



Cyborg bacteria capable of performing synthesis in organic solvents

Project:

We offer an exciting Master Thesis project in the frontier of biology, biophysics and macromolecular chemistry. The project aims at creating bacterial-cyborgs that can perform biocatalysis in organic solvent. The presence of such solvent destabilizes the membrane of bacteria leading to their death. Thus, a large number of very important processes fail short due to the impossibility to perform biocatalysis in organic solvent. In this master thesis project we will explore the creating of a “coat of invisibility” that will protect the bacteria from the action of the solvent. For this, we will design hybrid macromolecules (e.g., pectin), which can be decorated on the *E. coli* outer membrane layer by enzyme-mediated polymerization. The student will learn how to perform the enzyme mediated polymerization of hybrid molecules, characterize them and evaluate property of the whole-cell catalysis in organic solvent. The thesis will be led by Prof. Ulrich Schwaneberg and Prof. César Rodríguez-Emmenegger while having support from members of their highly interdisciplinary teams.

Your profile:

- Master student (f/m/d) in the field of biotechnology, biochemistry, biology or related
- Experience with molecular biology techniques is required
- Experience with enzymes, polymerization and surface characterization techniques is advantageous
- Fluent in English
- Highly motivated and independent person with the drive to learn and develop

The position is available from April 2023. For the master thesis, a period of 6 months is planned (with the option of a shorter precedent internship). For research internships, a minimum duration of 3 months is planned.

Feel free to contact me via e-mail together with your CV and current Transcript of Records.

Lilin Feng, M.Sc., l.feng@biotec.rwth-aachen.de

Institute of Biotechnology

RWTH Aachen University