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MetaboNews September 2023 Issue

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MetaboNews

This month in metabolomics

SEPTEMBER, 2023
Vol 13, Issue 9

MetaboNews is a monthly newsletter published in a partnership between The Metabolomics Innovation Centre (TMIC) and The Metabolomics Society

In This Issue

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Metabolomics Society News

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

General Enquiries

info@metabolomicssociety.org

Members' Corner

Early-career Members Network (EMN)

Spatial and Single Cell Metabolomics Webinar

Speakers:
Theodore Alexandrov and Tim Rose (EMBL-Heidelberg, Germany)

Hosts:
Sofina Begum (Harvard Medical School, USA) and Álvaro Fernández-Ochoa (University of Grenada, Spain)

Theodore Alexandrov is a team leader at the European Molecular Biology Laboratory (EMBL), the head of the EMBL Metabolomics Core Facility, a faculty of the Molecular Medicine Partnership Unit between EMBL and Heidelberg University, and a Principal Investigator at Bio Studio at the BioInnovation Institute in Copenhagen, Denmark. The Alexandrov team at EMBL aims to reveal the secrets of metabolism in time and space in tissues and single cells by developing experimental and computational technologies, software, and resources.

The work of Alexandrov team led to over 100 journal publications, multiple patents, and two startups in the field of spatial and single-cell -omics. Among key contributions are the development of METASPACE, a cloud open-source community platform for spatial metabolomics, and SpaceM, a method for spatial single-cell metabolomics.

Tim Rose is a computational biologist specialized in Mass Spectrometry data, with a PhD from the Technical University of Munich, where he focused on the development of data integration algorithms for molecular patient stratification and pathway analysis utilizing networks and machine learning. With this expertise, his post-doctoral work focuses on the application of computational methods and workflows for data reduction and deconvolution from complex biological datasets.

Rose's current work as a postdoctoral researcher, is funded by the AI Health Innovation Cluster, where he focuses on network methods and deep learning techniques for spatial and single-cell imaging mass spectrometry data.

Click here to learn more about this latest webinar by Theodore Alexandrov and Tim Rose.

Please register for, "Spatial and Single Cell Metabolomics," to be held on September 27 at 8:00 EDT, 13:00 GMT, 14:00 CET, 22:00 CST at: https://zoom.us/webinar/register/WN_OnWo-g5kRdKy2S14j5lbRA#/registration
After registering, you will receive a confirmation email with information about joining the webinar.

International Affiliates' Corner

Metabolomics Association of North America (MANA)

Visit: https://metabolomicsna.org

5th Annual MANA Conference

The **Plenary Speakers** and list of **Instructional and Interest Group Workshops** has been announced for the 5th Annual MANA Conference, to be held October 23-27, 2023 at the University of Missouri. See below for speaker and workshop details. Don't miss your opportunity to hear these dynamic speakers describe their exciting work! The conference program also includes corporate breakfasts, speakers selected from abstract submissions, poster presenters, and social events. Topics cover the broadness of the metabolomics field, broadly spanning computational advances, plant/environment applications, and clinical/translational applications.

Register for the meeting **here.** While the oral abstract submission deadline has passed, you can still submit your abstract for consideration as a poster presentation up until August 31. **Submit abstracts here.**

Plenary Speakers

- Prof. Andrew Patterson (Penn State University) - "**Bile Acids: The Conversation Starters in the Complex Host-Microbiome Dialogue**"
- Prof. Dajana Vuckovic (Concordia University) - Title TBA
- Prof. Lauren Petrick (Icahn School of Medicine at Mount Sinai) - "**Leveraging Untargeted Metabolomics for Discovery in Cancer Epidemiology**"
- Prof. Arthur Edison (University of Georgia) - "**Unique Strengths of NMR Metabolomics: In Vivo Metabolism and Functional Metabolomics**"

