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Dear Colleagues,

We are just a few days away from [Metabolomics 2021 Online](https://www.metabolomics2021.org), and on behalf of the Board of Directors, we would like to invite you to join us for the 17th Annual Conference of the Metabolomics Society. The conference will run from Tuesday, June 22 to Thursday, June 24 and will have a fantastic program that we are excited to share! A reminder that you can register now via the conference website, [metabolomics2021.org](https://www.metabolomics2021.org). Below are a few updated highlights that we would like to make you aware of. Members of the Society receive discounted registration.

On day one we will offer a series of exciting Workshops and Sponsor Studios. The scientific program will take place on days two and three and we have several exciting talks and updates to tell you about:

- The conference agenda is available on the website, with a summary of the different workshops and talks. Check it out for more details.
- While the online format limits some of the interaction that happens during an in-person meeting, we have extended our BOD Town Hall Meeting, to summarize what has happened and ways that you can get involved in the Society this coming year.

Metabolomics 2021 Online is your unique chance to connect to everyone virtually and learn about cutting-edge applications of metabolomics from friends and colleagues. With an interactive exhibit hall and nearly 400 virtual posters, this is the event you do not want to miss. Come join us!

One of the good things to come from the pandemic, is the rapid transition to the virtual space. Our Society is trying to make a concerted effort to utilize the virtual environment more, with the addition workshops, forums, panel discussions, etc. this coming year. Please be on the lookout after the conference as we start adding more opportunities to get engaged from the comfort of your home and/or office.

I am looking forward to seeing you all at Metabolomics 2021 Online!

All the best,



President of the Metabolomics Society



METABOLOMICS2021
JUNE 22-24 ONLINE

Ian Forsythe
Editor

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

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

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Membership Enquiries

Early-career Members Network (EMN)

EMN Webinar Series

The EMN would like to thank Prof. Caroline Johnson and Ms. Ana Rosen Volmar, who gave an inspiring presentation about their work on metabolic subphenotypes and colon cancer prognosis as well as on normalizing approaches of untargeted urine metabolomics data. Find all our previous webinars [here](#).

New Expert Opinion

The new Expert Opinion is now published on the EMN wiki page! Thank you to Prof. Kati Hanhineva for taking the time to share her work which focuses on food and nutritional metabolomics research. Follow [the link](#) to find out more.

EMN Wiki page

The EMN wiki page has been reorganized and it is the perfect place to learn more about the EMN initiatives, such as [past EMN webinars](#) and the [Expert Opinion series](#). You can also find out about [upcoming events](#) in the field of metabolomics as well as access online tools such as [databases](#) and [software](#). It also includes a section on the [various metabolomics communities](#) existing around the world. Check it out now!

EMN Participation to the Online Conference

The EMN committee is looking forward to the online conference to network with other early career researchers in the field of metabolomics, and to propose to them an exciting workshop entitled “Project Management for Early-Career Researchers: Skills for Career Advancement” on June 22nd, 4 PM New York time. It is a real pleasure to welcome Jeanita Pritchett and Christopher Rose for this special occasion.

A round table will also be held on June 24th during which the EMN committee will present what they have been working on since the last conference. Do not hesitate to join us to learn everything about the EMN initiatives.

International Affiliates Corner

Metabolomics Association of North America (MANA)

Visit <https://metabolomicsna.org>

MANA 2021

The [MANA 2021 program](#) continues to be firmed up, and the team at The Ohio State University – Jessica Cooperstone, Rachel Kopec, Julie Manning, and Matthew Teegarden – are working with the Scientific Organizing Committee to finalize session topics and plan details of abstract submissions. Six exciting and diverse Plenary Speakers have been confirmed: [Dr. Elizabeth Kujawinski](#), [Dr. David Wishart](#), [Dr. Michael Snyder](#), [Dr. Elizabeth Ryan](#), [Dr. Susan Murch](#), and [Dr. Jason Locasale](#). Additionally, 6 Keynote Speakers will be selected from abstracts submitted to each of the planned oral sessions. Instructional workshops will occur one day prior to the main program, with 4 workshops confirmed so far on the topics of Complex Mixture Analysis by NMR (COLMAR), Global Natural Products Social Molecular Networking (GNPS), Skyline and...wait for it...wine tasting! There are still slots available for additional workshops - if you are interested in organizing an instructional workshop, then reach out to the OSU team to discuss opportunities: Rachel Kopec (kopec.4@osu.edu) and Jessica Cooperstone (cooperstone.1@osu.edu). To stay current with the developing program, visit MANA2021.org, where you can also subscribe to ongoing updates.

