MetaboNews

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Metabolomics Society News

Members Corner

Board of Directors

Dear Colleagues,

For those of you taking some time off, I hope that you are enjoying your summer holidays. There are a few brief updates that I would like to highlight for you:

- We are excited to let you know that society website is up and running. Please check it out: https://metabolomicssociety.org

- We would looking for individuals interested in participating in the Diversity Equity and Inclusion (DEI) Task Group. The DEI Task Group will focus on further cultivating a community where all members feel welcome and secure and that all voices are heard and respected. The aim is to develop and promote strategies and best practices within the realms of racial, social, sexual and gender diversity. Please contact Natasa Giallourou (natasagiallourou@gmail.com) for more information.

- The Journal *Metabolites* is doing a special issue of Metabolomics 2021. We are inviting anyone with an oral or poster presentation to submit a journal article to this issue. More information can be found on the *Metabolites* website.

There are several exciting updates that we will provide in September. Specifically, we are hoping to announce to location of Metabolomics 2022. In this issue we will also highlight several details from Metabolomics 2021 online, including overall number of attendees from all over the world and highlights from the workshops, scientific sessions, posters, and sponsor booths.

For those of you in summer, enjoy the last few weeks.

All the best,

President of the Metabolomics Society

Early-career Members Network (EMN)

The Early-Career Members Network is thrilled to acknowledge the four awardees of the EMN Award, which aimed to recognize early-career achievements in the field of metabolomics through the abstracts received for the 2021 Metabolomics Society online conference.

Congratulations to Emma Leacy, for the best student poster abstract, to Priyadarshini Kachroo, for the best ECR poster abstract, to Camille Roquencourt, for the best student oral abstract and to Roland Wedekind, for the best ECR oral abstract.

Metabolomics Society News

The Metabolomics Society is an independent non-profit organisation dedicated to promoting the growth, use and understanding of metabolomics in the life sciences.

General Enquiries
info@metabolomicssociety.org
Membership Enquiries

International Affiliates Corner

Australian & New Zealand Metabolomics Network (ANZMN) is now Australian & New Zealand Metabolomics Society

It's our pleasure to inform you that ANZMN has been registered as a formal society and our new name is "Australian and New Zealand Metabolomics Society". In short, we will be called as "The ANZ Metabolomics Society". You may notice the changes in our names in all our social media and a new email address; our website will be launched soon.

ANZ Metabolomics Society is now the peak body representing scientists in the metabolomics and lipidomics field in Australia, New Zealand, and the Oceania region. Membership of the society is currently free, and advantages of being a member are:

- The largest network of regional experts in metabolomics and lipidomics, including both mass spectrometry and NMR.
- Monthly newsletters keeping you up-to-date with developments, conferences, meetings, and job opportunities in the field.
- Regular webinars to showcase research being undertaken by metabolomics and lipidomics community.
- Annual meeting covering the latest research and developments from academia and industry.
- Dedicated early career members' network

Other News

Voting for Directors of the Metabolomics Society

The election to fill open Board of Director seats will be open August 16. You can participate in the Society by completing a quick ballot online, between August 16 and September 8. Keep an eye out for the e-mail notification!
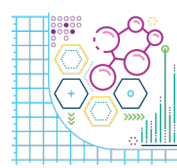
Spotlight | m/q Initiative at PNNL

SpOtlight

m/q **Initiative at PNNL**

The use of mass spectrometry (MS) to characterize biomolecules began in the 1960s; now the method is routinely employed worldwide in the high throughput identification and quantification of proteins and small molecules in proteomics and in metabolomics and lipidomics studies, respectively. Proteins, being chemically uniform and consisting of repeating units of just 20 amino acids, are relatively easily identified and quantified as their constituent peptides using MS in bottom-up proteomics analyses, due to well-characterized gas-phase dissociation around the peptide bond. Non-peptide, small molecule metabolites are more challenging to comprehensively identify and quantify due to very high diversity in their chemical structures (Figure 1).

