> <i>Capture Efficiency and Separation Performance of Dynamic pH Junction with Two Different On-column Electrolyte Configuration in CE-MS</i>	<b>Rosa Vazquez-Fresno, University of Alberta (Canada)</b> <i>The Application of Multi-platform Metabolomics Methods for the Characterization of the Chemical Composition of Fruits and Vegetables</i>
11:50 - 12:10	<b>John Hudson, SCIEX (Canada)</b> <i>Increasing Throughput with Multi-Segment-Injection-Capillary Electrospray Ionization-Mass Spectrometry (MSI-CESI-MS).</i>	<b>Philip Britz-McKibbin, McMaster University (Canada)</b> <i>Assessment of Treatment Responses to Protein Supplementation during Caloric Restriction: Weight Reduction without Muscle Loss?</i>
	<b>Grand Georgian Ballroom</b>	
12:10 - 13:00	<b>Closing of MSB 2016 &amp; Welcome to MSB 2017</b>	

**Monday, April 4, 2016**  
**3 Minute Talk Sessions**

<b>13:00 - 13:30</b>		<b>Grand Georgian Ballroom</b>
Session Organizer: <i>Philip Britz-McKibbin</i>		
<b>Session:</b>	<b>Presentation:</b>	
<b>Biologics</b>	<b>Leila Josefsson, KTH Royal Institute of Technology (Sweden)</b> <i>Analysis of Polyvinyl Alcohol Microbubbles in Human Blood Plasma</i>	
<b>Sample Preparation</b>	<b>Nicolas Drouin, University of Geneva (Switzerland)</b> <i>Dynamic Electromembrane Extraction (d-EME): A New Technical Development</i>	
<b>Biologics</b>	<b>Agnesa Shala-Lawrence, Sanofi Pasteur (Canada)</b> <i>Quantitative and Qualitative Analysis of a Vaccine Antigen using SDS Capillary Gel Electrophoresis</i>	
<b>Sample Preparation</b>	<b>Yang Chen, Nanjing University (China)</b> <i>Coupling of Phosphate-imprinted Mesoporous Silica Nanoparticles-based Selective Enrichment with MALDI-TOF MS for Highly Efficient Analysis of Protein Phosphorylation</i>	
<b>Food, Nutrition &amp; Health</b>	<b>Cederic Sarazin, Wynsep SAS</b> <i>On the Use of Capacity Coupled Contactless Conductivity Detector (C4D) on a New Modular Capillary Electrophoresis System</i>	
<b>Food, Nutrition &amp; Health</b>	<b>Ana Sanches-Silva, National Institute of Health Dr Ricardo Jorge (Portugal)</b> <i>Evaluation of the Lipid Oxidation of a Meat Product Packaged with a Biodegradable Active Film</i>	
<b>Biologics</b>	<b>Virginie Houbart, University of Geneva (Switzerland)</b> <i>Alpha-synuclein as Biomarker in Parkinson's Disease: Strategies for Detection in CGE-LIF</i>	

**Tuesday, April 5, 2016**  
**3 Minute Talk Sessions**

<b>13:00 - 13:30</b>		<b>Grand Georgian Ballroom</b>
Session Organizer: <i>Philip Britz-McKibbin</i>		
<b>Session:</b>	<b>Presentation:</b>	
<b>Advanced Column Technologies</b>	<b>Myriam Taverna, University of Paris (France)</b> <i>Novel Approaches of Isotachopheresis for Improvement of Electrokinetic Preconcentration Performance in Microbore Channels</i>	
<b>Clinical Diagnostics</b>	<b>Yingdi Zhu, École Polytechnique Fédérale de Lausanne (Switzerland)</b> <i>Sensitive and Fast Identification of Bacteria in Blood Samples by Immunoaffinity Mass Spectrometry: A Quick BSI Diagnosis Tool</i>	
<b>Pharmaceutical</b>	<b>Sven Kochmann, York University (Canada)</b> <i>Non-orthogonal Free Flow Electrophoresis</i>	
<b>Nucleic Acids</b>	<b>Vladimira Datinska, Czech Academy of Sciences (Czech Republic)</b> <i>Development of FRET-based Sensor for Detection of DNA Mutation</i>	
<b>Nucleic Acids</b>	<b>Feriel Melaine, McGill University (Canada)</b> <i>Gold Nanoparticles Surface Plasmon Resonance-enhanced Signal for the Detection of 16s rRNA Sequence of Legionella Pneumophila</i>	
<b>Pharmaceutical</b>	<b>Catherine Perrin, Montpellier University (France)</b> <i>Development of an Integrated Bioanalytical Methodology based on Oxidation Reactions for the Quality Control of HRP-conjugated Antibodies</i>	
<b>Pharmaceutical</b>	<b>Stanislav Beloborodov, York University (Canada)</b> <i>Kinetic Capillary Electrophoresis (KCE) as a Tool to Study Interaction Between a Virus and an Antibody</i>	

