

CLIB2021 Project:

Biotechnological pathways for functional polymer- and oligomer products;

Microorganisms (yeasts and bacteria) as whole cell catalysts (BioCat)

Sub-project: Optimization of Expression, Fermentation and Biotransformation

by Application of Automated Micro Bioreactors

Description:

Aim of this project is the development of stable and recyclable whole cell biocatalysts converting the transformation of monomeric substrates to functional chiral products which are used in the pharmaceutical, chemical and/or cosmetic industry. The project focuses on the proprietary yeast systems *Hansenula polymorpha* and *Arxula adenivorans* as well as on *Escherichia coli* as a reference organism. Finally these biocatalysts should be able to replace chemical catalysts or expensive purified enzymes with specifically designed whole cell biocatalysts. The scientific challenge of this project is on the one hand the optimization of molecular tools and methods and on the other hand the utilization of a micro-scale screening tool for the identification of production strains and mutants as well as the development of a method for gentle yeast cell wall permeabilization. Furthermore it is necessary to understand which membrane transport system in *E. coli* is required for the correct biological substrate transformation.

The expected results should strengthen the CLIB²⁰²¹ technology-platform "Expression"

Period of project: 2008 - 2013

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