Figure 1. Non-peptide, small molecule metabolites remain challenging to comprehensively identify and quantify. Single properties, such as tandem mass spectra, are often insufficient for providing an unambiguous compound identification, and higher dimensional analyses are required.

However, the scientific community has now generated vast amounts of data in fundamental studies of authentic small molecules that enables the development of computational approaches to predict the various chemical and physical processes that occur during a MS measurement. The m/q Initiative at Pacific Northwest National Laboratory (PNNL) is a 5-year, $12M investment that seeks to achieve a revolutionary transformation in the utility of and knowledge gained from molecular measurements through a comprehensive, unified, and predictive understanding of the chemistry and physics of all ions throughout an MS experiment.

Synergizing Diverse Strengths

m/q exploits key institutional strengths in MS instrument development and application, and in molecular modeling, machine learning and applied statistics to develop new capabilities that support PNNL core research areas in decarbonization and energy storage; chemistry, biology, earth sciences, and data science; and nuclear materials and threat analysis. The initiative also leverages a suite of state-of-the-art instrumentation within the PNNL Environmental Molecular Sciences Laboratory, a national scientific user facility sponsored by the U.S. Department of Energy. Now concluding its second year, *m/q* is comprised of 16 individual R&D projects organized within four Technical Areas: Ionization & Matrix Effects, Separations & Detection, Molecular Modeling, and Statistics & Machine Learning (Figure 2).
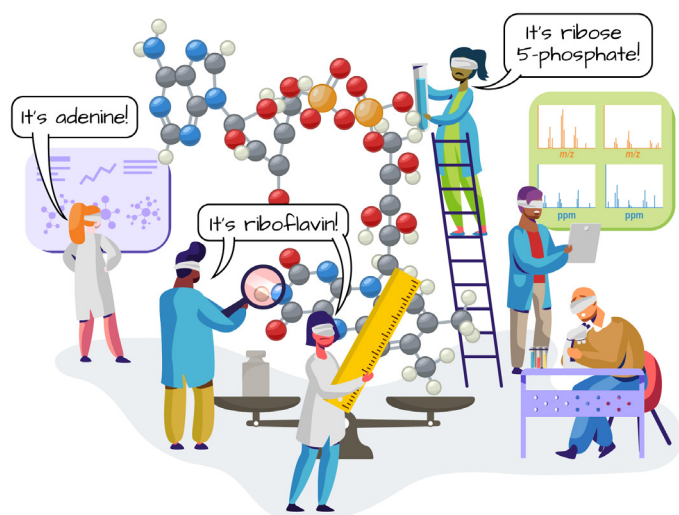

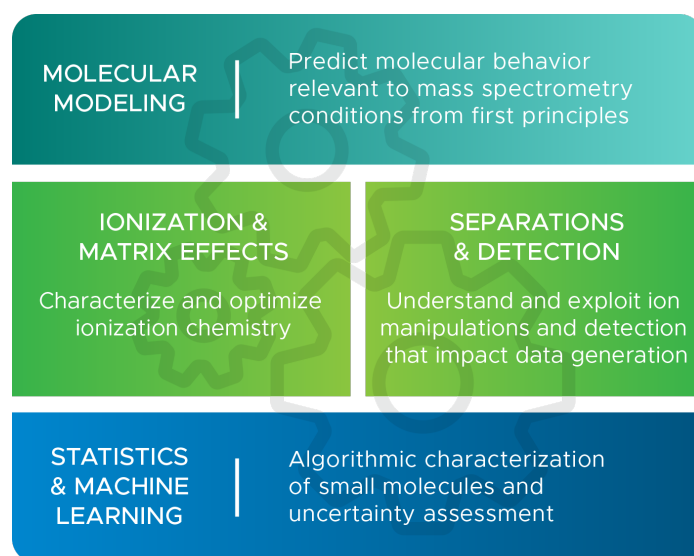**Figure 2.** The four Technical Areas of the *m/q* Initiative work synergistically to advance the field of MS.