**Wednesday, April 6, 2016**  
**3 Minute Talk Sessions**

<b>13:00 - 13:30</b>		<b>Grand Georgian Ballroom</b>
<b>Session Organizer: Philip Britz-McKibbin</b>		
	<b>Session:</b>	<b>Presentation:</b>
	<b>Comprehensive-OMICS</b>	<b>Lukas Najdekr, Palacky University (Czech Republic)</b> <i>Influence of Mass Resolving Power in HRMS Metabolomics</i>
	<b>Environmental</b>	<b>Stefanie Maedler, MOECC (Canada)</b> <i>Speciated Isotope Dilution Ion Chromatography Tandem Mass Spectrometry for the Quantification of Cr(VI) at Ultratrace Levels</i>
	<b>Fundamentals</b>	<b>Nazmul Alam, University of Waterloo (Canada)</b> <i>How Solid-phase Microextraction Works?</i>
	<b>Fundamentals</b>	<b>Kanji Miyabe, Rikkyo University (Japan)</b> <i>Moment Analysis Method using CE for Kinetic Study of Intermolecular Interaction</i>
	<b>CE-Novel Detection</b>	<b>Elliott Kerrin, Dalhousie University (Canada)</b> <i>Analysis of the Neurotoxin Beta-N-Methylamino-L-Alanine via Capillary Electrophoresis coupled with Tandem Mass Spectrometry</i>
	<b>Microfluidics</b>	<b>Yizhong Zhang, Pfizer Inc. (USA)</b> <i>Evaluation of IonKey Micro-Flow LC/MS/MS for In Vivo Drug Discovery</i>
	<b>Comprehensive-OMICS</b>	<b>Michelle Saoi, McMaster University (Canada)</b> <i>Characterization of the Muscle Metabolome: Elucidating the Ergogenic Effects of Bicarbonate on Interval Exercise</i>

# Plenary Speakers

Oliver Fiehn,  
UNIVERSITY OF CALIFORNIA, DAVIS

## Biography

Prof. Oliver Fiehn has pioneered developments and applications in metabolomics with over 130 publications to date (<http://scholar.google.com/citations?user=6BXzO88AAAAJ>), starting in 1998 as Postdoctoral scholar and from 2000 onwards as Group Leader (assistant professor) at the Max-Planck Institute for Molecular Plant Physiology in Potsdam, Germany. Since 2004 he is Professor at the UC Davis Genome Center, overseeing his research laboratory and the satellite core service laboratory in metabolomics research. Since 2012, he is Director of the NIH West Coast Metabolomics Center, supervising 35 staff operating 15 mass spectrometers and coordinating activities with 6 UC Davis satellite labs with a further 20 mass spectrometers and 5 NMR instruments. The West Coast Metabolomics Center provides the most extensive and most in-depth analysis of metabolites available today, using a range of validated protocols. Prof. Fiehn specifically aims at integrating new approaches or technologies, including pathway-based mapping and statistical and data processing tasks. The Center engages with users and collaborators in study designs. Prof. Fiehn specifically focuses on lipids and primary metabolism in cancer, cardiovascular diseases, diabetes and nutrition. He has chaired efforts in establishing metabolomic databases, libraries and standardizing metabolomic reports, including for the Metabolomics Society for which he served on the Board of Directors from 2005-2010 and 2012-2015, organizing a range of workshops and conferences.

## Abstract

***Second-Generation Metabolomics: Merging Untargeted and Targeted Data Acquisitions with MS-data Independent Analysis and Virtual MS/MS Libraries***

At UC Davis, the NIH West Coast Metabolomics Center integrates more than 30 mass spectrometers in six laboratories, focusing on complex lipids, eicosanoids and lipid mediators, primary metabolism, proteomics, genomics and informatics analyses. In addition, identification of novel compounds of unknown structure is part of research advancements and collaboration-based services.

The presentation will highlight novel informatics tools how to interrogate mass spectrometry-based metabolomics data, from compound identification to quality controls. These tools include SWATH-type data independent UPLC-QTOF and TripleTOF MS/MS experiments, but also novel software for distinguishing isobaric co-elutions, retention time predictions and isotope ratio matching. In addition, we highlight the power of gas chromatography with TOF and QTOF MS analysis due to its superior chromatographic peak capacity and higher universality compared to more selective LC separations. We will highlight processed for exposome analyses, identification of unknowns through databases, and, importantly, predicting mass spectra through heuristic and ab-initio calculations. We will show expansions of our LipidBlast library of virtual MS/MS spectra, quantum-mechanical modeling of electron ionization GC-MS spectra and application of these tools to identify novel compounds in metabolomics studies. All these tools are used in research and service projects: currently, over 35,000 samples per year are analyzed in our Center, in ranges of studies of plants, microbial, mouse and human clinical samples.

