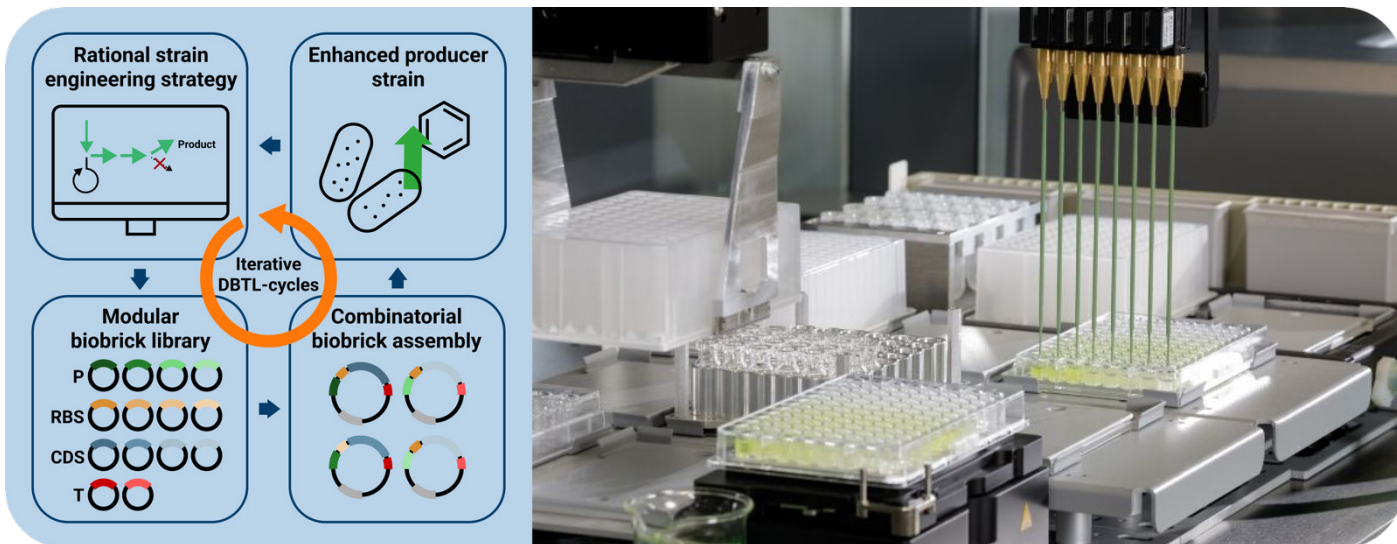


Master's thesis

High throughput technologies for the rational development of microbial cell factories

Starting date: as soon as possible



Description

The construction of microbial production strains is still a time-consuming, costly and labor-intensive process due to non-standardized and intense manual laboratory work. In this context, parallelization, automation and miniaturization hold the promise to reduce development times, and increase reproducibility and effectiveness. The modular assembly of genetic building blocks in high-throughput is herein the central enabling methodology.

This project aims to develop standardized cloning strategies for high-throughput strain constructions of *Corynebacterium glutamicum*. Focus is on the plasmid-based construction of synthetic operons utilizing the modular cloning (MoClo) principle as well as CRISPR-based genome editing tools. The approach relies on stoichiometric metabolic modeling for a rational identification of metabolic modification strategies. Thereby, this thesis contributes to our efforts to rationalize, standardize and automate strain construction on our holistic *AutoBiotech* strain construction platform. As application example, biotechnologically interesting aromatic compounds will be produced.

Your tasks

Application of state-of-the-art cloning techniques (Gibson Assembly, Golden Gate, MoClo) in an automatable cloning system, microcultivation (BioLector) and phenotyping (HPLC) of producer strains. You will learn to develop strain modification strategies based on modeling data and help to expand our modular library for automatable part assembly. If desired you can participate in the modeling workflow.

Your profile

Studies in biology, biotechnology, bioprocess engineering or a related discipline. Interest in metabolic engineering and automation, molecular cloning work and microbial cultivation systems. Knowledge in modelling not necessary.

Are you interested? Scan the QR-code for more information or contact us directly 😊

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