Tom Metz leads the *m/q* Initiative together with Robert Ewing (*m/q* Chief Scientist and Ionization & Matrix Effects Lead), Yehia Ibrahim (Separations & Detections Lead), Simone Raugei (Molecular Modeling Lead), and Bobbie-Jo Webb-Robertson (Statistics & Machine Learning Lead).

Spotlight | m/q Initiative at PNNL

Their diverse, cross-disciplinary team of scientists with world-renowned expertise in instrumentation, measurements, theory, and computation allows for the intensive study of fundamental properties regulating the behavior of molecules under a variety of MS conditions. This multi-disciplinary approach will greatly enhance MS data collection and analysis and allow researchers to elucidate a more thorough picture of the metabolome.

Ionization & Matrix Effects

For a MS measurement to occur, molecules are ionized, then their mass-to-charge ratios are detected by the instrument. Improvements in understanding and predicting the ionization process would vastly augment the already-high sensitivity and selectivity of the technique. Scientists involved with the Ionization & Matrix Effects Technical Area are spearheading the effort to enhance mass spectrometry capabilities through a fundamental understanding of the ionization process and the ability to predict future ion states. This includes characterizing and optimizing the ionization process through selective ionization by way of competitive charge affinity, generation of unique product ions via adduct formation and the stabilization of labile ionization products.

Separations & Detection

In MS, both the electric field and pressure can be altered to manipulate ions for different measurements (Figure 3).
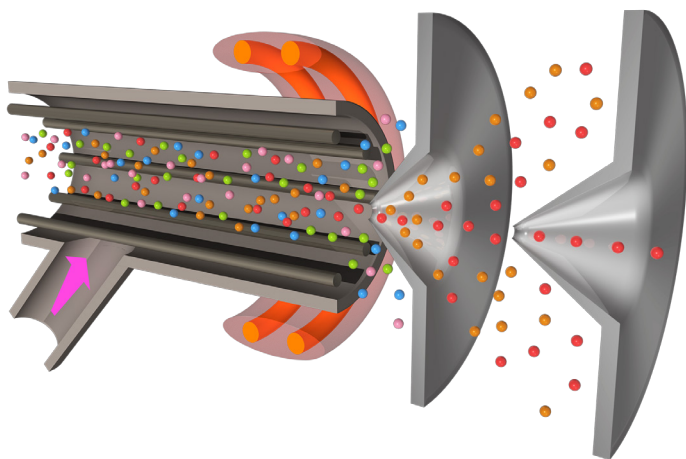

Figure 3. A more finely tuned separation of ions can be achieved through the manipulation of the pressure and electric field in mass spectrometry and complementary techniques.

At low pressures, the mass-to-charge ratio can be measured, while the structure of the molecule can be probed at higher pressures. Ions interact differently with the electric field based on their properties, which can be exploited to effectively separate different species. However, current instrumentation is not sensitive enough to differentiate between very similar molecules. The goal of the Separations

& Detection Technical Area is to deliver advances in mobility separations, ion confinements, and theoretical tools to understand and predict the separation, confinement, and detection of ions to increase the sensitivity of mass spectrometry and complementary techniques.