Elaine Holmes,  
IMPERIAL COLLEGE, LONDON

## Biography

Professor Holmes' main research area focuses on applying metabolic profiling and computational modelling of biofluids and tissues to understand pathological and physiological processes. She has a broad background in metabolic chemistry, with specific expertise in spectroscopy and in chemometric modelling of spectral data. She began her research career investigating molecular mechanisms of toxicology using spectroscopic methods and then broadened the

scope to research clinical pathologies in a range of clinical fields. Professor Holmes has several research projects investigating the consequences of modification of the gut microbiota and has particular interest in the gut-brain axis. This involves both the development and application of spectroscopic and chemometric methods, and in particular the fusion of metagenomic and metabonomic data to provide a readout of the functionality of the microbiome. In 2015, Professor Holmes was awarded the Interdisciplinary Prize Medal by the Royal Society of Chemistry. She holds Visiting Professorship, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, People's Republic of China; William Glasser Visiting Professor, University of the Sciences, Philadelphia; CEU Madrid, Spain; Adjunct Professor, King Abdul Aziz University Saudi Arabia; Visiting Professor, Purdue University, West Lafayette Indiana, USA. Professor Holmes has an H-index of 83 and is an ISI Highly Cited Researcher (Pharmacology 2014). She has trained over 60 PhD students.

## Abstract

### *Systems Biology in Clinical Medicine*

Man is a complex ecosystem with thousands of biochemical processes working together through time to maintain health. In order to understand the biology of man and to intervene in an appropriate manner and time to prevent disease, we require knowledge of how the body works at the level of genes, proteins and metabolites. The metabolic phenotype can provide a window onto dynamic biochemical responses to physiological and pathological stimuli. Metabolic profiling strategies for analyzing biosamples, encompassing high-resolution spectroscopic and imaging methods in combination with multivariate statistical modelling tools, have been shown to be well-suited to generating metabolic signatures characterizing the effects of environment, and in particular disease, on metabolism and have resulted in the development of metabolome wide association studies (MWAS) in order to identify associations between diet and disease prevalence or risk [1-2]. This lecture will explore the potential and limitations of various spectroscopic platforms for metabolic profiling and provide an overview of how multivariate statistical modelling tools can be harnessed to model metabolic signatures

reflecting gene-environment interactions. Increasing awareness that the co-evolution has influenced the microbiome of mammals, and that the gut microbiota play a role in the aetiology and/or development of several diseases including cardiovascular disease, inflammatory bowel disease and certain cancers, has been fuelled by landmark studies in both animal models and humans showing that obese, lean and insulin resistant individuals carry a different gut microbial composition [3]. The tripartite association of the gut microbiome, diet and human metabolism is key to understanding the aetiology of chronic diseases and may open new avenues in therapeutic interventions. We will explore specific targeted profiling assays for capturing the functionality of the gut microbiome. Finally, a framework for predicting population disease risk and response to interventions at the individual level will be presented and examples drawn from a selection of clinical studies.

**Stephen M. Rappaport**  
UNIVERSITY OF CALIFORNIA, BERKELEY

## Biography

Over the last 30 years, my laboratory has developed and applied methods for measuring biomarkers of exposure in human populations and has used these measurements to investigate exposure-response relationships. Given my particular interest in small reactive molecules that initiate cancers and other chronic diseases, I have developed methods for detecting adducts of reactive electrophiles with blood proteins, especially human serum albumin (HSA), and have recently adapted these methods for untargeted analyses (adductomics). The adductomic studies began when I directed a NIEHS-funded center devoted to biological-response indicators (2007-2012) that brought together U.C. Berkeley scientists from Public Health, Chemistry, and Electrical Engineering. I have also been a prominent advocate of the exposome concept and organized two workshops on this topic for the National Academy of Sciences. With collaborating epidemiologists, I am now conducting Exposome-wide Association Studies (EWAS) that use untargeted methods to detect small molecules and adducts in

biospecimens from diseased and healthy subjects with the goal of discovering disease causes. I have an active NIH grant (Project 2 of 1P01 ES018172) to develop and apply HSA-adductomics to extracts from dried blood spots collected at birth from childhood leukemia cases and controls, and have recently shown that the same samples (representing only 3 microliters of serum) can be used for untargeted analysis of thousands of small molecules. I am also a collaborator in the Exposomics Program funded by the EU to perform adductomic analyses with biospecimens from European cohorts. My laboratory has established in-house systems for tracking samples and data acquisition, with imbedded quality controls. Working with our collaborators, we also perform bioinformatics to investigate associations of detected features with case status and covariate effects.

