This training activity aims to promote mass spectrometry and its applications in the areas of clinical and medical research, fundamental sciences, engineering and the environment. The high sensitivity, speed and specificity of mass spectrometry allow the identification and quantification of multiple substances from minute amounts of samples. At the end of this training activity, participants will be able to recognize various applications offered by mass spectrometry in the health field.

The Organizing Committee

Mona Abaoui, M.Sc.
Christiane Auray-Blais, LL.M., Ph.D.
Caroline Barr, M.Sc., Int
Michel Boutin, Ph.D.
Pamela Lavoie, M.Sc.
Bruno Maranda, MD, M.Sc.

The Centre de formation continue (CFC) of the Faculty of Medicine and Health Sciences at l’Université de Sherbrooke is accredited by the Collège des médecins du Québec and, by the Committee on Accreditation of Canadian Medical Schools. This collective training activity, approved by the CFC, as per the certificate of the Royal College of Physicians and Surgeons of Canada, may be recognized for a maximum of 6 hour-credits. This activity is also certified for 6 hours of MainPro+ credits by the College of Family Physicians of Canada as a training group activity. For other health practitioners, a certification of a maximum of 6 hours of accredited training will be provided on May 24th 2017.
Agenda – May 24th 2017

8h00 - 8h30 Registration, coffee, pastries

8h30 - 8h45 Welcome and opening remarks

8h45 - 9h30 ► The Role of Metabolic Profiling in Health and Disease
Elizabeth J. Want, Imperial College London, Kensington, London, UK
Question period: 10 minutes

At the end of this lecture, the participant will be able to:
- Describe metabolic profiling.
- Illustrate the role of mass spectrometry in metabolic profiling and demonstrate some applications of metabolic profiling in the study of disease.

9h30 - 10h00 ► The Sweat Metabolome: Discovery of New Markers for Improved Diagnostic Testing and Treatment Monitoring of Cystic Fibrosis Patients
Philip Britz-McKibbin, McMaster University, Hamilton, Ontario, Canada
Question period: 10 minutes

At the end of this lecture, the participant will be able to:
- Describe the composition of the human sweat.
- Describe how new sweat biomarkers improve diagnostic testing and/or treatment monitoring of cystic fibrosis patients.

10h00 - 10h15 Health Break

10h15 - 11h00 ► Discovery of Bile Acid Synthesis Disorders as a Cause of Metabolic Liver Disease
- Diagnosis and Therapeutic Monitoring by Mass Spectrometry
Kenneth Setchell, University of Cincinnati College of Medicine, Cincinnati, Ohio, USA
Question period: 10 minutes

At the end of this lecture, the participant will be able to:
- Describe how untargeted mass spectrometry provides a powerful analytical tool for the diagnosis of defects in the cholesterol-bile acid biosynthetic pathway and in the development of a successful therapy for what are otherwise fatal conditions.
- Recognize the importance of applying complementary mass spectrometry techniques to elucidate and define metabolic pathways in cholesterol catabolism in liver disease.

11h00 - 11h30 ► Rapid Characterization of Cancer with Ambient Mass Spectrometry Methods; How Multimodal Imaging Can Help
Arash Zarrine-Afsar, University of Toronto, Toronto, Canada
Question period: 10 minutes

At the end of this lecture, the participant will be able to:
- Recognize how rapid measurements with mass spectrometry can be used in future clinical decision making.
- Develop insights into mass spectrometry technologies that are used to directly characterize cancer from tissue sections or in situ tissue.

11h30 - 12h30 Lunch – Buffet, Hall Z-1309

12h30 - 13h30 Tour - Waters-CHUS Expertise Centre in Clinical Mass Spectrometry Laboratories 1410 and 1419

13h30 - 14h15 ► Efficient and Effective Newborn Screening for Lysosomal Storage Disorders (LSD) by MS/MS
Dietrich Matern, Mayo Clinic College of Medicine, Rochester, Minnesota, USA
Question period: 10 minutes

At the end of this lecture, the participant will be able to:
- Recognize the different analytical platforms and approaches to NBS for LSDs.
- Recognize the principle and benefit of “second tier tests”.

14h15 - 14h45 ► Organic Contaminants in the Aquatic Environment: Novel Identification Strategies and Potential Human Impacts
Pedro A. Segura, Université de Sherbrooke, Sherbrooke, Quebec, Canada
Question period: 10 minutes

At the end of this lecture, the participant will be able to:
- Recognize the diversity of organic contaminants present in environmental waters and challenges for their detection and identification.
- Recognize how mixtures of organic compounds, even at trace concentrations, can be potentially harmful for aquatic organisms and humans.

14h45 - 15h15 Health Break

15h15 - 15h30 ► Verification of a Probe for the Discrimination of Exogenous GHB in Human Hair
Anny-France Hudon, INSPQ, Quebec, Quebec, Canada
Question period: 5 minutes

At the end of this lecture, the participant will be able to:
- Recognize the issues arising from the development of a mass spectrometry method for the analysis of GHB, GABA and succinic acid in hair.
- Describe how the use of a probe allows the verification of the involuntary exposure to GHB.

15h30 - 16h00 ► How High-Throughput Mass Spectrometry and Machine Learning Can Assist the Clinical Decision: a Tale of Numbers
Jacques Corbeil, CHUQ, Quebec, Quebec, Canada
Question period: 10 minutes

At the end of this lecture, the participant will be able to:
- Describe how large data analytics is used for clinical research.
- Recognize the strengths and caveats of using machine learning approaches for clinical diagnostics.

16h00 - 16h30 ► Matrix Effect in LC-MS, Some News Aspects in Therapeutic Drugs Analysis Method Development
Jean-Francois Bienvenu, INSPQ, Quebec, Quebec, Canada
Question period: 10 minutes

At the end of this lecture, the participant will be able to:
- Recognize the importance to characterize matrix effect efficiently.
- Recognize the importance of the choice of the internal standard in quantitative analyses.

16h30 - 16h45 Closing Remarks

This training activity was made possible with the support of our partners:

Waters
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