Instructional and Interest Group Workshops

- **MANA Interest Groups: What They Are and How to Get Involved** - Ewy Mathé, Arpana Vaniya
- **The NP-MRD: An NMR Database for Metabolomics and Natural Product Discovery** - David Wishart, Lloyd Sumner, Roger Linington, John Cort
- **Farm to (data)Table: How has your data been Processed?** - Daniel Hitchcock, Yue Wu, Ewy Mathé
- **Opportunities and Challenges in Developing a Web-accessible, Community-sourced Database of Reproducible Metabolomics Methods in Compliance with FAIR Principles: An ABRF Initiative** - Ryan Sheldon, Maryam Goudarzi
- **Multi-omics Analysis and Interpretation** - Isin Tuna Sakallioglu, Stephanie Bishop
- **Challenges and Considerations for Processing Untargeted High-dimensional Mass Spectrometry Data** - Sean Colby
- **Quality Management for Metabolomics Laboratories: A Path to Enable Precision Medicine** - David Wishart, Sindhu Nair, Stephen Barnes, Annie Evans,

Katherine Black, Jennifer Kirwan, Rima Kaddurah-Daouk, mQACC, MANA Precision Medicine Interest Group, Metabolomics Society Precision Medicine Task Group

- **The View of the Microbiome Through the Lens of Metabolomics: Data Analysis and Integration Strategies** - Denny Lan, Rob Quinn, Maryam Goudarzi, Chris Zhu
- **The Art of Industry Collaboration: Empowering Early Career Scientists in Establishing Corporate Member Relationships** - Arpana Vaniya, Nicole Prince
- **Lipidomics Minimal Reporting Checklist for Metabolomics** - Kim Ekroos, Tom Metz, Gerhard Liebisch, Ruth Welti
- **Hands-on Processing of Mass Spectrometry-based Metabolomics and Exposomics Big Data Using ADAP-BIG and Compound Identification and Annotation Using ADAP-KDB** - Aleksandr Smirnov and Xiuxia Du
- **SQUAD Metabolomics, the New Standard in Discovery Metabolomics Analyses** - Susan Bird, Eric Tague, Bashar Amer, and Rahul Deshpande
- **COMETS Analytics: An Open-source Analytic Tool for Single Cohort and Meta-analyses of Multiple Cohorts in Metabolomic-based Epidemiological Studies** - Jessica Lasky-Su, Ewy Mathe, Nicole Prince and Marinella Temprosa

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We are excited to announce that we have implemented a new format for our advertisements. However, we would like to inform you that the price is currently subject to review and may change in the near future. We encourage you to get in touch with us as soon as possible in order to freeze the current price and take advantage of this opportunity. Thank you for your continued support and we look forward to working with you.

MetaboInterview

Masanori Arita

Professor
Head of DNA Data Bank of Japan, National Institute of Genetics (NIG)
Team Leader RIKEN Center for Sustainable Resource Science (CSRS)
Arita Group

Biography

With Ph. D. in information science, Masanori Arita started his career as a termed researcher at Electrotechnical Laboratory, Tsukuba, Japan. He moved to Computational Biology Research Center of AIST (Japan) as its starting member in 2001, and was later appointed as Associate Professor of Computational Biology Department, The University of Tokyo in 2003. He started working with RIKEN in 2007, and is currently Team Leader at CSRS. The main research focus is metabolomics and bioinformatics, especially on data infrastructure and management. Major research products include Metabolomics.JP, MassBank, and MetaboBank.

How did you get involved in metabolomics?

My background is computer science but I have been interested in plant secondary metabolites including their biosynthesis and bioactivities. My initial contribution was an atomic-level reconstruction of metabolic pathways, but after I learned the complexity and ambiguity of metabolite biosynthesis in plants, most of my work has been dedicated to

databases and standardization. I was one of the initial members of the Metabolomics Society, which in 2005 organized the first conference in Tsuruoka City, Japan.

What are some of the most exciting aspects of your work in metabolomics?