Metabolomics Society News

New ECM Travel Award

We are proud to announce the establishment of the Mark P. Styczynski Early Career Award in Computational Metabolomics in the amount of \$1,000 USD, in honor of our founding and immediate past-president Mark Styczynski! To be considered for the award, applicants will be required to be MANA early career members in good standing, submitting an abstract for oral or poster presentation at the MANA conference, and demonstrating a significant accomplishment in computational metabolomics. Additional details will be forthcoming.



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Contact: info@metabolomicscentre.ca

Dr. Georgios Theodoridis



Professor of Analytical Chemistry, Aristotle University, Thessaloniki, Greece

Biography

Georgios Theodoridis is Professor of Analytical Chemistry at the Department of Chemistry, Aristotle University Thessaloniki, Greece. He studied Chemistry and received his PhD in Separation Science from the Aristotle University. He worked for the Universities of Pardubice and Leiden, AstraZeneca UK, and the Edmund Mach Foundation, Trento, Italy. His research focuses on the application of LC-MS and GC-MS in metabolite profiling and bioanalysis with an emphasis on method validation, QC, and biomarker discovery. He leads the BIOMIC (Bioanalysis and Omics Interdisciplinary Laboratory) at the Innovation Centre of the Aristotle University (<http://biomic.web.auth.gr/>) and the FoodOmicsGR Research Infrastructure, which brings together 90 scientists from 20 research fields and eight Greek Universities (<http://foodomics.gr/>). He has co-authored ca. 190 peer reviewed articles and 20 book chapters that generated more than 10,000 citations (April 2021) and delivered more than 200 presentations at international meetings. He serves as Editor of *J. of Chromatography B*, on the editorial board of *Metabolites*, *Separations*, *Frontiers in Molecular Biosciences* and in think tank scientific bodies (EURACHEM, mQACC, and other bodies).

Interview Q&A

How did you get involved in metabolomics?

Until 2005 my research was on the development of selective sample preparation modes studying immunoaffinity or molecular imprinted molecules. Then two of my students took the Erasmus fellowship to work on NMR metabolomics under Rob Verpoorte at Leiden University, where I did postdoctoral research back in the 90s. When I read their theses, I was excited. Subsequently I contacted Ian Wilson (then at AstraZeneca UK), we applied for, and were awarded, a Transfer of Knowledge Industry Academia Partnership EU project on metabolomics-based disease biomarker discovery. Two researchers and I moved from the Aristotle University Thessaloniki (AUTH) to the AZ Alderley Park research site (2006) to set up LC-MS metabolomics technologies.

This was a real U-turn. We had to switch our analytical chemistry perspective from cleaning up and isolating the analytes, to developing holistic analyses. Upon our return to Aristotle University in 2008, we aimed to set up a metabolomics lab in Greece, but it was not easy as we had no capital equipment or funding. After some years we managed to build a modern facility and train more than 60 scientists in the metabolomics field. I am proud to see my former students now pursuing successful careers in Greece and around the world.

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

I learn from my collaborators, every single day. We work with clinicians, biochemists, informaticians, and food/nutrition scientists. This close interaction is most intriguing. We see our ideas and our knowledge combined with the expertise, research approaches, and different types of data from life

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scientists, in the quest to solve important questions and deal with real issues: health, quality of life, redox status in sports and so forth. As an example, in Foodomics research we aim to promote the recognition of Greek products and support the improvement of the local economy and return to society, and to the taxpayer, part of the investment in our facility and our salaries.