## Abstract

### ***An Untargeted Adductomics Pipeline for Cys34 of Human Serum Albumin***

Although epidemiologic evidence indicates that most human cancers are caused by unknown exposures to carcinogens, epidemiologists still rely on self-reported information to characterize exposures. To provide high-quality characterization of carcinogen exposures from diverse exogenous and endogenous sources, studies of disease etiology should focus on the *blood exposome* (Rappaport, *et al.*, 2014), representing all circulating chemicals in blood. Unfortunately, many carcinogens cannot be measured in blood because they are reactive electrophiles with short life spans *in vivo*. An avenue for assessing these meaningful exposures focuses on adducts from reactions between reactive electrophiles and blood proteins. Adducts of Cys34 in human serum albumin (HSA) are particularly appealing because HSA is the most abundant protein in serum, where Cys34 is the dominant scavenger of reactive electrophiles. Although levels of some Cys34 adducts have been correlated with exposures to targeted chemicals, a plethora of uncharacterized Cys34 adducts represent unknown exposures that undoubtedly contribute to cancer incidence. We developed an untargeted Cys34 adductomics pipeline, which employs nanoflow liquid chromatography-high resolution

mass spectrometry, coupled with in-house bioinformatics. Taking advantage of MS2 spectra to find signatures of the T3 peptide, containing Cys34 and its modifications, and MS1 spectra for peak picking and quantitation, the Cys34 adductomics pipeline can rapidly develop a list of putative adducts for comparing between blood samples of interest. We applied this pipeline to profile 43 abundant Cys34 adducts in plasma from 34 healthy human subjects stratified by smoking status, race, and gender. Annotations included Cys34 oxidation products, mixed disulfides, and some smoking-specific adducts. Several of these adducts were significantly associated with smoking, race, BMI, and consumption of animal and vegetable fat. This illustrates the utility of the Cys34 adductome for characterizing unknown exposures to electrophilic species and opens the door to untargeted adductomics in studies of cancer etiology.

## David Sinton

UNIVERSITY OF TORONTO

## Biography

David Sinton is a Professor, Tier 1 Canada Research Chair in Microfluidics and Energy, and Associate Chair of Research in the Department of Mechanical and Industrial Engineering at the University of Toronto. Prior to joining the University of Toronto, Dr. Sinton was an Associate Professor and Canada Research Chair at the University of Victoria, Victoria, British Columbia, and a Visiting Associate Professor at Cornell University. Dr. Sinton's research interests are in microfluidics and energy. This research involves the study and application of small scale fluid mechanics (microfluidics, nanofluidics, and optofluidics) to both advance renewable energy technologies and mitigate the impacts of current energy operations. He became a Fellow of the Canadian Society for Mechanical Engineering in 2012, a Fellow of the American Society of Mechanical Engineers in 2013, and a Fellow of the Engineering Institute of Canada in 2015. He was the University of Toronto McLean Senior Fellow in 2013-2014, and became a member of the College of New Scholars within the Royal Society of Canada in 2015. In 2016 he was awarded an NSERC E.W.R. Steacie Memorial Fellowship.

## Abstract

### *Microfluidic Analysis for Energy Applications*

Microfluidic analysis methods developed primarily for medical applications have much to offer the energy sector. This talk will describe my group's recent work in two such areas: microfluidic analysis to advance renewable energy technologies; and microfluidics to understand fluid transport and reactivity underground (CO<sub>2</sub>, oil and gas). Within the renewables theme, we are applying microfluidics to quantify and increase solar-powered CO<sub>2</sub> conversion through photosynthetic microorganisms as well as synthetic catalytic approaches. Within the fluids underground theme we are developing a suite of methods to study (a) pore-scale transport and reactivity, and (b) relevant fluid properties for applications in carbon sequestration, enhanced oil recovery, and hydraulic fracturing.

**Jean-Louis Viovy**  
INSTITUTE CURIE, PARIS

## Biography

Dr. Jean-Louis Viovy is research director at Institut Curie and CNRS, the French National Research Institute. He has a general training in liquid state and polymer chemical physics. He founded and heads the MMBM team. Dr Viovy received several awards, including the "Polymer Prize" of French Chemical Society, 1996, the "Philip Morris Prize for Science", speciality Biophysics, 1997 and the 2004 and 2005 French Ministry of Research Awards for Innovative Technology Company Creation, and ERCadg in 2013. Jean-Louis is a member of the board of several international journals, and of the international Chemical and Biological Microsystems Society. He was chairman of MicroTAS 2007, and he is cofounder of Institut Pierre Gilles de Gennes for Microfluidics (IPGG), a new Institute dedicated to state-of-the-art microfluidics research in Paris.

## Abstract

### *Pushing Microfluidics Towards Clinical Applications*

Microfluidics-based microdevices are now steadily making their way as a major tool in biomedical research. They yielded particularly impressive applications in massively parallel technologies, such as digital sequencing, or as a key (and often unrecognized) component of next generation sequencing machines.

The penetration of microfluidics in the field of diagnosis, however, is more difficult. It involves mostly either direct transposition of research tools to medical questions, with high cost problems, or the rational application of microfluidics to existing technologies such as lateral flow assay, in which the progress is rather incremental.

In this talk, we shall discuss the challenges that may explain in part these difficulties, and propose some solutions and applications, based on the use of magnetic particles as a common denominator.

