



Machine learning-guided cell factory optimization

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Talk *Machine learning-guided cell
factory optimization*

About

Michael Krogh Jensen is a senior researcher and group leader DTU Biosustain at the Technical University of Denmark (DTU). He holds a PhD in molecular biology from University of Copenhagen and did his postdoctoral training at the Max-Planck Institute (GER) and at Stanford University (US), before joining DTU in 2013. He is the author of >70 peer-reviewed publications, several book chapters, and inventor of 4 patents. He co-founded Biomia in 2022 following licensing agreement of a patent-portfolio from DTU and VC investment.

Abstract

An often-encountered bottleneck in modern biotechnology is how to efficiently search the design space to optimize cell factories for production of value chemicals and biologics. Parameters to consider include the i) choice of production host, ii) promoters to control the expression of genes encoding biosynthetic enzymes, iii) subcellular localization of expressed enzymes, iv) efficient selection of candidate enzymes to screen, and v) the bioprocess itself. While independently all these parameters have positively impacted optimization of fermentation-based manufacturing, multivariate exploration of these complex design spaces and enzymatic reactions are needed. In this presentation we demonstrate the use machine learning has to guide multivariate optimization of metabolic flux through dedicated metabolic reactions to brew medicines and building blocks thereof in yeast cell factories optimized using machine learning.