



Molecular Profiling by Mass Spectrometry

10-11 July 2018, 10:00 - 16:00, 2 days

Analytical BioSciences and Metabolomics group, Division of Systems Biomedicine and Pharmacology, Leiden Academic Centre for Drug Research, Leiden University
Einsteinweg 55, 2333CC Leiden

Content

Molecular profiling of complex samples using mass spectrometry can address a wide range of questions in the life sciences. In the course you will get a rapid introduction or recall of the basics of mass spectrometry, and you will learn about principles and latest applications of mass spectrometry, especially in the field of metabolomics. You will learn about challenges, current bottlenecks, experimental design and data analysis of complex data sets acquired using mass spectrometry. You will hear about applications including biomedical and clinical research, drug research, nutrition, food and plants, and biotechnology. The newest technologies including untargeted analysis, data processing, single cell analysis and organ-on-a-chip technology will also be discussed.

The course format comprises lectures, work groups, and discussion of case studies. The course is given in English.

Target audience

The course is taught in the framework of the MSc+ program for talents in Master education (University). Therefore, the course is well fit for employees at that level. The course is also aimed at PhD-students in analytical sciences or related fields who are not specialized in Solids and Surfaces and Mass Spectrometry including Metabolomics (ANAC-basic course). Finally, the course is suitable for graduates (BSc, MSc and PhD) interested in Solids and Surfaces and/or Mass Molecular Profiling by mass spectrometry with a focus on metabolomics, and seeking additional knowledge and understanding.

Topics

Mass Spectrometry and Metabolomics, Leiden University
9-10 July

Lectures: Isabelle Kohler, Alida Kindt, Naama Karu and Thomas Hankemeier

- Introduction to Mass Spectrometry
- Introduction into novel technologies and methods in Mass Spectrometry and Metabolomics
- Untargeted metabolomics
- Data analysis of complex metabolomics data sets
- Applications in health and disease, nutrition and food research, biotechnology
- Design of metabolomics studies (bring your own problem)
- Lab tour Metabolomics and Mass Spectrometry Lab



Leiden University: dr. Thomas Hankemeier

Professor of Analytical BioSciences at the Leiden Academic Centre for Drug Research and Professor of Translational Epidemiology at Erasmus MC.

Thomas Hankemeier is worldwide recognized for his research to develop analytical tools for metabolomics-driven systems biology in personalized medicine. He aims to miniaturized metabolomics methods and to develop high throughput analysis methods. He has initiated the Netherlands Metabolomics Centre and has established a Metabolomics Facility. In collaboration with clinicians, biomedical researchers, biostatisticians and other -omics researchers he works on better (early) diagnosis and interventions for (cardio)vascular and metabolic and neurodegenerative diseases. He is cofounder of Mimetas, the worldwide first organ-on-a-chip company, which develops predictive microfluidic 3D cell culture models with organotypic properties for better and more reliable customised medicines

Leiden University: Dr. Naama Karu

Senior Researcher, Leiden Academic Centre for Drug Research, Leiden University. Naama Karu is an analytical chemist with a background in biochemistry (B.Sc, M.Sc). She acquired a Ph.D in Separation Science from the University of Tasmania, Australia. Her postdoctoral research in UTas and at the University of Alberta, Canada, concentrated on metabolomics for clinical, nutrition and environmental applications, as well the development of metabolomics workflows and data-mining tools.



Leiden University: Dr. Alida Kindt-Dunjko.

Data analysis expert, Leiden Academic Centre for Drug Research, Leiden University. Kindt-Dunjko studied Biotechnology with Industrial Placement in Leeds, UK. Her interest in data analysis emerged during her Master studies for Quantitative Genetics and Genome Analysis in Edinburgh. She continued her studies in Computational Biology at the University of Edinburgh and finished her PhD with a meta-analysis of genome-wide association studies.



She moved first to Innsbruck, Austria, for a postdoctoral fellowship to learn the analysis of next generation sequencing data. Then she moved to Germany for a postdoctoral fellowship in Munich where she analysed a large range of datasets from different omics and different experimental setups. Since June 2018 she works in the LACDR department as a Data Analyst. Her interests include data analysis of all the available omics individually and their integration.

Leiden University: Dr. Isabelle Kohler.

Assistant professor, Leiden Academic Centre for Drug Research, Leiden University. Isabelle Kohler studied Pharmacy at the University of Geneva, Switzerland. She carried out her Master internship at the Swiss Laboratory for Doping Analysis in Lausanne (Switzerland) where her interest for bioanalysis and clinical metabolomics started to emerge. She then carried out her PhD at the School of Pharmaceutical sciences, University of Geneva, and obtained her PhD in Pharmaceutical Sciences in 2013, focusing on the use of capillary electrophoresis hyphenated to mass spectrometry in clinical and forensic toxicology.



She moved to The Netherlands for a postdoctoral fellowship carried out at the Leiden University Medical Center in the Center for Proteomics and Metabolomics, where she investigated the biomolecular mechanisms of familial hemiplegic migraine in a transgenic mouse model using untargeted and targeted metabolomics approaches. Since July 2016, she is working as Assistant Professor in the group of Analytical Biosciences and Metabolomics at the LACDR, in the division of Systems Biomedicine and Pharmacology. Her research interests include clinical metabolomics, brain metabolism, neurodegenerative disorders and neurological diseases, method development and validation, quality assurance, as well as data analysis and data integration.

At the end of the course

The students will have a good overview of mass spectrometry and its application in metabolomics and life sciences, including the design of metabolomics studies and the analysis of data of complex biological studies.

Course duration and time investment

Course duration: 2 days, 10:00 - 16:00
Participant's investment: 2 days

Extra Information

This course is taught as a Summer Course in the MSc+ program and is taught every two years.

Course fees:

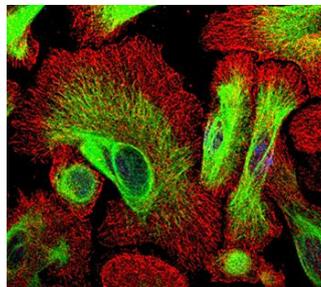
- €800 (ex. BTW/VAT) per day
- COAST members pay a reduced fee of €400 per day (ex. BTW/VAT) or use a wildcard
- ASTP / MSc+ students: Free

Special fees can be offered to PhD students and companies registering for three or more persons.

Please contact us for more information: secretary@ti-coast.com

Registration

To register fill out, sign and email the form attached to lifelonglearning@ti-coast.com .



Registration Form**Molecular Profiling by Mass Spectrometry**

10-11 July 2018, 10:00 - 16:00, 2 days

Leiden Academic Centre for Drug Research, Leiden University
Einsteinweg 55, 2333CC Leiden

| | |
|--|--|
| Name | |
| Organization | |
| Address | |
| Billing address (if different from above) | |
| Educational background | |
| Email address | |
| Phone number | |

I will attend on the following date(s):

- Day one: 10 July, 10:00 - 16:00
 Day two: 11 July, 10:00 - 16:00

Payment

- I will pay the full course fee of €800 per day (ex. BTW/VAT)
 I qualify for 50% discount, because my employer is a COAST participant, and will pay €400 per day (ex. BTW/VAT)
 I am a PhD student and will pay €400 per day (ex. BTW/VAT)
 I am a PhD student from a group participating in COAST and will pay €200 (ex. BTW/VAT) per day
 I have received a wildcard from: Therefore, I will follow this course for free (note: this person must receive a copy of your registration mail, to indicate approval)

Date:**Place:****Signature:**To register, please email the duly signed registration form to lifelonglearning@ti-coast.com