The first technology, named EPHESIA, is dedicated to the sorting and multimodal typing of rare cells. It consists in self-assembling in a high throughput microfluidic device, an array of antibody-bearing magnetic particles. These beads create a self-assembled "micro-posts" array, with an aspect ratio much higher than that of microfabricated post arrays, allowing the use of innovative high resolution imaging with very little optical interference. This technology was adapted to the sorting of circulating tumour cells (CTC) from blood. Blood depleted from most of its red blood cells is flown in the array with a uniform flow velocity, CTC are captured and complex characterization protocols (membrane and cytosol immunophenotyping, detailed morphological analysis, genetic analysis by FISH), can be performed in situ in a fully automated way. This reduces risk of cell loss or damage, as compared to the release and collection of the cells for delayed analysis in a separate device. The system was tested for CTC capture in patients with breast, prostate and lung cancer, in a multi-centers, blind protocol. A sensitivity generally comparable to that of VERIDEX CellSearch<sup>®</sup>, and significantly superior for some cancers, was

achieved. The technique also allows genotyping by FISH, and by PCR following cell capture and release. Finally, we show how this technology can also be used to investigate more specific biological questions, such as the HER2-HER3 dimerization at the single molecule level, by implementation of the Proximity Ligation Assay (PLA)

Second, we shall describe and discussed a new technology for target enrichment, based on a magnetic microfluidic fluidized bed. Inspired from macroscopic gravity-based systems, this technology allows flow through capture of analytes or targets on magnetic beads in continuous steady-state recirculation, avoiding the difficulties encountered in microfluidic packed columns, such as high back pressure, uneven packing and clogging. In this case, the fluidic challenge does not lie in the complexity of the protocol, but in the high non-linearity of the fluidized bed hydrodynamics. The fast response time of pressure-based flow control was key to success. We shall in particular show recent recents on high sensitivity pathogen detection. We shall finally show how magnetic particles can also improve the power of droplet microfluidics, and drive this technology out of its current mainstream families of applications, dedicated to massively parallel droplet generation, to more complex and programmable analytical processes.

# Arnold O. Beckman Award

## Arnold O. Beckman Medal and Award for Outstanding Scientific Achievements in The Field Of Electrodriven Separations Techniques



This annual award recognizes outstanding contributions to the field of electrodriven separation techniques and comprises a Medal and a \$5,000 prize, and reimbursement of reasonable travel expenses to the MicroScale Separations and Bioanalysis (MSB) symposium at which the award will be presented. A nominee must have made an outstanding career achievement supported by a significant body of work in the field of electrodriven separations and technologies with particular consideration given to developments of new methods, techniques, and high impact applications. This award is presented annually during the MSB conferences. The award is presented during a Special Award Plenary Session followed by a Lecture from the recipient. "At SCIEX, We are very pleased to be the sponsor of this medal and award in the

name of Dr. Arnold O Beckman", whose inspiration was a key driver behind the first commercialization of capillary electrophoresis technology says Jeff Chapman, Senior Director, Separations Business Unit, SCIEX.

The history of Beckman Coulter is one of innovation, beginning with Dr. Arnold O. Beckman's solution for determining the precise measurement of pH in lemon juice — the acidimeter, or pH meter. From a small operation in the rear of a garage in Pasadena, Calif., to its position today as a world leader in clinical diagnostics and life science research, Beckman Coulter owes its success to three men of vision who revolutionized science and medicine: Arnold O. Beckman, Ph.D, and brothers Wallace and Joseph Coulter. The Arnold O. Beckman Medal and Award for Outstanding Achievements in the Field of Electrodriven Separations is one way the company continues to celebrate the spirit of scientific innovation.



