

## Transfer of metabolic pathway from a fungus to a yeast

Within decades we must be able to relieve our global dependence on fossil deposits. The replacement of petro-chemically derived chemicals by those produced by microorganisms is a critical step in this transition to a bio-based economy. The beer yeast *Saccharomyces cerevisiae* is the first organism that has been applied to produce such a chemical (ethanol) at massive scale from renewable substrate. In this process, yeast uses glucose as the sole carbon source for growth and production. We would like to change this, since many more carbon sources are available in nature.

The filamentous fungi *Aspergillus niger* is able to use almost all carbon sources. This capacity is well studied and we will transfer part of it to yeast. The *A. niger* pathway for using another (confidential) carbon source needs 4 metabolic enzymes and 1 transporter. These 5 genes will be transferred to *S. cerevisiae* and its ability to utilize this carbon source will be analysed.

The following methodology will be used during the research project: DNA isolation, oligonucleotide design, DNA sequencing, PCR; Application of a novel synthetic toolkit for expression vector construction; Heterologous expression by transformation of *S. cerevisiae*; Phenotypic analysis and growth experiments.

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