One of the most memorable and exciting events in Metabolomics was the 10th Society Conference in Tsuruoka City in 2014, hosted by The Institute for Advanced Biosciences, Keio University (then directed by Masaru Tomita). Tsuruoka is famous in this society but it is a small town of 100,000 people. There are only 4 flights per day between Tokyo and Tsuruoka. It was a tremendous challenge to organize an international meeting of >500 participants. First of all, no single venue existed that could house all people. So the solution was to connect the attendees from two hotels via teleconference so that they are able to see the same presentation in real-time. Accommodation and transportation were also challenges. The local committee arranged with the local bus company to provide special buses to connect the venue with surrounding hotels and food places. We even prepared English conversation guides for local restaurants which kindly agreed to host gourmet tours. The result was a huge success, and I still hear good memories of Tsuruoka City, especially about the heartful receptions and traditional culture.

What key metabolomics initiatives are you pursuing at your research centre or institute?

I was one of the founding members of MassBank, a high-quality mass spectral database (Figure 1), which was also based at Keio Institute in Tsuruoka. Before MassBank there was no open-shared repository for mass spectra but it changed the world as you can see now. Next important is the sharing of raw data in metabolomics. This is more challenging because there are so many different platforms; preparing appropriate metadata is far more complicated than genomics and proteomics. Still, I managed to start the MetaboBank repository under the umbrella of the DNA Data Bank of Japan (DDBJ) with support from the Japan Science and Technology Agency (JST)

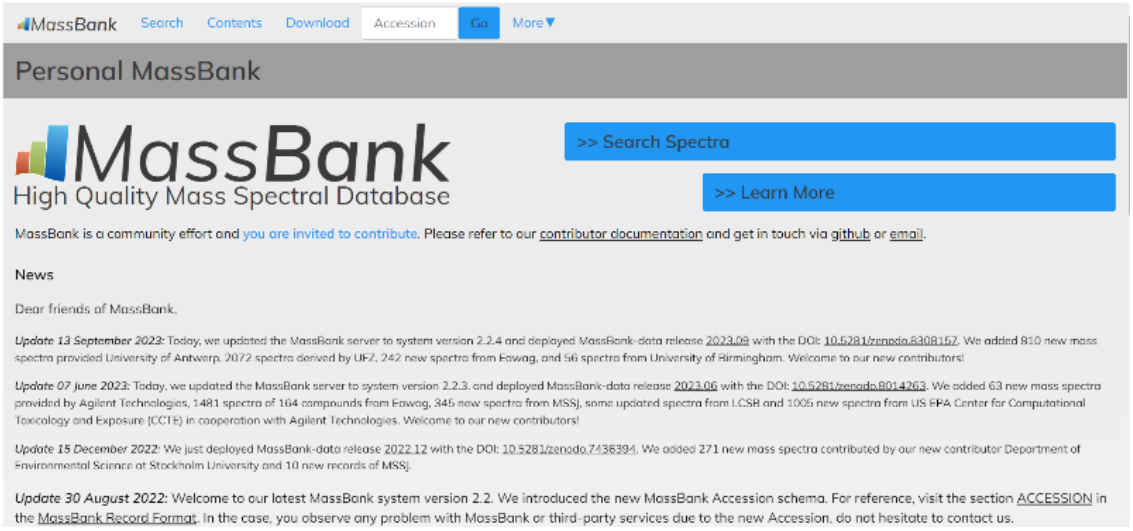

Figure 1: Homepage of the MassBank. MassBank is an open source mass spectral library for the identification of small chemical molecules of metabolomics, exposomics and environmental relevance. The vast majority of MassBank contents now feature high-resolution mass spectrometry data, although all kinds of mass spectral data are accepted.

What is happening in Japan in terms of metabolomics?

Because of the MassBank and Tsuruoka initiative, Japan has been a leading country in this field, I believe. We are relatively weak in human analyses but Japan is strong in plants. I have an appointment at RIKEN Center for Sustainable Resource Science (CSRS) led by Kazuki Saito, and CSRS is contributing much to this society mainly from plant metabolomics. One big achievement is the development of MS-DIAL (Figure 2), whose main developer is Hiroshi Tsugawa. This software platform is strong in lipidomics, and I hope many more people will use this software.