Molecular Modeling

The goal of the Molecular Modeling Technical Area is to understand physical-chemical properties of small analytes in the gas-phase to elucidate the fundamental principles that regulate their structure and reactivity and to develop predictive models to inform their experimental interpretation (Figure 4). This involves the computational analysis of thermodynamic and kinetic properties that govern the behavior of these ions, as well as gas-phase structure prediction and effects of ionization. This Technical Area aims to provide accurate theoretical estimates of thermochemical properties, such as ionization potentials, bond dissociation energies, and gas-phase basicities, and how they correlate with structural motifs, functional groups and ion-molecule clustering to offer new insights into the behavior of gas-phase analytes under ionizing conditions and high fields.
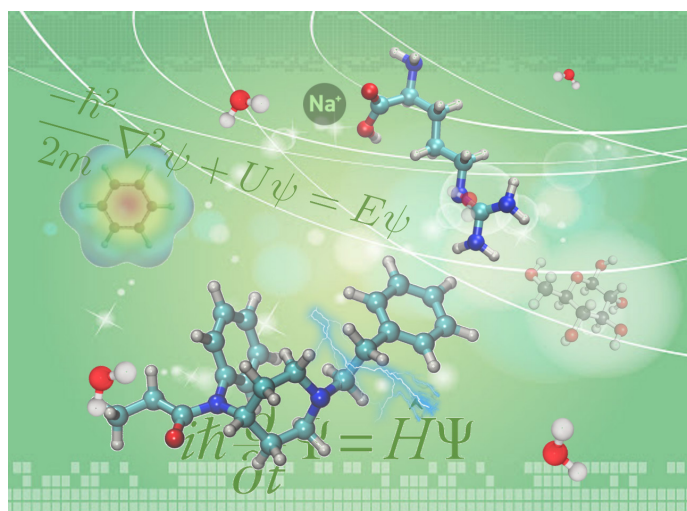

Figure 4. Quantum chemical modeling and statistical mechanics approaches are deployed to understand the behavior of analytes under conditions relevant to MS.

Statistics & Machine Learning

Statistics and machine learning are core capabilities across many scientific disciplines, providing needed validation to theoretical models and novel models for prediction of compound identification and quantification. As part of the *m/q* Initiative, the Statistics & Machine Learning Technical Area offers algorithmic characterization of small molecules, uncertainty assessments on various mass spectrometry processes, as well as data management and software development processes. Improved identification of unknown compounds is expected by utilizing domain-informed machine learning approaches that account for the

Spotlight | m/q Initiative at PNNL

experimental parameters generating the measurements, robust statistical false discovery calculations and cross-study comparisons through the development of standards-free statistical normalization approaches.

Building a Better Paradigm for Metabolomics Studies

As part of the integrated *m/q* Initiative, scientists working under the four Technical Areas outlined above come together to create an integrated platform that provides unambiguous identification and quantification of all MS sample components.

"Continued improvements in instrumentation and increases in dimensionality of MS-based molecular analysis approaches will yield increasing amounts of data. A comprehensive, unified, and predictive understanding of the chemical and physical processes that ionized molecules experience during a MS measurement will provide the foundation for comprehensive standards-free molecular identification and quantification, full characterization of measurement uncertainty, and analyte-specific detection capabilities," said Metz.

As a result of the *m/q* Initiative, PNNL is uniquely positioned in the scientific community to lead the next paradigm of molecular MS measurements. Researchers interested in becoming involved with the mission of the initiative are invited to contact *m/q* leadership expressing their interest.

Contact

For more information on the *m/q* Initiative and opportunities for collaboration, please contact:

- Tom Metz, *m/q* Initiative Lead, thomas.metz@pnnl.gov
- Robert Ewing, *m/q* Chief Scientist and Ionization and Matrix Effects Lead, robert.ewing@pnnl.gov
- Yehia Ibrahim, Separations and Detections Lead, yehia.ibrahim@pnnl.gov
- Simone Raugei, Molecular Modeling Lead, simone.raugei@pnnl.gov
- Bobbie-Jo Webb-Robertson, Statistics and Machine Learning Lead, bobbie-jo.webb-robertson@pnnl.gov

Recent Publications

Recently published papers in metabolomics

- [Beyond the Classic Risk Factors in Atherosclerosis - the Promise of Metabolomics and Other -omics in Life-style Acquired Cardiovascular Diseases](#)

- [Bridging the Polar and Hydrophobic Metabolome in Single-Run Untargeted Liquid Chromatography-Mass Spectrometry Dried Blood Spot Metabolomics for Clinical Purposes](#)

