

Thesis/Internship

Polyurethanase engineering

Description

Polyurethane (PU) is a versatile polymeric material used in different areas of our daily life, as thermal insulation, coatings, and mattresses, among others. PU waste is not widely recycled in regular recycling processes because of the generated by-products toxicity and the characteristics of the PU raw materials. Therefore, enzymatic degradation by polyurethanases (PUase) rises as a promising alternative for environmental impact reduction of PU waste. An essential problem in using available PUases is their low compatibility with industrial processes conditions, and protein engineering of PUases represents a promising approach to overcome this obstacle.

What we offer/Techniques you will learn

In the project, you will establish a screening system for PUases and evaluate improved variants. In this process, you will learn different techniques in microbiology (e.g., handling of *E. coli*), molecular biology (e.g., gene cloning, PCR, DNA extraction, electrophoresis, and quantification), and biochemistry (enzymatic assays in 96-plate format, screening of improved enzymes via high-throughput screening (HTS) and enzyme characterization via quartz crystal microbalance with dissipation (QCM-D)). You will enjoy working in a professional and international biotechnological environment with close industrial cooperation and focusing on re-engineering industrial relevant enzymes.

Qualifications

- Bachelor/Master student (f/m) in the field of biotechnology, biology, chemistry, or related
- Confident in using MS Office programs
- Good knowledge of English (spoken and written)
- Creativity, flexibility, high motivation, and strong commitment

Estimated time: According to "Studienordnung"

Start: Applications will be considered until a proper candidate is found

Contact

Francisca Contreras

Lehrstuhl für Biotechnologie, Worringer Weg 3, 52074 Aachen

Room 4.136

Phone: +49 241 80 20676

E-Mail: f.contreras@biotec.rwth-aachen.de