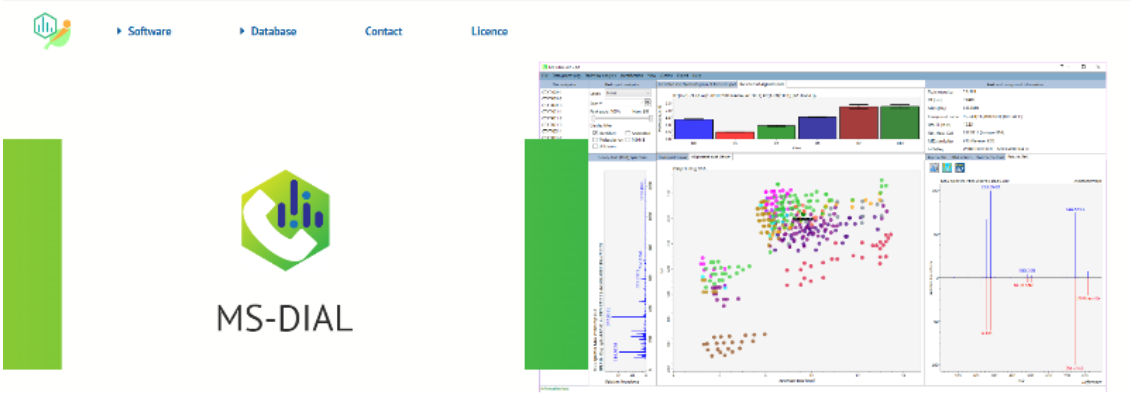

Figure 2: MS-DIAL was launched as a universal program for untargeted metabolomics that supports multiple instruments (GC/MS, GC/MS/MS, LC/MS, and LC/MS/MS) and MS vendors (Agilent, Bruker, LECO, Sciex, Shimadzu, Thermo, and Waters).

How do you see your work in metabolomics being applied today or in the future? As you see it, what are metabolomics' greatest strengths?

Considering its throughput and versatility, monitoring or surveillance including health check is the strength. For this purpose, standardization is important. I have been making much effort to standardize data/metadata for the community. It is never-ending but nevertheless important. In my view, each country will prepare average (or standard) profiles for urine, serum, food, sewage, and so on, and start monitoring environments including ourselves using metabolomics. Metabolomics is more comprehensive and effective than traditional biochemical tests, as you can see in the doping check of Olympic athletes. What we need to do is to prepare standards and average profiles for such monitoring.

What do you see as the greatest barriers for metabolomics?

"Capacity building". Understanding mass spectra including fragmentation is far more complicated than biochemical tests. But we need a huge number of staff to implement mass spectrometry as a standard monitoring technology. Unfortunately, I do not find enough people who are interested in metabolomics, mainly because genomics is much easier to understand and work on.

What improvements, technological or otherwise, need to take place for metabolomics to really take off?

As mentioned above, capacity building and education is the key. It is such an exciting area but people tend to avoid difficult or uncertain research areas. Here again, data standardization and archiving are important because we need more study materials that are easy to work on.

How does the future look in terms of funding for metabolomics? What role can metabolomics standards play?

Funding is based on the community size and future prospects. We need to bring more people to this society and share the benefits of applying metabolomics around us. In genomics, everyone knows about GenBank/ENA/DDBJ, and searching for similar sequences is routine. In metabolomics, however, such an integrated repository is still hard to establish. We collaborate with MetaboLights at the European Bioinformatics Institute (EBI) and Metabolomics Workbench at the National Institutes of Health (NIH), United States to establish such a worldwide link. China is also an important player to collaborate with.

Do you have any other comments that you wish to share about metabolomics?

The world is unstable in many aspects but for this very reason, scientists need to collaborate for a collective benefit for the whole world. The next metabolomics conference will be held in Osaka, Japan, and I expect many participants from overseas, especially from China.