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

I coordinate FoodOmicsGR, a National Research Infrastructure with the scope to characterize food and support R&D in the AgroFood Sector <http://foodomics.gr>. This is a distributed Research Infrastructure that includes eight Universities and research Institutes in Greece, mobilizes more than 60 staff, 38 new recruits, and 30 associated scientists from 20 scientific disciplines: omics and field/application scientists (food/nutrition sciences, plant protection/plant growth, animal husbandry, apiculture, and other disciplines). Omics teams have developed and implemented a variety of methods for metabolic and quantitative analysis. Metabolomics is the key omics technology. Our goal is the in-depth characterization of foods for the support of dietary/nutrition studies: mapping of the food composition with emphasis on mapping emblematic commodities (olive oil, honey, wine, and cheese), genetic resources, assessment of the distinct value of foods, effect of nutritional intervention on the metabolic profile of biological samples of consumers and animal models. Our aims include the development of a detailed database of Greek food constituents; the exploitation of “omics” technologies to assess domestic agricultural biodiversity aiding authenticity-traceability control/certification of geographical/genetic origin; highlighting unique characteristics of Greek products with emphasis on quality, sustainability, and food safety and finally the assessment of diet's effect on health and well-being; creating added value from agri-food waste. We are undertaking several demonstration projects with external collaborators mostly from the industry. The facility that we have built offers an array of validated protocols: 64 protocols for small molecules/metabolomics, 9 protocols for genetics/genomics, 9 for proteomics, 12 for food safety, and 8 for elemental analyses. This is an open infrastructure, and we welcome collaboration. More information can be found in our introductory paper: <https://www.mdpi.com/2218-1989/11/2/74>

Further in the agrofood sciences we collaborate on the Fitsow project where we search for disease biomarkers in sows. The sow's health, and her reproductive potential, have strong economic consequences for the pig farming industry. We are also starting on a PRIMA project studying the Mediterranean diet; we will map the metabolome of local produce and link it to the metabolic phenotypes of biological samples from humans after consumption of the foods.

In the life sciences most of the themes are supervised by my close collaborator Dr. Helen Gika, Assistant Professor at the School of Medicine AUTH. Corlipid is a prospective, cohort trial empowered to enroll 1065 patients who undergo coronary angiography in the University Hospital of Thessaloniki. We will measure the blood serum concentrations of selected biomarkers (ceramides, acyl-carnitines, fatty acids, and proteins) and fuse these data with clinical laboratory and clinical data (disease severity - SYNTAX score) to provide a descriptive and predictive model for the disease. In pediatrics we work with University Hospital clinics on biomarker discovery on topics such as neonatal sepsis, necrotizing enterocolitis, obstructed and congenital nephropathies, acute lymphoblastic leukemia, and influenza infectious disease.

In more fundamental bioanalysis research, we work with Waters on the evaluation of new UPLC separation media aiming mainly at the polar metabolome: amphoteric phases, or material masked to eliminate interactions with metals to provide solutions for difficult analytes such as phosphorylated molecules. We also work closely with Merck, generating spectral and retention time databases on UPLC-qTOF-MS for their extensive analyte libraries.

What is happening in your country in terms of metabolomics?

From a handful of metabolomics groups active in Greece and 18 aggregate publications in 2010, the field has expanded greatly and now boasts several groups that produced a total of 110 publications last year. Since 2008 my team with the support of our mentor Ian Wilson and in collaboration with two other Greek groups have initiated a series of metabolomics workshops in Greece, which have held five very successful symposia. The last one took place in 2019 and included a hands-on course in our new state-of-the-art facility at Biomic_AUTH (<http://biomic.web.auth.gr/>).

Very recently the Hellenic Metabolomics Network (HMN, <https://hellenicmetabolomics.gr/>) was established, aiming to bring together researchers who are active in metabolomics in Greece and Cyprus, to join forces, promote common actions, expand training and the exchange of knowledge/expertise and resources. We now organize monthly meetings via Zoom. These are open to all and include presentations from scientists from different sectors (academia, research centers, and industry) and countries.

How do you see your work in metabolomics being applied today or in the future?

Regarding academic research: I would like to see our work reaching a higher level that would provide new insights and useful tools for the analysis of challenging analytes.

Funding in Greece is very unstable and unpredictable. The

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viability of the resources that we use daily for our research is secured only via reaching out to the health services or food industry. So, I strive to organize the lab to provide solutions that might have applications and meaning in real life. We want to provide bio-analytical tools that could improve the service provided. In the agrofood sector, we have set up solutions in the form of a complete service for producers and entrepreneurs to support quality or health claims. In the disease and life sciences we aim to formulate panels of analytes for selected health and life conditions. We would like to see our research reaching maturity and see our methods find application in the clinical or industrial laboratories in the future.

As you see it, what are metabolomics' greatest strengths?

