

# Research Internship / Bachelor Thesis

## Topic: Measurement of Biomass in Fermentation Samples with 2G Hydrolysate

Hydrolysates can be generated from renewable raw materials such as agricultural residues. The biotechnological fermentation of so-called second-generation (2G) hydrolysates represents a sustainable way to produce platform chemicals. However, the composition of 2G hydrolysates differs from batch to batch, including strong fluctuations in the concentration of inhibiting substances as well as in solid remnants like sand. While soluble components can significantly influence microbial growth, insoluble components strongly impair the conventional determination of microbial biomass. Hence, the establishment of a method to reliably determine microbial biomass in samples with 2G hydrolysates is crucial to enable modern process control strategies.

### Aim of the project

The aim of the project is to establish a method for the reliable determination of microbial biomass in samples with 2G hydrolysates. First, a short literature research will be conducted to identify existing measurement methods. The most promising ones will be evaluated in experiments with fluctuating microbial cell concentrations and different media compositions, including the use of wheat straw hydrolysate obtained from industry. Microbial cells will be produced in a standard fermentation using *Corynebacterium glutamicum*. Finally, the best working method or combination of methods will be secured by creating an SOP.

### Requirements

- Independent planning of experiments
- Focused and proactive way of working
- Advanced laboratory skills
- Basic fermentation skills
- Team player
- TUM student

### Application

Please send your application documents (including CV) to the supervisor of this project: M. Sc. Nico Geisler ([nico.geisler@tum.de](mailto:nico.geisler@tum.de)). He will be happy to answer any further questions you may have. Supervision is provided in German or English. Start of the project: **June 2024**

### Privacy policy

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