- [A Comparison of Serum and Plasma Blood Collection Tubes for the Integration of Epidemiological and Metabolomics Data](#)

- [Formation of Sodium Cluster Ions Complicates LC-MS Metabolomics Analyses](#)

- [The Limitless Applications of Single-cell Metabolomics](#)

- [Metabolomics Analysis for Diagnosis and Biomarker Discovery of Transthyretin Amyloidosis](#)

- [Metabolomics in Bariatric Surgery: Towards Identification of Mechanisms and Biomarkers of Metabolic Outcomes](#)

- [Metabolomics of the Tryptophan-Kynurenine Degradation Pathway and Risk of Atrial Fibrillation and Heart Failure: Potential Modification Effect of Mediterranean Diet](#)

- [Metabolomics-based Discrimination of Patients with Remitted Depression from Healthy Controls using ^{1}H-NMR Spectroscopy](#)

- [Metabolomics-based Understanding of the Olanzapine-induced Weight Gain in Female First-episode Drug-naïve Patients with Schizophrenia](#)

- [Morpho-metabotyping the Oxidative Stress Response](#)

- [NMR-based Metabolomics Associated with Chronic Kidney Disease in Humans and Animals: a One Health Perspective](#)

- [Personalised Therapeutic Management of Epileptic Patients Guided by Pathway-driven Breath Metabolomics](#)

- [Phytocannabinomics: Untargeted Metabolomics as a Tool for Cannabis Chemovar Differentiation](#)

- [Profiles of Urine and Blood Metabolomics in Autism Spectrum Disorders](#)

- [Rapid ex vivo Molecular Fingerprinting of Biofluids using Laser-assisted Rapid Evaporative Ionization Mass Spectrometry](#)

- [Tandem Mass Spectrum Similarity-Based Network Analysis Using ^{13}C-Labeled and Non-labeled Metabolome Data to Identify the Biosynthetic Pathway of the Blood Pressure-Lowering Asparagus Metabolite Asparaptine A](#)

- [Towards Superior Plant-based Foods using Metabolomics](#)

- [Unraveling Mosquito Metabolism with Mass Spectrometry-based Metabolomics](#)

- [Untargeted Metabolomics and Infrared Ion Spectroscopy Identify Biomarkers for Pyridoxine-dependent Epilepsy](#)

MN

Metabolomics Events

Postponed Until 2021

The 3rd Annual Canadian Metabolomics Conference

Venue
TBD, The Metabolomics Innovation Centre

Overview
The Third Annual Canadian Metabolomics Conference has been postponed until 2021. The conference will highlight work by leading researchers, including new technologies and approaches for metabolomics research, and applications in various fields. The conference will feature networking opportunities and a poster session designed for trainees to present their work. Our goal is to highlight the exceptional metabolomics science that is being done in Canada and abroad, and foster Canada's leadership role in the global research community.

We look forward to seeing you in 2021!

Additional information here.

18 August 2021

EMSL Learn Webinar Series: Supercomputing Your Data

Venue
Online Webinar, 12:00 PM Pacific Time, EMSL

Overview
Learn how to accelerate your research with Tahoma, EMSL's newest supercomputer.

Tahoma, EMSL's newest supercomputer, has 1015-teraflops of computing power to perform calculations for molecular modeling, bio-imaging, and meta-transcriptomics.

During this 45-minute webinar, Kurt Maier will explain how to leverage Tahoma's powerful capabilities; Amy Jystad will walk you through how she and her team used Tahoma in the development of a natural-product database; and Jay Bardhan will discuss how you can gain access to Tahoma and begin accelerating your research.

Additional information here.

Metabolomics Events

30 August 2021

SMS Lunch Webinar: Expanding Information Content with Data Independent Acquisition and Chimeric Tandem Mass Spectrometry for the Analysis of Complex Biological Samples?