The 2016 Arnold O. Beckman Award Winner - TBA

# Poster Presentations

Monday Poster Session		
SESSION SPONSOR		
Poster #	Session Topic	Participant/Title
M1	Biologics	<b>Leila Josefsson (3MT), KTH Royal Institute of Technology (Sweden)</b> <i>Analysis of Polyvinyl Alcohol Microbubbles in Human Blood Plasma</i>
M2	Biologics	<b>Virginie Houbart (3MT), University of Geneva (Switzerland)</b> <i>Alpha-synuclein as Biomarker in Parkinson's Disease: Strategies for Detection in CGE-LIF</i>
M3	Biologics	<b>Julie Schappler, University of Geneva (Switzerland)</b> <i>pKa Determination of Closely-related Sialylated Glycoconjugates by Capillary Electrophoresis</i>
M4	Biologics	<b>Agnesa Shala-Lawrence (3MT), Sanofi Pasteur (Canada)</b> <i>Quantitative and Qualitative Analysis of a Vaccine Antigen using SDS Capillary Gel Electrophoresis</i>
M5	Sample Preparation	<b>Warren X. Chen, Bonna-Agela Technologies Ltd. (USA)</b> <i>Extraction of Bile Acids from Serum using Cleanert MAS-MAW Mixed-mode SPE for LC-MS/MS Detection</i>
M6	Sample Preparation	<b>Nicolas Drouin (3MT), University of Geneva (Switzerland)</b> <i>Dynamic Electromembrane Extraction (d-EME): A New Technical Development</i>
M7	Sample Preparation	<b>Yang Chen (3MT), Nanjing University (China)</b> <i>Coupling of Phosphate-imprinted Mesoporous Silica Nanoparticles-based Selective Enrichment with MALDI-TOF MS for Highly Efficient Analysis of Protein Phosphorylation</i>
M8	Sample Preparation	<b>Lan Zhang, Fuzhou University (China)</b> <i>In situ Solvothermal Synthesis of Metal–Organic Framework UiO–66 Coated Fiber for Highly Sensitive Solid–phase Microextraction of Polycyclic Aromatic Hydrocarbons</i>
M9	Sample Preparation	<b>Ping Tong, Fuzhou University (China)</b> <i>Ferrite Nanospheres-based Magnetic Solid-phase Extraction for Determination of Domoic Acid in Seawater Samples by HPLC-MS/MS</i>
M10	Sample Preparation	<b>Young Sook Yoo, Korea Institute of Science &amp; Technology (Korea)</b> <i>Development of Reproducible and Effective Extraction Method of miRNA in Plasma</i>
M11	Food, Nutrition & Health	<b>Nourah Alzoman, King Saud University (Saudi Arabia)</b> <i>Simultaneous Determination of Twenty Five Polyphenols in Multifloral and Cactus Honeys using SPE-HPLC with PDA Detection</i>
M12	Food, Nutrition & Health	<b>Haider al Lawati, Sultan Qaboos University (Oman)</b> <i>Rapid Liquid Chromatography-Mass Spectrometry Methods for Monitoring Synthetic Adulterants in Herbal Medicines and Dietary Supplements</i>

M13	Food, Nutrition & Health	<b>Idris al Busaidi, Sultan Qaboos University (Oman)</b> <i>Comparative Evaluation Between Core-shell, 3.5 Micron and Monolithic Columns: Applications on Adulteration of Herbal Remedies and Food Supplements</i>
M14	Food, Nutrition & Health	<b>Zeid Alothman, King Saud University (Saudi Arabia)</b> <i>Determination of Methyl Gallate in Bauhinia Retusa Extract by High-Performance Liquid and Thin Layer Chromatography</i>
M15	Food, Nutrition & Health	<b>Cederic Sarazin (3MT), Wynsep SAS (France)</b> <i>On the Use of Capacity Coupled Contactless Conductivity Detector (C4D) on a New Modular Capillary Electrophoresis System</i>
M16	Food, Nutrition & Health	<b>Ana Sanches-Silva, National Institute of Health Dr Ricardo Jorge (Portugal)</b> <i>Study of the Potential of Application of Essential Oils in Active Food Packaging</i>
M17	Food, Nutrition & Health	<b>Ana Sanches-Silva (3MT), National Institute of Health Dr Ricardo Jorge (Portugal)</b> <i>Evaluation of the Lipid Oxidation of a Meat Product Packaged with a Biodegradable Active Film</i>
M18	Food, Nutrition & Health	<b>Jonathan Bloomfield, McMaster University (Canada)</b> <i>Assessment of Dietary Intake of Long-Chain Free Fatty Acids in Plasma using GC-MS</i>
M19	CE-Novel Detection	<b>Johan Jacksen, KTH - Royal Institute of Technology (Sweden)</b> <i>Development of a Simple and Versatile Contactless Conductivity Detector (CCD) for Capillary Separation Systems</i>
M20	CE-Novel Detection	<b>Sarah Lum, University of Notre Dame (USA)</b> <i>Discovery of Novel Biocatalysts from Metagenomics Analysis of Unculturable Bacteria: Separation of Single Species of Microbial Strains by CZE</i>
M21	CE-Novel Detection	<b>Tiemen Huang, Advanced Electrophoresis Solutions (Canada) &amp; Gerard Rozing, Rozing Consulting (Germany)</b> <i>Protein iCIEF fractionation for MS with CEInfinite system</i>
M22	CE-Novel Detection	<b>Victor Gonzalez-Ruiz, University of Geneva (Switzerland)</b> <i>Evaluation of a Simple Low Sheath-flow Interface for CE-MS</i>
M23	CE-Novel Detection	<b>Elliott Kerrin (3MT), Dalhousie University (Canada)</b> <i>Analysis of the Neurotoxin Beta-N-Methylamino-L-Alanine via Capillary Electrophoresis coupled with Tandem Mass Spectrometry</i>
M24	CE-Novel Detection	<b>Martin Greiner, Agilent Technologies</b> <i>Technical developments on CE/MS interfaces and its impact on applications</i>
Tuesday Poster Session		
SESSION SPONSOR		
T1	Advanced Column Technologies	<b>Myriam Taverna (3MT), University of Paris (France)</b> <i>Novel Approaches of Isotachopheresis for Improvement of Electrokinetic Preconcentration Performance in Microbore Channels</i>