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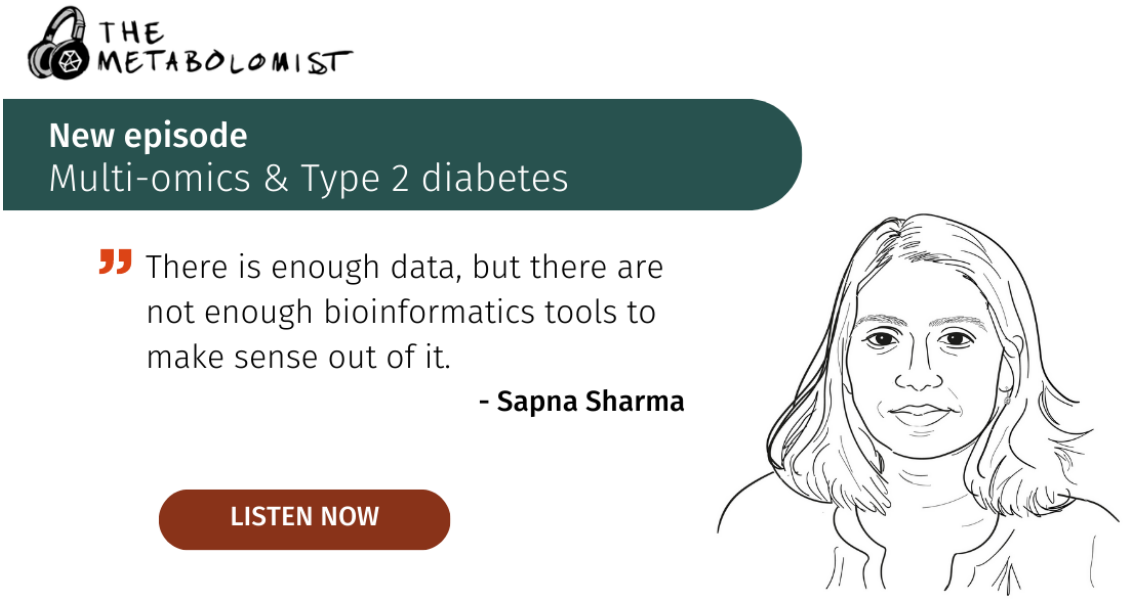
The Metabolomist Podcast



Recent Publications

Reviews:

- Dietary Assessment and Metabolomic Methodologies in Human Feeding Studies: A Scoping Review (Open access)
- Direct mass spectrometry analysis of exhaled human breath in real-time
- Metabolomics in archaeological science: A review of their advances and present requirements (Open access)

- The impact of inflammatory and metabolic markers on depression, anxiety, and cognition after COVID-19: A narrative review (Open access)

Articles:

- Association of maternal metals exposure, metabolites and birth outcomes in newborns: A prospective cohort study (Open access)
- Circulating metabolites modulated by diet are associated with depression (Open access)
- Comparative brain metabolomics reveals shared and distinct metabolic alterations in Alzheimer's disease and progressive supranuclear palsy. (Open access)
- Emerging LC-MS/MS-based molecular networking strategy facilitates foodomics to assess the function, safety, and quality of foods: recent trends and future perspectives
- Exposome epidemiology for suspect environmental chemical exposures during pregnancy linked to subsequent breast cancer diagnosis (Open access)
- Gut microbial carbohydrate metabolism contributes to insulin resistance (Open access)
- Metabolome-wide Mendelian randomization characterizes heterogeneous and shared causal effects of metabolites on human health (Open access)
- Multi-omics profiling of CSF from spinal muscular atrophy type 3 patients after nusinersen treatment: a 2-year follow-up multicenter retrospective study (Open access)
- Multimodal metabolomics pinpoint new metabolic vulnerability in colorectal cancer
- Polystyrene microplastic attenuated the toxic effects of florfenicol on rice (Oryza sativa L.) seedlings in hydroponics: From the perspective of oxidative response, phototoxicity and molecular metabolism
- Principles of metabolome conservation in animals (Open access)
- Serum Metabolome Analysis Identified Amino-Acid Metabolism Associated With Pain in People With Symptomatic Knee Osteoarthritis - A Cross-Sectional Study (Open access)
- Statistical considerations and database limitations in NMR-based metabolic profiling studies (Open access)
- The metabolic role of vitamin D in children’s neurodevelopment: a network study (Open access)
- The changes of metabolites, quality components and antioxidant activity of tea (Camellia sinensis L.) infected with Exobasidium vexans by applying UPLC-MS/MS based widely targeted metabolome and biochemical analysis (Open access)
- Untargeted and targeted metabolomics to understand plant growth regulation and evolution in Wollemi pine (Wollemia nobilis) (Open access)

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Metabolomics Events

Bits & Bites # 06: Mass Spectrometry for Metabolomics

October 5, 2023

Venue: Online

Learn More Here

This 6th course is taught by Dr. Uri Keshet from UC Davis, and no prior knowledge or software is required. The tuition is $175.

