

Schedule for PhD course "Introduction to nutritional metabolomics"

30. of June to 4. of July 2025

Date/Time	Subject	Lecturer	Lecture room
Monday Theme: Introduction to basic concepts in LC-MS metabolomics research			
9:00--9:30	Outline of the course and introduction of participants	GLB	A 2.74.11
9:30--10:05	Perspectives and goals of metabolomics	HMR	
	Break		
10:15--10:50	Metabolomics in Nutrition	HMR	
	Break		
11:00--12:00	Overview of the metabolomics pipeline	GLB	
	Lunch will be provided		
13:00--13:30	Experimental design	GLB	
13:30--14:15	Sample preparation	GLB	
14:15--14:25	Break		
14:25--15:10	Liquid chromatography	GLB	
15:10--15:20	Break		
15:20--15:50	Spectrometry principles	GLB	
15:50--16:00	Break		
16:00--16:30	LC-MS lab tour	GLB	
16:30--18:30	Optional: Software installation troubleshooting, group-forming and tutorial	JS	
Tuesday Theme: Metabolomics data preprocessing, normalization and annotation			
9:00--9:10	Presentation of exercise LC-MS dataset: Extraction of food intake markers Exercise	JS, (FR)	A 2.74.11
9:10--10:00	A brief introduction to R: Working in Rstudio, basic syntax, code-along	JS, (FR)	
10:10--10:10	Conversion of raw data	JS	
	Break		
10:20--12:00	Data preprocessing in metabolomics: Concepts in preprocessing and	JS, (FR)	
	Lunch will be provided		
13:00--14:00	Data preprocessing in metabolomics: Concepts in preprocessing and	JS, (FR)	
14:00--15:00	Introduction to normalization and transformations	JS, (FR)	
	Break		
15:10--17:00	Exercise: Hands on LC-MS data preprocessing (XCMS)	JS, (FR)	
17:30	We leave together on foot or by bike	All	Madklubben Vesterbro - Google
18:00--21:30	Dinner party		
Wednesday Theme: Metabolomics data analysis			
9:00--9:40	Data Analysis I: Univariate Methods	CB	A 2.74.11
	Break		
9:50--10:30	Exercise: Hands on univariate analysis using R	CB, (JS)	
	Break		
10:40--11:20	Data Analysis II: Multivariate Approach - PCA	CB, (JS)	
	Break		
11:30--12:00	Exercise: Hands on PCA using R	CB, (JS)	
	Lunch will be provided		
13:00--13:20	Exercise: Hands on PCA using R	CB, (JS)	
	Break		
13:30--14:30	Data Analysis III: Multivariate Approach - PLSDA	CB, (JS)	
	Break		
14:40--17:00	Exercise: Hands on PLSDA using R	CB, (JS)	
17:00--19:30	Optional time with teachers available	(CB), JS	
Thursday Theme: Metabolite identification			
9:00--9:50	Metabolite Identification	GLB	A 2.74.11
	Break		
10:00--12:00	Exercise: Fragmentation, adducts, annotation	GLB, (JS)	
	Lunch will be provided		
13:00--13:40	Compound and spectral databases, in-silico prediction, levels of identification	GLB	
13:40--14:00	Exercise: Fragmentation, adducts, annotation	GLB, (JS)	
	Break		
14:10--15:30	Exercise: Fragmentation, adducts, annotation	GLB, (JS)	
15:30--17:00	Exercise: Hands on - Identification of markers of food intake	GLB, (JS)	
17:00--19:30	Optional time with teachers available	GLB, (JS)	
Friday Theme: Project work and presentation of results			
9:00--11:30	Students presentations	JS, GLB, HMR	A 2.74.11
11:30--12:00	What we found in the exercise data		
12:00--12:30	Course Evaluation	JS, GLB, HMR	

Lecturers

JS: Jan Stanstrup

HMR: Henrik Munch Roager

GLB: Giorgia La Barbera

CB: Carl Brunius

FR: Francesca Bucci