Venue
Online Webinar, 12:00-13:00 CET, Swiss Metabolomics Society
Overview
Prof. Gerard Hopfgartner, University of Geneva

Sensitive identification and quantification of endogenous and exogenous metabolites or lipids in metabolomics and drug metabolism is based on the combination of separation sciences (e.g., LC or SFC) and mass spectrometric detection. Recent instrumental improvements in high-resolution mass spectrometry (HRMS) have enabled data independent information acquisition (DIA) schemes, such as SWATH. Moreover, implementing differential mobility spectrometry (DMS) into the workflow as the use electron induced dissociation (EID) can significantly improve the performance of the analysis on singly charged precursor ions including adducts. In this talk the benefits to apply multiple separation techniques (LC, SFC) with multiple MS and MS/MS techniques (DIA, IMS, ExD) using a prototype chimeric collision cell will be presented for the analysis of pharmaceuticals and metabolites in biological samples.

Additional information here.

Join the Zoom meeting here. No registration needed.

30 August - 10 September 2021

International Summer Sessions in Metabolomics

Venue
Online, University of California, Davis, California, USA, West Coast Metabolomics Center

Overview
The course will include:

1. Study design, including pitfall analysis and hidden biases in studies from microbial, plant, mouse and human cohort research
2. Sample preparation and quality control
3. In-laboratory detailed discussions standard operating procedures for GC-MS and LC-MS data acquisitions
4. Targeted metabolomics, including monitoring charts and use of isotope labeled internal standards
5. Exercises on flux analysis in cancer cells by isotope tracer analysis
6. Untargeted data processing and exercises on MS-DIAL software
7. Exercises on identification of unknowns by cheminformatics software workflows (incl MS-FINDER, CFM-ID, and various databases and small software routines)
8. Data normalization and transformation with and without internal standards and quality controls
9. Multivariate and univariate statistics
10. Pathway mapping

Additional information here.

Metabolomics Events

8-9 September 2021

41st British Mass Spectrometry Society Annual Meeting

Venue
Sheffield Hallam university, (City Campus), Hallam Hall, Howard Street, Sheffield, S1 1WB, United Kingdom; Hybrid Event with Asynchronous Online Outreach, BMSS

Overview
A vibrant national mass spectrometry society is in everyone's interest - academia, industry & vendors alike. The Society invites you to join us for the 41st BMSS Annual Meeting at Sheffield.

The 41st Annual Meeting will feature a two day (one night) format incorporating plenary lectures, keynote lectures, contributed talks, partner presentations, flash presentations and an inclusive social evening. On-line poster sessions will be presented digitally. All talks will be recorded and archived to a secure location accessible to registered delegates only via the BMSS website. Recorded talks will be accessible to both in-person & digital only delegates from Monday 13th September, and will remain accessible for 28 days after the meeting as part of the asynchronous on-Line outreach.

Additional information here.

10 September 2021

MANA Summer Symposium

Venue
Online, 9:00 AM - 2:30 PM PST, MANA

Overview
Untargeted metabolomics and lipidomics data provide exciting prospects for defining biological mechanisms and finding novel hypotheses and disease associations.

Current workflows mostly rely on accurate precursor masses and matching experimental to library MS/MS spectra. However, False Discovery Rates (FDR) for this classic method remain poorly studied. FDRs may possibly be much larger than anticipated due to multiple adduct species, (relative) retention time exclusions, and in-source fragmentations. This symposium will discuss how LC-MS/MS annotations can achieve increased confidence by using complementary information from ion mobility (CCS). We will also evaluate how many isomeric compounds should be considered given background information from chemical and biochemical databases and atlases, genetic inferences and biological literature data on species, organs and cells.

The symposium starts at 9 AM PST.

Additional information here.

