Master Thesis/Internship

Laccase-mediated surface functionalization with Pectin and Lignin

Project Description:

In this study, our objective is to achieve surface functionalization of materials (such as PP, PET, ITO) using pectin and lignin to enhance the surface characteristics. To accomplish this, we will employ a fusion protein with laccase and adhesion promoting peptide. We will be using a high-redox fungal laccase (LCC2) which will be adhered to the surface via adhesion promoting peptide, LCI-KR2. The laccase will facilitate the crosslinking of either sugar beet pectin (SBP) or lignin onto the surface, thereby modifying the surface properties of the materials.

In this study, the *Pichia pastoris* expression system will be employed to produce fusion proteins. Your focus will be on optimizing the expression and purification of these fusion proteins. Additionally, we will investigate the binding of the fusion proteins onto the material surface. The kinetics of the binding process will be evaluated to understand the interaction dynamics. Finally, the crosslinking process will be performed to effectively cover the surface with SBP and lignin, completing the surface functionalization procedure.

You will have the opportunity to contribute to diverse research projects and gain practical experience in various techniques encompassing microbiology, molecular biology, and biochemistry in an innovative and collaborative environment.

Your profile:

- Master student (m/f/d) in the field of Biotechnology, Biochemistry, Biology or related
- Experience with polymerization and surface characterization techniques is advantageous but not required
- Proficient in both spoken and written English
- Highly motivated individual with a strong commitment to learning and professional development
- Ability to work independently and as part of a team

The position will become available in June 2023, and the duration of the master thesis is anticipated to be six months, potentially preceded by a short internship.

Contact:

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