

# Master's Thesis

## Metabolomics

### Outline

Analysis of intracellular metabolites (metabolomics) represents an essential tool in human- and bio- sciences to study cellular properties at molecular level and identify process-relevant metabolic bottlenecks or health-associated biomarkers. Typically, mass spectrometry-based techniques are applied and hundreds of compounds can be addressed in one sample run.

Because metabolite-specific ion suppression, losses throughout the complex procedure of sample preparation as well as strong matrix effects impair strongly the quality and therefore reliability of acquired mass-spec data compound-specific internal standardization is indispensable.

To this end, samples are spiked with a  $^{13}\text{C}$ -labeled metabolite extract ( $^{13}\text{CME}$ ). However, applicability of current  $^{13}\text{CME}$ s is largely limited by their insufficient metabolite coverage, interfering matrix, and because commercial products are extremely expensive.

**The objective of this work is to identify and optimize targets in the production process of  $^{13}\text{CME}$  to extend its applicability and to reduce production costs.**

This is a joint project of the IBB together with the HEALTH Institute, Joanneum Research.

### Methods involved

Cultivation of yeasts, monitoring of yeast growth, downstream processing, LC-MS analytics and corresponding data analysis, uni and multivariate statistics of experimental data

### Start of the Thesis

ASAP

### Contact

Priv.-Doz. Dr. Mario Klimacek  
Petersgasse 10-12/1, office: BC 01 008  
Email: [mario.klimacek@tugraz](mailto:mario.klimacek@tugraz)  
Phone: 0316 873 8420