BIH ACADEMY OPTIONAL TRAINING WORKSHOP

Practical Course on GC-MS-based Metabolomics

Course guided by Dr. Jennifer Kirwan and Dr. Raphaela Fritsche
Trainers: Dr. Ulrike Brüning, Dr. Ozan Haliscelik, Janine Wiebach
Support: Alina Eisenberger, Sarah Samut Tagliaferro
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Date:	Tuesday 11 June 2024, 09:00 - 16:00 Wednesday 12 June 2024, 09:00 – 16:00 Thursday 13 June 2024, 09:00 - 16:00
Venue:	Seminar room (first floor), BIH Metabolomics Platform (Käthe-Beutler-House), Campus Buch
Aimed at:	Members of BIH, Charité and MDC with no prior knowledge of metabolomics. Scientists that aim to use metabolomics in their project. **This workshop is limited to twelve participants**. **Please include in your application a short motivation letter (3-4 sentences) explaining your background and reasons for joining the course.**
Safety remarks:	During the course we will work with hazardous, harmful and teratogenic substances (especially Pyridine, Chloroform, MSTFA, Methoxyamine, Methanol). Participants are REQUIRED to have read and understood the safety datasheets for these chemicals prior to attending the course and take part in the course at their own risk. Registering for this course constitutes acceptance of this responsibility. Anyone who is or may be pregnant or is trying for a baby is advised not to do the laboratory practical component of this course – please advise the organisers in confidence at the earliest possible date if this applies to you.

Abstract including training aims / outcomes

This course is designed to provide a basic introduction to gas-chromatography-mass spectrometry (GC-MS) and metabolomics and is suitable for beginners to the field who are interested in collaborating with metabolomics experts to expand their own research. In the wet-lab you will have the opportunity to prepare course-provided samples for GC-MS. In the dry-lab, an existing data set will be processed and analyzed by the group. The theoretical part of the course will cover basic theory on metabolomics and GC-MS. At the end of the course, you should have 1) a broad understanding of how to plan a metabolomics experiment to maximize interpretability, 2.) understand the complexity of metabolomics in general and the importance of setting clearly defined questions, 3.) understand the process of how samples are prepared, results processed and which factors may influence results and 4.) understand why quality assurance and quality control are important.

Regustration link

https://www.bihealth.org/en/news/events/metabolomics-course-2024

Agenda

Day 1 **11.06.24**	09:00 - 10:00	Lecture: Welcome and introduction to the world of metabolomics	Jennifer Kirwan
	10:00 - 10:30	Health and safety introduction and lab tour	Ulrike Brüning
	10:30 - 11:00	*Break*	
	11:00 - 11:30	Lecture: Different techniques and protocols to cover the metabolome	Ulrike Brüning
	11:30 - 12:00	Lecture: Introduction to sample extraction	Ulrike Brüning
	12:00 - 13:00	*Lunch**	
	13:00 - 16:00	Practice: Extraction of samples	
Day 2 **12.06.2024**	09:00 - 09:30	Practice: Adding derivatization solvent 1	
	09:30 - 10:00	Lecture: Purpose of derivatization	Ozan Haliscelik
	10:00 - 10:30	*Break*	
	10:30 - 11:00	Lecture: Data aquisition and processing	Raphaela Fritsche
	11:00 - 11:30	Practice: Adding derivatization solvent 2	
	11:30 - 12:30	*Lunch**	
	12:30 – 13:00	Practice: Sample preparation, put on instrument and run	
	13:00 - 16:00	Practice: Analysis of data	
Day 3 **13.06.2024**	09:00 - 10:00	Lecture: Quality control and quality assurance	Janine Wiebach
	10:00 - 10:30	*Break*	
	10:30 - 11:00	Lecture: Power calculation	Janine Wiebach
	11:00 - 11:30	Lecture: The importance of normalization	Janine Wiebach
	11:30 - 12:30	*Lunch**	
	12:30 - 13:30	Discussion: Analysis of the results	
	13:30 - 15:30	Practice: How to plan a metabolomics experiment	Raphaela Fritsche
	15:30 - 16:00	Final questions and discussion, closing remarks	Jennifer Kirwan

*Lunch will not be provided but we will go as a group to Campus Buch Mensa where there are a range of options for you to purchase.