



**Model-Based Construction and Optimisation  
of Versatile Chassis Yeast Strains  
for Production of Valuable Lipid and Aromatic Compounds**

#### OFFERING

The EU-funded project CHASSY offers computational models of metabolism and the know-how for simulations and analysis for three industrially relevant yeast strains.

#### EXPERTS

Prof Jens Nielsen  
Iván Domenzain

#### PARTNERING OPPORTUNITIES

- Research collaboration
- Technical knowledge
- Industrial project development

#### TRL STATUS

3

#### KEYWORDS

- Genome-scale metabolic models
- Computational biology
- Metabolism
- Metabolic engineering

## Computational Models of Industrial Yeast Metabolism

### Summary

The EU-funded CHASSY project has developed a set of computational models for the whole metabolism of the yeast species involved in this project (*Saccharomyces cerevisiae*, *Yarrowia lipolytica* and *Kluyveromyces marxianus*), known for their broad application in biotechnology. These models can be used for quantitative exploration of the internal metabolism of cells, enabling the following:

1. **Prediction** of cell response to diverse environments
2. Design and evaluation of **cell factories**
3. Simulation of **genetic modifications** outputs
4. Optimisation of bio-based production processes

### The science

Genome-scale metabolic models (GEMs) are computational representations of the components of a cell and their complex interactions (genes, enzymes, biochemical reactions and metabolites). They capture the whole metabolism of a cell allowing the elucidation of the relationship between a cell's genome and its actual behaviour in any relevant environment. Computational simulation tools are already available for reconstruction, analysis, simulation and visualisation of these models for biotechnology and basic research purposes. The CHASSY project has followed the guidelines of open and

collaborative software development for the generation of these publicly available models.

### Development stage

The **Technology Readiness Level** (TRL) of the platform is 3. The research group at Chalmers University of Technology who developed these models as part of the CHASSY project are seeking **industry and research partnerships** for further development and wider utilization.

### Contact

Prof Jens Nielsen  
Chalmers University of  
Technology, Gothenburg  
Email: [nielsenj@chalmers.se](mailto:nielsenj@chalmers.se)

Iván Domenzain  
Chalmers University of  
Technology, Gothenburg  
Email: [ivand@chalmers.se](mailto:ivand@chalmers.se)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 720824