In my view a great strength of the field is that the number of practitioners of chromatography and mass spectrometry is very large and is increasing fast. Instruments are in place in many laboratories that can apply metabolomics or even develop metabolomics analyses with minor additional investments in capital, methods, or material. So, the potential to democratize the methodology and enable many new users to enter the field is very large.

Another strength is that the concentrations of metabolites are often very high. We do not need tryptic digestion or nanoflow LC which, in our hands, remains a "delicate" instrumental configuration. Ultimately, we can take a sample, use a 40K euro GC-MS and give results for small molecule analysis in a few hours. Our group's life science branch does this very often, while other areas can hardly reach this speed and simplicity.

What do you see as the greatest barriers for metabolomics?

In my point of view these are a) lack of standardization, b) inadequate quality control, and c) sloppy data analysis for metabolite identification. I act as Editor for *Journal of Chromatography B*, and check hundreds of submitted papers every year. I am really worried by the inadequate level of scientific rigor applied in many manuscripts. Even though we reject many of these manuscripts on this basis, these papers (I believe) are eventually published somewhere. Unfortunately, I have seen erroneous identifications in publications of high impact factor journals. I know I am not the only one who is aware of this, as these results are out there for everyone to see. Such mistakes, if not corrected, may defame the field, and reduce confidence in our community.

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

Try to visualize a lab as it was in 2001. In our university no

mass spectrometer existed. At a global scale, no protocols were in place, no software for data treatment, no repositories, or databases for metabolomics. The technological advances we have seen since then are unprecedented. The problem is not with technology. The problem is in the lack of training of the researchers, to reach effective use of this fantastic technology. Inexperienced researchers may take wrong turns using fancy instrumental configurations and friendly software and generate poor science. Such papers increase "the noise". Speaking as an analytical chemist the "signal-to-noise ratio" of the field is not where it should be. Necessary steps may include efforts to raise the standards, build stronger connections with laboratories, interlaboratory testing with common (reference) samples, harmonization of protocols, reports, and databases and strong quality control. Journals, such as the one I edit, and their editors and reviewers, have a duty to the authors and their readers to do as much as possible to ensure the high scientific quality of their papers.

A group of editors of *J. of Chromatography B* have recently discussed the issue in a perspective article providing guidance for authors and reviewers (<https://doi.org/10.1016/j.jchromb.2020.122515>). However, there is still a long road ahead for field consolidation.

How does the future look in terms of funding for metabolomics?

I am happy to see funding flowing into the field. It is very competitive naturally. Funding from large public bodies involves politics, a lot of unnecessary administration and, often, proposals get funded that will have only a marginal benefit to society.

Another worry is that funding is leaning toward applied research, so even training grants should employ application in a specific field. As a result, basic research in "pure" metabolomics is not seen as a priority. This in return leads to research fragmentation. Basic problems are not solved in the beginning and the necessary tools are not generated early on. A solution could be to fund horizontal, not topical metabolomics research. This means our community may need to "lobby" policymakers more convincingly.

Despite these "grievances", my group has secured many grants in recent years, mostly in interdisciplinary research. These help us to retain our researchers (we have lost dozens of young scientists that had to move abroad to get suitable positions over the last decade). Indeed, things are now going well enough for some of these expatriates to have returned, bringing with them very valuable experience.

What role can metabolomics standards play?

This is an absolute priority. There was a good start early on

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with MSI, but things did not progress. Recently there is increased awareness and multi-centre initiatives: mQACC, the Epilipid net COST action, and the Lipidomics Standard Initiative. These are still in my view insufficient, as they are networking actions that do not fund actual research. More standards are needed. These should also be made economical to be widely and frequently used to allow harmonization. This is needed to provide benchmarks necessary for our field.

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

I would very much encourage the younger generation to enter the field and engage in its development. I am very confident of its potential and growth in the future.