MN

Metabolomics Events

4-8 October 2021

ELIXIR Fluxomics Training Shool 2021

Venue
Virtual Training School, ELIXIR-Metabolomics Community

Overview
The 1st ELIXIR Fluxomics Training School is organized by ELIXIR-GR (FORTH/ICE-HT) in collaboration with ELIXIR-ES (UB) in the context of the ELIXIR Metabolomics Community-lead Implementation Study "Standardizing the fluxomics workflows".

This 5-day course will take place in virtual mode on October 4-8, 2021 from 9:00 to 17:00 Central European Time (CET) and will provide an introduction to the field of fluxomics and the experimental and computational methods used to estimate and predict metabolic fluxes. The course is addressed mainly to graduate students and junior post-docs, of either experimental or computational background. Learning outcomes include familiarity with the basic concepts, experimental techniques, data deposition standards and computational methods and software tools in fluxomics.

The course includes hands-on experience in computational methods and software tools and mini team projects that will help the students apply the taught concepts.

Additional information here.

17-21 October 2021

3rd Annual MANA Conference: Foods for Health Discovery

Venue
Virtual Conference, Ohio State University & MANA

Overview
The 18th Annual Ohio Mass Spectrometry Symposium will be held virtually in conjunction with the 3rd annual Metabolomics Association of North America conference (MANA 2021). Join us for "Mass Spec Mornings" on October 19-20, 2021.

If you seek to get your planned metabolomics event endorsed by MANA and receive MANA funds, please contact us!

Additional information here.

1-5 November 2021

Hands-On Mass Spectrometry Course

Venue
Department of Animal Science, Aarhus University, Blichers Allé 20, Tjele, Denmark

Overview
At Aarhus University, Department of Animal Science, we are organizing a "Hands-on mass spectrometry course", which will give insight in the use of mass spectrometry for a range of analyses with relevance in animal science. The course will take place November 1-5, 2021.

Additional information here.

Metabolomics Events

19-20 Nov 2021

World Endocrine & Obesity Conference

Venue
Bangkok, Thailand

Overview
The 2021 World Endocrine and Obesity Conference (2021WEOC) will be organized around the theme "Endocrine Care through Innovation & Discovery". The conference program for the 2 days will run as a hybrid conference model allowing Virtual / Digital and Physical platform. 2021WEOC is offering a line-up of local and international speakers with inspiring insights to share on advancing Endocrinology, Obesity, Diabetes and Metabolism Quality Improvement through Patient and Family Experiences.

2021WEOC anticipates hundreds of participants including Didactic keynote and session lectures, panel discussions, case-based breakouts, and original scientific abstracts, questions and answers, young researchers' investigations and poster presentations. Leading experts will present new concepts, technologies, management protocols, and clinical experiences in their respective disciplines. This conference is perhaps a giant event that creates an ideal platform to share expertise addressing current advancements involved in critical care management. It will be a wonderful opportunity for all the delegates as it provides an international networking opportunity to collaborate with the world-class trauma and critical care and medical associations.

Additional information here.

Conference Flyer

13-16 May 2022

2nd Metabolism in Health and Disease Conference

Venue
Fiesta Americana Condesa, Cancun, Mexico

Overview
Scientific chairs Heather Christofk (UCLA), Erika Pearce (Johns Hopkins University) and Janelle Ayres (Salk Institute) are coming together to host the 2nd Metabolism in Health and Disease conference.

Building on the success of the first meeting, this interdisciplinary meeting will bring together researchers working on immunity, metabolism, cancer, stem cells, neurobiology, and host-microbe interactions to gain a more integrated understanding of how metabolism impacts health and disease, with the aim of moving research in the field forward.

Additional information here.

Metabolomics Events

20-24 June & 20-23 September 2022

CliMetabolomics

Venue
20-24 June, Leipzig and Halle, France / 20-23 September, Saale, Germany

Overview
CliMetabolomics aims to better understand the plasticity of plants and to develop sustainable plants adapted to climate change. The event consists of seminars, discussions and many practical courses. The workshop is aimed at doctoral students, post-docs and young researchers working in France or Germany. It is funded by INRAE, Science Campus and the Franco-German University.

