



The future of crop protection: leveraging fungi, robotics, and AI in the battle against wheat pathogens

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Speakers and Abstracts

Session II: Cell factory engineering



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Talk *The future of crop protection: leveraging fungi, robotics, and AI in the battle against wheat pathogens*

About

Johan Vormsborg Christiansen studied biotechnology at the University of Copenhagen with a focus on heterologous expression and cell factories. In 2022 he received his PhD from DTU in fungal metabolomics and natural products, where he studied the application of fungal metabolites as electrolytes in sustainable batteries. He has since transitioned to a position as a postdoctoral researcher in the DTU project Smarter AgroBiological Screening (SABS), offering his expertise in fungal metabolomics. His primary areas of specialization encompass fungal metabolomics, LC-MS/MS data processing, and chemometrics, including big data analysis and machine learning.

Abstract

Quality by Design (QbD) guided process development is time & cost effective only if knowledge is transferred from one scale to the other (vertical knowledge transfer) one project to the next (horizontal knowledge transfer). Today knowledge is transferred across scales and molecules when assessing the technical risks. However, this form of knowledge transfer is limited and despite the wide spread of platform processes, to some degree the process needs to be developed *de novo* for every new drug or vaccine candidate.

Hybrid modeling and transfer learning have the potential to transfer knowledge between scales and processes of different molecules much more effectively. In particular, we propose to use an embedding technology to transfer knowledge and a digital twin as a knowledge transfer vehicle. Used consistently this has the potential to reduce the number of experiments by up to 80%.