Recent Publications

Recently published papers in metabolomics

- [A Comprehensive Targeted Metabolomics Assay for Crop Plant Sample Analysis](#)
- [CyProduct: A Software Tool for Accurately Predicting the Byproducts of Human Cytochrome P450 Metabolism](#)
- [Nutritional Metabolomics and the Classification of Dietary Biomarker Candidates: A Critical Review](#)
- [Untargeted metabolomics analysis identifies creatine, myo-inositol, and lipid pathway modulation in a murine model of tendinopathy](#)
- [New Insights into Vaginal Environment During Pregnancy](#)
- [Steroid Hormone Biosynthesis Metabolism Is Associated With Fatigue Related to Androgen Deprivation Therapy for Prostate Cancer](#)
- [Commonly and Specifically Activated Defense Responses in Maize Disease Lesion Mimic Mutants Revealed by Integrated Transcriptomics and Metabolomics Analysis](#)
- [An Eggplant Recombinant Inbred Population Allows the Discovery of Metabolic QTLs Controlling Fruit Nutritional Quality](#)
- [*Lactobacillus casei* CCFM1074 Alleviates Collagen-Induced Arthritis in Rats via Balancing Treg/Th17 and Modulating the Metabolites and Gut Microbiota](#)
- [Compositional Data Analysis of Periodontal Disease Microbial Communities](#)
- [Clinical significance of small molecule metabolites in the blood of patients with different types of liver injury](#)
- [Metabolomics analysis of the soapberry \(*Sapindus mukorossi* Gaertn.\) pericarp during fruit development and ripening based on UHPLC-HRMS](#)
- [Metabolomics dissection of depression heterogeneity and related cardiometabolic risk](#)
- [Using nontargeted LC-MS metabolomics to identify the Association of Biomarkers in pig feces with feed efficiency](#)
- [Metabolomic analysis reveals reliance on secondary plant metabolites to facilitate carnivory in the Cape sundew, *Drosera capensis*](#)



Metabolomics Events

Postponed Until 2021

The Third Annual Canadian Metabolomics Conference

Venue

Edmonton, Alberta, Canada

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!

Conference Link

<https://www.canmetcon.ca/>

22-24 June 2021

Metabolomics 2021 Online

Save the Date! Metabolomics 2021 Online will take place June 22-24, 2021. Registration is now open!

We are excited to introduce **Metabolomics 2021 Online**, the second virtual conference that will take place from June 22-24, 2021. While we will not be meeting in person, I am confident that the caliber of our program this year will push the boundaries of our understanding in multiple domains of metabolomics research.

The conference will follow the general format that we instituted for Metabolomics 2020 Online, with the conference taking place in all time zones, enabling it to continue as a truly international event. We will open the conference with day 1 offering workshops on special interest topics, which has now become a tradition of our conference format. Days 2 and 3 will feature scientific sessions that will begin with a keynote speaker followed by talks selected from submitted abstracts and

Metabolomics Events

the ability for viewers to ask questions, in order to maximize member interactions. For each of us, some talks will be at more convenient times than others because the conference will take place through many time zones. Fortunately, recorded talks will be available to access and watch later during the virtual event, so don't worry about staying up all night to attend a talk you wanted to hear at 3 AM!

We will also host virtual poster sessions, networking opportunities, and special interest sessions that will include a town hall and early career member network meetings, among others. One thing that we can say is the plethora of virtual meetings over the last year has taught us much on how to effectively engage through virtual events and we will use this to our advantage. So get excited about Metabolomics 2021 Online! Registration fees for the meeting will be greatly reduced for all registered members of the Society.

Now is a great time to become a member of the Society! If you are already a member, then please go ahead and register for the meeting. I would also encourage you to submit an abstract to present your work at the conference, as we depend on each of you to hear about the latest in cutting-edge research. We look forward to seeing you virtually at Metabolomics 2021 Online.

[Conference Link](#)



Metabolomics Events

28 June to 2 Jul 2021

Introduction to Nutritional Metabolomics

Venue

Department of Nutrition Exercise and Sports, University of Copenhagen, Denmark

Overview

The course will provide a general overview of LC-MS based untargeted metabolomics from study design to results and will be exemplified with its specific application in nutrition. It will be delivered using a mixture of lectures, hands-on data preparation and analysis, computer-based practical sessions, and discussions. Visits to wet labs and instructions on human sample preparation procedures are included but with minimal hands-on experience.

The students will go through common steps in a typical metabolomics study using a real-life case. This case study includes collected plasma (or urine) samples from a nutritional intervention. The sample preparation and analysis on UPLC-QTOF has been conducted and the students will further process and analyze the acquired data with various freeware tools (e.g., R, XCMS, MZmine, etc). They will finally work on identification of relevant metabolites using several web-based structure elucidation tools. The course will conclude by presentations of reports generated by the students based on the case study.

