

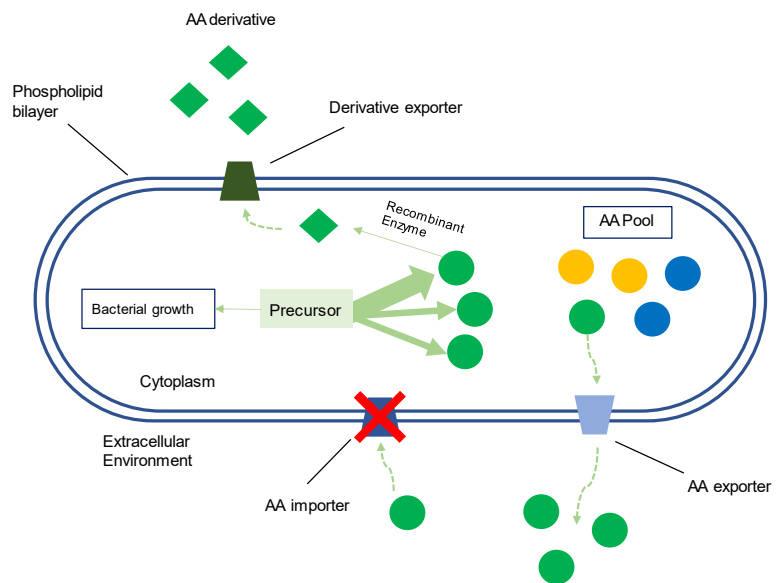
Genetic Engineering for the Quantification of Amino Acid Synthesis Cost in *Pseudomonas putida*

Keywords: Metabolic burden, amino acids, genetic engineering, enzymatic conversions, quantitative biotechnology

Project description

The goal of this project is to quantify the synthesis cost of different amino acids (AA) in the biotechnological relevant bacteria *Pseudomonas putida*. The experimental part will focus on posing a quantifiable growth burden on *P. putida* by depleting specific AAs. In this context, the effectiveness of different genetic approaches (single or combinatorial) in increasing the AA demand of the cell are evaluated (see graphical abstract). One of these approaches, the enzymatic conversion of AAs, will at the same time aim at generating value-added AA derivatives that could be commercially interesting.

[For more information, see SBT Website]



Assignments & Methods

- Genetic Engineering to create „high AA demand“ strains (PCR, Cloning, Conjugation)
- Cultivation of strains (Fermentation in mL-Scale, „sterile-workflow“)
- Analysis of amino acid content (HPLC / Assays)
- Search for interesting AA derivative targets and adjunct enzymes for conversion (Bio-informatics)

Specifications

- Option for Masterthesis, Bachelorthesis or Research Project
- For students with interest (and background) in : Microbiology, (Molecular) Biology / Biotechnology or Biochemistry
- **Preferred starting date:** August 2021 (options for earlier start can be discussed)



Marleen Beentjes
 marleen.beentjes@tum.de
 Tel: +49 (0)89 289-15756