Short description of the course: Mass spectrometry (MS) is an important analytical technique in many metabolomics labs. With a wide range of MS systems available, such as GC-MS, LC-MS, EI, ESI, TOF, QQQ, and Orbitrap, selecting the appropriate instrument to suit specific needs and constraints can be a daunting task. In this short course, the fundamental principles of MS will be explored, encompassing various sample introduction methods, ionization techniques, and mass analyzer options, with a particular focus on their application in metabolomics. Whether for targeted or untargeted applications, participants will gain insights into reading and comprehending MS output data, including EI-MS, ESI-MS, or ESI-MS/MS spectra. The course will also provide valuable guidance on developing high-throughput MS methods, (i.e., short 5-min method) that can be used in metabolomics. By the end of the course, attendees will acquire a solid understanding of the available MS systems in the market, the challenges associated with their use, the essentials of designing studies using different MS approaches, and the tools required for reading and processing MS data files.

MANA SODAMeet

October 10, 2023

Venue: Online

Learn More Here

The goal of SODA is to provide a community-driven resource of actively-maintained software, test datasets used for software benchmarking, and results produced by software. SODAMeets is a platform where data generators and computational scientists can share their use of software/data. During SODAMeets (every 2 months), two speakers will present on software or data they would like to share with the community, emphasizing how these software/data are used. Speakers will be requested to fill out a form on our SODA website so that we collect relevant information on these software/data presented.

The 3rd Nordic Metabolomics Conference 2023

October 18 – 20, 2023

Venue: Trondheim, Norway

Learn More Here

The annual conference of the Nordic Metabolomics Society aims to highlight and discuss the latest metabolomics research in the Nordic countries and abroad. The conference starts Wednesday 18 October with a session dedicated to early career scientists, and an informal get-together for all participants at the hotel. The conference program starts in the morning of Thursday 19 October. There is a panel of outstanding keynote speakers from different fields within metabolomics. Check out more information at the conference website.

Conference topics:

- Spatial metabolomics
- Computational metabolomics
- Metabolomics and lifestyle
- Microbiome and host metabolism

- Clinical metabolomics

Registration deadline: **September 25, 2023**

5th Annual Metabolomics Society of North America (MANA) Conference

October 23 – 27, 2023

Venue: Columbia, MO, USA

Learn More Here

The 2023 conference will be held October 23-27, 2023 on the campus of the University of Missouri in Columbia, MO. Professor Lloyd Sumner will chair the meeting and is developing an exciting program that will appeal to many interests in metabolomics. This year, MANA is excited to partner with the International Lipidomics Society (ILS), and the 2023 conference will have dedicated sessions for lipidomics, and an evening workshop with the ILS. Check out the conference website for program updates.

Bits & Bites # 07: Introduction to Metaboanalyst

November 2, 2023

Venue: Online

Learn More Here

This 9-part short course series will feature in-depth topics in untargeted metabolomics. Each short course can be taken individually or you can select multiple Bites. You will gain a deeper insight into current software, methods, and pitfalls. Each session starts promptly at 9 a.m. (Pacific Time) and will take approximately 4 hours. The courses will be conducted in highly interactive manner, with use of freely available software and databases. The tuition is $175.