T2	Advanced Column Technologies	<b>Xucong Lin, Fuzhou University (China)</b> <i>Rapid Fabrication of Multifunctional Ionic Liquid-grafted Monolithic Column via Urea-Formaldehyde Polycondensation for Capillary Electrochromatography</i>
T3	Clinical Diagnostics	<b>Xuan Liu, University of Toronto Mississauga (Canada)</b> <i>A Paper-based FRET DNA Sensing Platform Integrated with Rolling Circle Amplification</i>
T4	Clinical Diagnostics	<b>Yingdi Zhu (3MT), École Polytechnique Fédérale de Lausanne (Switzerland)</b> <i>Sensitive and Fast Identification of Bacteria in Blood Samples by Immunoaffinity Mass Spectrometry: A Quick BSI Diagnosis Tool</i>
T5	Clinical Diagnostics	<b>Shou-mei Wu, Kaohsiung Medical University (Taiwan)</b> <i>A Turn on/off Scorpion Biosensor Targeting Point Mutation of SMN Gene for Diagnosis of Spinal Muscular Atrophy</i>
T6	Clinical Diagnostics	<b>Thomas Moore, University of Toronto</b> <i>Single Cell Functional Analysis of Multiple Myeloma Cell Populations Correlate with Diffusion Profiles in Static Microfluidic Coculture Systems</i>
T7	Pharmaceutical	<b>Julie Schappler, University of Geneva (Switzerland)</b> <i>Low-cost Capillary Electrophoresis for Counterfeits Detection and Sub-standard Drugs Quality Control</i>
T8	Pharmaceutical	<b>April Wong, Hong Kong Jockey Club</b> <i>Doping Control Analysis of Anabolic Steroids in Horse Urine by Gas Chromatography/Triple-Quadrupole Mass Spectrometry</i>
T9	Pharmaceutical	<b>Catherine Perrin (3MT), Universite de Montpellier</b> <i>Development of an Integrated Bioanalytical Methodology based on Oxidation Reactions for the Quality Control of HRP-conjugated Antibodies</i>
T10	Pharmaceutical	<b>Nourah Alzoman, King Saud University</b> <i>A Validated Stability-indicating and Stereoselective HPLC Method for the Determination of Lenalidomide Enantiomers in Bulk Form and Capsules</i>
T11	Pharmaceutical	<b>Stanislav Beloborodov (3MT), York University (Canada)</b> <i>Kinetic Capillary Electrophoresis (KCE) as a Tool to Study Interaction Between a Virus and an Antibody</i>
T12	Pharmaceutical	<b>Jiayin Bao, York University (Canada)</b> <i>Predicting Electrophoretic Mobility of the Complex between Protein and DNA-encoded Ligand in Kinetic Capillary Electrophoresis</i>
T13	Pharmaceutical	<b>Sven Kochmann (3MT), York University (Canada)</b> <i>Non-orthogonal Free Flow Electrophoresis</i>
T14	Pharmaceutical	<b>Vinod Kumar Vashistha, IIT Roorkee (India)</b> <i>Microscale Enantioseparation of (RS)-Ketamine by HPLC using Newly Developed Hydrazone Derivative of (S)-Levofloxacin for Diastereomer Synthesis</i>
T15	Nucleic Acids	<b>Jane Luo, SCIEX (USA)</b> <i>Accurate and Reliable Detection of Respiratory Viruses using XP-PCR Multiplex Technology</i>

