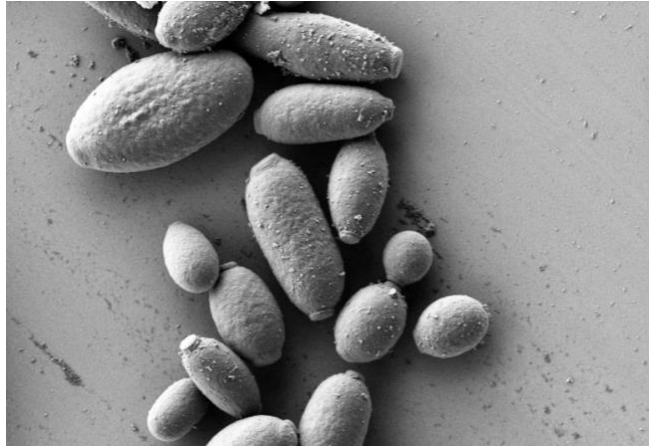


# 30/60 ECTS Master's thesis project

**More than an oleaginous workhorse:**

**Engineering *Yarrowia lipolytica* for production of non-lipid chemicals**



## Background

To overcome global challenges of climate change and limited supply of resources, microbial cell factories are a promising sustainable approach to produce renewable chemicals. As a robust oleaginous yeast, *Y. lipolytica* has been well studied for the production of various fuels and chemicals derived from fatty acids. It can also produce up to 90% of lipid through systematic engineering. However, thanks in part to newfound genetic tools and metabolic understanding, with a great potential, *Y. lipolytica* has been explored for high-level production of a variety of non-lipid products.

## Project

This project uses metabolic and genetic engineering (mostly using CRISPR-Cas9) to develop *Y. lipolytica* for rewiring metabolic pathways and redirecting carbon flux for producing interesting non-lipid products.

The project will include learning and using various methodologies that are used in our laboratories, including genetic and system metabolic engineering techniques for strain construction, fermentation engineering techniques for enhanced titer, yield and productive of our products by flask or bioreactor experiment, and biochemical techniques for analysis of our products and strains. Your project would be within this experimental context, but the exact details will need to be discussed depending on which stage you would join the project, and naturally also taking your interests into account.

## SysBio

The Division of Systems and Synthetic Biology (SysBio) is part of the Department of Biology and Biological Engineering at Chalmers University of Technology. The division is very international with researchers from more than 30 countries. It is one of the leading Systems Biology research groups in the world, with an active and multi-disciplinary academic environment.

## Application

Projects are suitable for 6- or 12-month Master theses (30/60 credits). Starting time is flexible. Applicants need to have a background in either Biotechnology/Bioengineering, Synthetic, Systems or Molecular Biology, Microbiology or other related disciplines.

Duration: 6-12 months (30 or 60 ECTS).

Please send a letter of motivation to Eduard Kerkhoven [eduardk@chalmers.se](mailto:eduardk@chalmers.se) or Jing Fu [jingf@chalmers.se](mailto:jingf@chalmers.se).