

Metabolomics (C002718)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size *(nominal values; actual values may depend on programme)*

Credits 3.0 **Study time** 80 h **Contact hrs** 25.0 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 1)	Dutch	Gent	online lecture	15.0 h
			online seminar	10.0 h

Lecturers in academic year 2020-2021

Morreel, Kris WE09 lecturer-in-charge

Offered in the following programmes in 2020-2021

	crdts	offering
Master of Science in Teaching in Science and Technology (main subject Biochemistry and Biotechnology)	3	A
Master of Science in Biochemistry and Biotechnology	3	A

Teaching languages

Dutch

Keywords

Metabolite profiling, separation techniques, mass spectrometry, computational metabolomics, metabolic networks, flux analysis

Position of the course

Metabolomics is an optional course in the second year Masters in Biochemistry and Biotechnology, and combines methods belonging to the field of analytical chemistry and statistics for a general analysis of metabolite concentrations.

This course introduces the separation and data analysis methods that are currently applied to reveal changes in the metabolome (the full suite of metabolites present in a living tissue). This will enable the student to judge the pros and cons of metabolome techniques.

Contents

Extraction and derivatization methods
 Metabolite profiling using liquid chromatography (LC), gas chromatography (GC), and capillary electrophoresis (CE) hyphenated to mass spectrometry (MS), and using nuclear magnetic resonance (NMR)
 Metabolic fingerprinting via direct infusion-MS and via NMR
 Data analysis using principal component analysis (PCA) and partial least squares (PLS)
 High-throughput structural characterization methods
 Metabolic networks versus correlation networks
 Connection between metabolic flux and metabolite abundance-based correlations
 Flux analysis

Initial competences

The student should be acquainted with the principles of biochemistry, statistics, analytical and organic chemistry.

Final competences

- 1 The student knows the pros and cons of different metabolomics procedures
- 2 The student is able to interpret metabolome results in relation to metabolic flux

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Online lecture, online seminar

Learning materials and price

Written course and slides

Cost: 10 EUR

References

-

Course content-related study coaching

Questions will be answered on demand

Evaluation methods

end-of-term evaluation

Examination methods in case of periodic evaluation during the first examination period

Oral examination, report

Examination methods in case of periodic evaluation during the second examination period

Oral examination, report

Examination methods in case of permanent evaluation**Possibilities of retake in case of permanent evaluation**

examination during the second examination period is possible

Calculation of the examination mark

100% periodic evaluation