

Master's Thesis Project

Topic: Directed evolution of the arginine synthase ArcE for ATP production in the synthetic cell

Group: Poolman Lab, University of Groningen

Start and duration: Flexible

We are looking for a motivated and curious MSc student to join our project on bottom-up synthetic biology, focusing on optimizing ATP metabolism in synthetic cells.

What you bring:

- High motivation, initiative, and curiosity
- Preferred but not required: Experience in microbiology, molecular biology, genetics, and biochemistry

What you will learn:

Biochemistry, molecular biology, genetics, and microbiology techniques, including:

- Enzyme expression, purification, and *in vitro* characterization
- Cloning and strain engineering
- Working with microbes
- Directed evolution techniques

Project description:

This project aims to characterize and improve the ATP-producing enzyme ArcE for ATP generation in a synthetic cell. The work involves: **1)** cloning, expressing, and *in vitro* characterization of ArcE, and **2)** *in vivo* testing and directed evolution of the enzyme in a previously created *E. coli* selection strain.

If you are excited about synthetic biology, enzymology, and metabolic engineering, and want to develop strong lab skills in a collaborative and innovative environment, we'd love to hear from you.