

## A Cost-Benefit Perspective on enzyme production

### Type of project

MSc. Thesis

### Short description

At Novonesis, we use precision fermentation to produce many of our BioSolutions. To improve our process economy and environmental footprint we would like to evaluate the cost-benefit potential of various process configurations for enzyme production, focusing on both upstream and downstream operations. The study will analyze yield, titer, and productivity for various processing options, for example fed-batch, CSTR, cell recycle, in situ product removal and various combinations of these methods. By comparing these configurations, this work seeks to identify the most efficient and cost-effective approach to maximize productivity and sustainability in bio-processing.

### Project milestones

- Literature survey covering the state-of-the-art on bio-process configurations.
- Develop simple models in AVEVA Process Simulator to evaluate process configurations
- Assessment of rate yield and productivity for each configuration

### The ideal candidate

- Has a background in STEM education and programming (ideally in python)
- Strong analytical skills and experience with modelling of unit operation

This project supports our Digital twin strategy, and the candidate will have the opportunity develop their soft skills, as well as technical competencies.

### Supervisors

Jason Price [jpr@novonesis.com](mailto:jpr@novonesis.com)

Benny Cassells [BEP@novozymes.com](mailto:BEP@novozymes.com)

Contact: Kresten Kromphardt

E-mail: [kkro@pha.dk](mailto:kkro@pha.dk)

Phone: +45 72482544

---

Novonesis is a global company leading the era of biosolutions.

By leveraging the power of microbiology with science, we transform the way the world produces, consumes and lives. In more than 30 industries, our biosolutions are already creating value for thousands of customers and benefiting the planet. Our 10,000 people worldwide work closely with our partners and customers to transform business with biology.

August 5, 2025

Novozymes A/S CVR number: 10007127, part of Novonesis Group

Novozymes A/S

Krogshøjvej 36

2880 Bagsvaerd

Denmark

[novonesis.com](https://novonesis.com)