This 7th course is taught by Dr. Jeff Xia from McGill University, and basic knowledge of computer skills and no prior coding experience or software is needed. This short course will cover how to use MetaboAnalyst 5.0, a comprehensive platform dedicated to metabolomics data analysis. There will be a brief overview of data input, processing, and general workflow to perform PCA/PLS-DA/OPLS-DA analysis in MetaboAnalyst. More importantly, this course will cover how to use different functional analysis methods such as Enrichment Analysis, Pathway Analysis, Joint Pathway Analysis, and Network Analysis. Lastly, participants will also learn how to perform biomarker analysis and statistical analysis with complex metadata.

IV LAMPS meeting | American Metabolomic Profiling Society

November 2 – 4, 2023

Venue: Cartagena, Colombia

Learn More Here

IV LAMPS meeting will be held in Cartagena, Colombia Nov 2-4, 2022 at the Universidad de los Andes - Sede Caribe located in the Serena del Mar urbanization. This is the first time that the LAMPS meeting is held in Colombia and the first face-to-face meeting after two years of postponing the meeting due to the COVID-19 pandemic. The conference will cover 5 main areas:

- Health & nutrition
- Natural product screening & identification
- Experimental design & data acquisition
- Software & data analysis
- Metabolite identification

Poster abstract submission deadline: **October 18, 2023**
Registration deadline: **October 18, 2023**

Clinical & Translational Omics Symposium

November 4 – 5, 2023

Venue: Protaras, Cyprus

Learn More Here

Dive into cutting-edge research in Proteomics, Metabolomics, Lipidomics, Bioinformatics & AI, led by experts John Yates III and Jennifer Van Eyk.

List of speakers and chairs

- Albert Sickmann, ISAS, Germany
- Alina Petre, Al.I.Cuza University of Iasi, TRANSCEND at IRO Iasi, Romania
- Cecilia Lindskoog, University of Gothenburg, Sweden
- Christoph Borchers, McGill, Canada
- David Fenyo, New York University School of Medicine
- Eugene Nikolaev, Skoltech, Russia
- George Spyrou, The Cyprus Institute of Neurology & Genetics, Cyprus
- Gunnar Dittmar, Luxembourg Institute of Health, Luxembourg
- Ian Lewis, University of Calgary, Canada
- Jack Wood, University College London, United Kingdom
- Jenya Petrotchenko, McGill, Canada

- Jennifer Geddes-McAlister, University of Guelph, Canada
- Jennifer van Eyk, Cedars-Sinai, USA
- Jesper Olsen, University of Kopenhagen, Denmark
- Joerg Hanrieder, University of Gothenburg, Sweden
- John Yates III, Scripps Institute San Diego, USA
- Konstantinos Makris, Cyprus University of Technology, Cyprus
- Lukasz Jaremko, KAUST, Saudi-Arabia
- Margret Thorsteinsdottir, University of Iceland, Iceland
- Mariusz Jaremko, KAUST, Saudi-Arabia
- Michael O. Glocker, Proteome Center Rostock, Germany
- Nick Shulman, Skyline, USA
- Nicolai Bache, Evosep, Denmark
- Nelson Soares, Sharjah University, UAE
- Oliver Pötz, SIGNATOPE, Germany
- Petr Novak, Czech Academy of Science, Czech Republic
- Rene Zahedi, University of Manitoba, Canada
- Stefan Tenzer Medical University Mainz, Germany
- Wendy Heywood, University College London
- Yassene Mohammed, LUMC, Netherlands

Check out the conference website for program updates.

- Click here for early-bird registration and abstract submission

14th European Nutrition Conference (ENC) FENS 2023

November 17 – 25, 2023

Venue: Belgrade, Serbia

Learn More Here

The 14th European Nutrition Conference will be held in Belgrade, the capital city of Serbia. The theme of the conference is “Food, Nutrition, and Health: Translating science into practice”. Around this theme, the conference will deliver a high-quality program, featuring international speakers across plenary sessions and symposia. Other features of the program will be discussions and debates, industry symposia, panel sessions, and networking opportunities including several specifically catering to early career researchers.