Additional information [here](#).

7-12 August 2022

Gordon Research Conference on Lipidomics

Venue
Jordan Hotel at Sunday River 27 Grand Circle Newry, ME, US

Overview
Save the date and check back in October 2021 for more information!

Additional informaiton [here](#).

26-27 October 2022

2nd International Diabesity and Metabolic Surgery Summit

Venue
Tel Aviv, Israel, IDMSS

Overview
The focus of the forthcoming IDMSS 2022 will be the relationship between obesity and type 2 diabetes and their associated complications and the beneficial results obtainable from metabolic/bariatric surgery. This Summit is therefore vital to increase the international knowledge of these procedures and stimulate the investigation and development of new and more effective treatments. The Summit will bring together many of the world experts in the fields of metabolic surgery and medicine. A wide range of related topics will be presented, discussed and debated. The range and scope of the program are a must for all clinicians caring for patients suffering from metabolic diseases.

Additional information [here](#).

Metabolomics Jobs

Metabolomics Jobs

If you have a job you would like posted, please email Ian Forsythe (metabolomics.innovation@gmail.com).

Jobs Offered

Job Title	Employer	Location	Posted	Closes	Source
Scientist (LC-MS/MS) for Assay & Kit Development	biocrates life sciences ag	Innsbruck, Austria	12-Aug-21		biocrates life sciences ag
Various Positions	Various	Various	9-Aug-21	Various	Metabolomics Association of North America Jobs
Postdoctoral Appointee in Metabolomics	School of Medicine, Indiana University	Indiana, USA	29-Jun-21	3-Sept-21	Indiana University School of Medicine
Visitor Scientist	ICGEB Laboratories	Cape Town, South Africa; New Dehli, India; and Trieste, Italy	29-Jun-21	Technology	PACTs Felloewships for LDCs
Metabolomics of Algae - Post-doctoral Fellowship	Cawthron Institute	Nelson, New Zealand	10-Jun-21	Until Filled	Cawthron Institute
Senior/Principal Research Associate, Metabolomics	Calico Life Sciences	South San Francisco, CA, USA	26-Apr-21	Until Filled	Calicolabs.com
PhD Student and Post-doctoral Fellow Positions in Mass Spectrometry Metabolomics and Proteomics	Technion – Israel Institute of Technology	Haifa, Israel	29-Mar-21	Technology	MetaboNews Jobs
Research Associate, Entomology Department	Cornell University	Ithaca, NY, USA	22-Mar-21	Until Filled	AcademicJobs Online.org
Postdoctoral R&D Scientist - NMR-based metabolomics	Lesaffre	Loos, France	16-Mar-21	Until Filled	SmartRecruiters. com
PhD Research Project Opportunities, Centre for Integrative Metabolomics and Computational Biology	Edith Cowan University	Joondalup, Australia	16-Mar-21	Until Filled	Edith Cowan University
Various Positions	The Metabolomics Innovation Centre	Various	23-Feb-21	Various	The Metabolomics Innovation Centre

Metabolomics Jobs

Metabolomics Jobs

If you have a job you would like posted, please email Ian Forsythe (metabolomics.innovation@gmail.com).

Jobs Wanted

This section is intended for very highly qualified individuals (e.g., lab managers, professors, directors, executives with extensive experience) who are seeking employment in metabolomics.

We encourage these individuals to submit their position requests to Ian Forsythe (metabolomics.innovation@gmail.com). Upon review, a limited number of job submissions will be selected for publication in the Jobs Wanted section.

- Dr. Nara Consolo - Seeking a position involving the application of NMR-based metabolomics in animals/animal production; it could be a Researcher position or an Assistant Professorship.

- Dr. Paulina Samczuk - Seeking an interesting Postdoc offer or other position which would allow her to develop herself.