The course will be structured as initial short lectures on theory followed by hands-on exercises, which will teach the students to transfer the theoretical information to practice. The students should expect a fairly technical course with a strong focus on the hands-on data analysis abilities and data interpretation skills.

Fee

There will be no fee for PhD students under the Open Market in Denmark and NOVA partners (Nordic Countries). Other participants are to pay a course fee of 300 EUR. Each student must pay and arrange their own travel and accommodations in Copenhagen during the course.

[Course Link](#)

12-16 July 2021

2021 EMSL Summer School

Venue

Online, Pacific Northwest National Laboratory, Richland, Washington, USA

Virtual Multi-omics Modeling of Biochemical Pathways Summer School

Researchers interested in modeling of multi-omics data are invited to attend the virtual Multi-omics Modeling of Biochemical Pathways Summer School July 12-16, 2021. Presentations given during this week-long event are free and open to the public.

Learn from world-class national laboratory and academic researchers how to use visualization tools, analysis, and modeling of multi-omics data for understanding biochemical pathways. Hosted by the Environmental Molecular Sciences Laboratory (EMSL) and Agile Biofoundry groups, this event will feature lectures on software and data analysis.

Metabolomics Events

Overview of daily topics covered during this Summer School event:

- Experimental Design
- Transcriptome & Proteome Data
- Metabolomics and Lipidomics Data
- Metabolic Modeling
- Fluxomics

Visit pnpl.cventevents.com/2021summerschool for information about speakers, topics covered, applications for the competitively-selected tutorials, and much more.

5 Aug 2021

Identification of Unknown Compounds in Untargeted Metabolomics using Freely Available Software for Compound ID

Venue

Online, University of California, Davis, California, USA

Instructor

Dr. Arpana Vaniya, UC Davis

Registration

Required software: [MS-FINDER](#) & [SIRIUS+CSI:FingerID](#). CFM-ID will be the web-based tool. Versions of tools to be used will be announced closer to the course date.

Participant prerequisites: Basic knowledge of computer skills. No coding experience needed.

Short description of the course: Compound identification is known as the bottleneck in metabolomics. However, there are many approaches one may consider while tackling this challenge (i.e., mass spectral library search, in silico fragmentation tools, or database searching). This short course will provide an overview on the current status of compound ID in metabolomics, participants will learn how to use some current tools for compound ID (i.e., CFM-ID, MS-FINDER, and SIRIUS+CSI:FingerID), and apply those skills to some unknown challenges.

For more information, please visit the [Bits & Bites: Short Course Series 2021 website](#).

30 Aug-10 Sep 2021

International Summer Sessions in Metabolomics

Venue

Online, University of California, Davis, California, USA

Registration

Metabolomics Events

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

For information and registration click [here](#).

27-30 Sep 2021

CliMetabolomics

Venue

Leipzig and Halle / 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.

[Event Link](#)

18-21 Oct 2021

3rd Annual MANA Conference: Foods for Health Discovery Theme

Venue

The Ohio State University, Columbus, Ohio, USA

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](#)!

[MANA 2021 Conference Website](#)

Metabolomics Events

1-5 Nov 2021

Hands-On Mass Spectrometry Course

Venue

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

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.

[Course Flyer](#)

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
Various Positions			22-Jun-21		Metabolomics Association of North America Jobs
Postdoctoral Associate Position in Cancer Metabolomics	Yale School of Public Health	New Haven, CT, USA	9-Jun-21		Yale School of Public Health
Postdoctoral Researcher	IARC	Lyon, France	27-Apr-21	Until Filled	IARC
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		MetaboNews Jobs
Research Associate, Entomology Department	Cornell University	Ithaca, NY, USA	22-Mar-21	Until Filled	AcademicJobs Online.org
Business Development Manager	TMIC, Faculty of Science, University of Alberta	Remote	17-Mar-21	Until Filled	University of Alberta Careers Page
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
Postdoctoral Research Fellow, Metabolomics and Nutritional Epidemiology	McMaster University	Hamilton, ON, Canada	23-Feb-21	5-Jul-21	TMIC Careers Page

Metabolomics Jobs

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 Console](#) - Seeking a position involving the application of NMR-based metabolomics in animals/animal production; it could be a Researcher position or an Assistant Professorship