- Abstract submission for late posters extended to **September 21st, 2023**
- Regular registration is until **September 30, 2023**
- Late registration is from **October 1, 2023 till November 10, 2023**

MANA SODAMeet

December 12, 2023

Venue: Online

Learn More Here

The goal of SODA is to provide a community-driven resource of actively-maintained software, test datasets used for software benchmarking, and results produced by software. SODAMeets is a platform where data generators and computational scientists can share their use of software/data. During SODAMeets (every 2 months), two speakers will present on software or data they would like to share with the community, emphasizing how these software/data are used. Speakers will be requested to fill out a form on our SODA website so that we collect relevant information on these software/data presented.

World Critical Care and Anesthesiology Conference 2024 (WCAC24)

March 09 – 10, 2024

Venue: Bangkok, Thailand

Learn More Here

World Critical Care and Anesthesiology Conference 2024 (WCAC24) is the 6th Edition educational event which is designed to advance knowledge and expertise in critical care and anesthesiology that rotates between continents and is organized in collaboration with national and international Anesthesiology and Critical Care societies and associations. The conference is targeted to the international Critical Care Medicine community as well as other healthcare professionals involved in multidisciplinary critical care surgical challenges; For every community, there continues to be a need for surgical and medical teams to evaluate and treat severely injured patients. Check out more information at the conference website.

- Early Bird Registration: Open till **September 30, 2023**
- Abstract Submission Deadline: **November 30, 2023**
- Speaker and Presenter's Registration Deadline: **December 30, 2023**

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Metabolomics Jobs

Metabolomics Jobs

If you have a job to post, please email the MetaboNews team at metabolomics.innovation@gmail.com

We may remove a listing after 6 months if we do not receive a confirmation that it is still necessary. However, if you would like us to repost it, please contact us.

Job Title	Employer	Location	Source
Postdoctoral Research Scientist Position in Exposomics	Britz-Mckibbin Lab at McMaster University	Hamilton, ON, Canada	TMIC website
Assistant Professor (Tenure track) Human Exercise Metabolism	University of British Columbia	Okanagan Campus, Kelowna, BC, Canada	University of British Columbia
Laboratory Technician	Matterworks	Somerville, MA, USA	Metabolomics Society
Postdoctoral Researcher in Mass Spectrometry Workflows for Unknown Chemicals	Luxembourg Centre for Systems Biomedicine (LCSB)	Luxembourg	Luxembourg Centre for Systems Biomedicine
Postdoctoral Position for Metabolomics Research in Mitochondrial Disorders	Luxembourg Centre for Systems Biomedicine (LCSB)	Luxembourg	Luxembourg Centre for Systems Biomedicine
Post-Doctoral Fellow	Department of Medical Microbiology & Immunology, University of Alberta	Edmonton, AB, Canada	University of Alberta Careers

Operations Assistant	NovaMT and TMIC Li Node at the University of Alberta	Edmonton, Alberta, Canada	Dr. Liang Li (please contact liang.li@ualberta.ca)
Research Specialist - Metabolomics	UMass Chan Medical School	Worcester, MA, USA	Metabolomics Society
Metabolomics Project Coordinator	Human Metabolome Technologies of America	Remote or Boston, MA, USA	Metabolomics Society
Postdoctoral Research Associate-Sumner Lab	Nutrition Research Institute	Kannapolis, North Carolina, US	The University of North Carolina
Postdoctoral Fellow in Omics	Georgia Institute of Technology	Atlanta, USA	Metabolomics Society
Postdoctoral Research Fellow (LC-MS and Data Science for Metabolomics)	The Li Lab and the Li Node of TMIC, University of Alberta	Edmonton, Alberta, Canada	University of Alberta

MetaboNews Feedback Form

As you noticed, we have changed to a new format starting in April 2023. We hope to provide enough useful content to keep you interested and informed and appreciate your comments and feedback on how we can make this newsletter better. Please fill out this quick survey and let us know your thoughts (your answers will be anonymous). It will only take less than one minute with only two mandatory questions

Fill Out Your Survey Here

We carefully considered all feedback to enhance our newsletter and deliver an improved experience. The issue on the "clipped email" link at the beginning of the newsletter is fixed, now, you are able to navigate to the clipped section and extend the content.

If you have any questions, don't hesitate to contact us at metabolomics.innovation@gmail.com

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