T16	Nucleic Acids	<b>Vladimira Datinska (3MT), Czech Academy of Sciences (Czech Republic)</b> <i>Development of FRET-based Sensor for Detection of DNA Mutation</i>
T17	Nucleic Acids	<b>Junbo Chen, Sichuan University (China)</b> <i>Binding-induced Colorimetric Assays using Displacement-triggered Rolling Circular Amplification</i>
T18	Nucleic Acids	<b>Liang Hu, York University (Canada)</b> <i>Comparison of DQAMmiR with qRT-PCR for microRNA quantification under various matrices</i>
T19	Nucleic Acids	<b>Feriel Melaine (3MT), McGill University (Canada)</b> <i>Gold Nanoparticles Surface Plasmon Resonance-enhanced Signal for the Detection of 16s rRNA Sequence of Legionella Pneumophila</i>
T20	Fundamentals	<b>Mirzo Kanoatov, York University (Canada)</b> <i>Simultaneous determination of protein concentration and equilibrium constant</i>
Wednesday Poster Session SESSION SPONSOR		
W1	Comprehensive Omics	<b>Lukas Najdekr (3MT), Palacky University (Czech Republic)</b> <i>Influence of Mass Resolving Power in HRMS Metabolomics</i>
W2	Comprehensive Omics	<b>Michelle Saoi (3MT), McMaster University (Canada)</b> <i>Characterization of the Muscle Metabolome: Elucidating the Ergogenic Effects of Bicarbonate on Interval Exercise</i>
W3	Comprehensive Omics	<b>Na Hyun Park, Kyung Hee University (Korea)</b> <i>Profiling Analysis of Biogenic Amines and their Metabolites in Human Urine by GC-MS/MS</i>
W4	Comprehensive Omics	<b>Christoph Borchers, Uvic Genome BC Proteomics Centre (Canada)</b> <i>Broad and Multiplexed Quantitation of Human/Mouse Biosamples for Biomarker Assessment by Multidimensional LC-MRM/MS</i>
W5	Comprehensive Omics	<b>Marina Tavares (3MT), University of Sao Paulo</b> <i>Method optimization strategies for integrated urinary metabolomics in HILIC-MS Platforms</i>
W6	Comprehensive Omics	<b>Yoshiaki Ohashi, Human Metabolome Technologies</b> <i>Metabolomics approach for diagnostic biomarkers of mental disorders</i>
W7	Fundamentals	<b>Reine Nehmé, University of Orleans (France)</b> <i>Human Elastase Activity Assessed by On-line Capillary Electrophoresis Combined with Laser-induced Fluorescence Detection for Cosmetic Applications</i>
W8	Fundamentals	<b>Alexander Stoyanov, University of Missouri (USA)</b> <i>Targeted Modification of Natural CA pH Gradient Improves IEF Resolution</i>
W9	Fundamentals	<b>Nazmul Alam (3MT), University of Waterloo (Canada)</b> <i>How Solid-phase Microextraction Works?</i>
W10	Fundamentals	<b>Kanji Miyabe (3MT), Rikkyo University (Japan)</b> <i>Moment Analysis Method using CE for Kinetic Study of Intermolecular Interaction</i>

W11	Fundamentals	<b>Friederike Becker, YMC Europe (Germany)</b> <i>Characterization of Efficiency of Micro Liquid Chromatography Columns by van Deemter and Kinetic-Plot Analysis</i>
W12	Microfluidics	<b>Amin Hosseini, McMaster University (Canada)</b> <i>Benchtop Fabrication of Multi-scale Micro-electromagnets for Manipulating Magnetic Particles</i>
W13	Microfluidics	<b>Yizhong Zhang (3MT), Pfizer Inc. (USA)</b> <i>Evaluation of IonKey Micro-Flow LC/MS/MS for In Vivo Drug Discovery</i>
W14	Microfluidics	<b>Philip Zimny, McGill University (Canada)</b> <i>Droplet Microfluidics for Compartmentalized Cell Lysis and Single Cell DNA Mapping</i>
W15	Microfluidics	<b>Mouhita Humayun, University of Toronto (Canada)</b> <i>Microfluidic Device for Coculturing Lung Airway Cells on a Suspended Hydrogel: Towards a Biomimetic Lung Airway Model</i>
W16	Microfluidics	<b>Christopher Birch, University of Virginia (USA)</b> <i>A centrifugally-loaded polyester-based microfluidic device with integrated gold leaf electrodes for the electrophoretic separation of DNA</i>
W17	Environmental	<b>Zelo Anatole Mangombo, Forensic Science Laboratory - South African Police Service (South Africa)</b> <i>Identification and Quantification of Cathinone Degradation in Khat Plant (Catha Edulis) using UPLC-MS/MS for its Forensic Applications in South Africa</i>
W18	Environmental	<b>Jaume Albiol, University Jaume (Spain)</b> <i>Micellar Liquid Chromatography to Analyze Thiabendazole, Tert-Octylphenol and Chlorophyifos in Wastewater</i>
W19	Environmental	<b>Nazmul Amin, University of Waterloo (Canada)</b> <i>Multiresidue Determination of Pesticides in Drinking Water of 5 regions of Cote d'Ivoire using a SPE/GC-MS Methodology</i>
W20	Environmental	<b>Qingqing Liu, University of Alberta (Canada)</b> <i>Temporal Variations and Elimination Kinetics of Arsenic Species in the Breasts of Chickens Fed a Control or a Roxarsone-Supplemented Diet</i>
W21	Environmental	<b>Vladimir Sladkov, Institut de Physique Nucleaire (France)</b> <i>Affinity Capillary Electrophoresis in Studying the Complex Formation Equilibria in Aqueous Solution: U(VI) - Hydroxamic Siderochelate Systems</i>
W22	Environmental	<b>Stefanie Maedler (3MT), MOECC (Canada)</b> <i>Speciated Isotope Dilution Ion Chromatography Tandem Mass Spectrometry for the Quantification of Cr(VI) at Ultratrace Levels</i>

Please note that the program is subject to change. While every effort has been made to ensure accuracy, we apologize if there are any errors.

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