

Zurich University  
of Applied Sciences

**zhaw**

**Life Sciences and  
Facility Management**

**Institute of  
Chemistry and Biotechnology**

## **Call for Proposals**

Submission deadline: July 31<sup>st</sup>, 2017

## **Biocatalysis**

Innovation in  
Application and  
Education

[www.zhaw.ch/ccbio/pgb](http://www.zhaw.ch/ccbio/pgb)

# Innovation in Application and Education

# Call for Proposals

## Innovation in Biocatalysis: A toolbox for sustainable bio-based production

«Innovation in Biocatalysis: A toolbox for sustainable bio-based production» is a program supported by project contributions from the Swiss Higher Education Council. The project is led by the Competence Center for Biocatalysis (CCBIO) located at the University of Applied Sciences in Wädenswil (ZHAW). The goal of the program is to create a network for dynamic and innovative biocatalysis in Switzerland by facilitating the development of transdisciplinary expertise between the fields of chemistry, biotechnology, micro- and molecular biology and engineering as well as by complementing the currently exist-

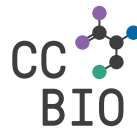
ing curriculum at tertiary level with classes and practical courses in biocatalysis. From the perspective of applied research, new transdisciplinary concepts will be developed which should serve integration of biocatalytic and chemical processes for the sustainable production of added-value chemicals. In addition to developing methods and applications, educational content for the tertiary level will be adapted to incorporate the bio-based technology shift; economic and social implications will also be examined and communicated within the community and to a larger audience.

## Research Projects

The call will support projects concerned with biocatalysis, i.e. the chemical transformation catalysed by one or multiple enzymes in any form, and plat-

forms enabling the discovery, application and optimization of biocatalysts.

- Process design of biocatalytic reactions or enzyme production processes
- Improvement of enzyme scope, robustness and production cost
- Novel biocatalytic transformations (e.g. implementation of underexploited enzyme families, cascade reactions, improved cofactor recycling, enzyme repurposing)
- Generic chassis strain development
- Acceleration of biocatalytic route development (e.g. via bioretrosynthesis, HTS screening methods, smart enzyme library design)
- New applications in biocatalysis (e.g. biopolymers with new properties, functionalization of surfaces, cell free protein expression, diagnostics)



Competence Center  
for **Biocatalysis**

## Biocatalysis

Biocatalysis enables the sustainable production of chiral and highly functionalized compounds for the chemical and pharmaceutical industry. Recent key advances in DNA sequencing, gene synthesis and data analysis are now enabling scientists to tailor biocatalysts according to industrial needs and to reorganize enzymes into new biosynthetic pathways. This progress fuels the so-called «third wave of biocatalysis» and promises to unlock hitherto inaccessible enzyme activities for industrial biocatalysis and engineer microbial and fungal strains for the production of novel asset molecules.

## Competence Center for Biocatalysis (CCBIO)

The Competence Center for Biocatalysis at the ZHAW promotes biocatalysis as a complementary method to classic organic synthesis and aims to help bridge the gap between academic laboratories and the production plant. By connecting relevant research competences CCBIO strives to develop a comprehensive biocatalytic toolbox consisting of enzyme libraries and methods, which will facilitate the development of biocatalytic and biosynthetic processes for the chemical and pharmaceutical industry.

## Curricular Elements

The call will support development of Curricular Elements aiming at a long-term integration of biocatalysis in life sciences education to facilitate the

use of enzyme systems for modern production processes. Curricular Elements should target BSc/ MSc and continuing education levels.

### Curricular Elements could be (but are not limited to):

- New practical and theoretical courses, also employing innovative teaching formats
- Integration of new biocatalytic elements into existing courses
- Integration of nationally distributed competences into joint curricular elements

### Content could include

- Expanding retrosynthesis by including biocatalytic elements
- Exploring the regulatory and IP space as well as fundamental elements of economic feasibility of biocatalysis
- Integrative approaches ranging from gene to final product
- Adapting industrial case studies to teachable formats
- Novel approaches to maintain and advance core competences in biocatalysis (e.g. directed enzyme evolution, chemical and process engineering as well as downstream processing)

## Support Criteria and Funding

The SBFI supports the program «Innovation in Biocatalysis» with CHF 2 Mio. The host institutes of the successful applicants contribute equal funds (50:50 co-financing) to the projects. For further details see

[www.zhaw.ch/ccbio/pgb](http://www.zhaw.ch/ccbio/pgb)

### Support for Research Projects

- 5–8 projects for up to 30 month
- Program contribution CHF 1'380'000

### Support for Curricular Elements

- 5–10 projects for up to 30 month
- Program contribution CHF 300'000

## Submission of Proposals

Application must be submitted by the leader of the project team and include a letter of support from an authorized signatory of the host institute confirming the 50:50 co-financing.

**Submission deadline: July 31<sup>st</sup>, 2017.**

## Project Evaluation

Applications will be evaluated by dedicated Working Groups composed of 5–10 experts in the field. On the basis of the recommendation of the Working Groups, the Scientific Board will decide on the funding of the projects according to the available budget.

## Scientific Board

- Prof. Dr. Gerhard Grundler (FHNW)
- Dr. Steven Hanlon (Roche, President SIBC)
- Prof. Dr. Donald Hilvert (ETHZ)
- Dr. Jan Lucht (scienceindustries)
- Dr. Roland Wohlgenuth (Merck)

## Contact

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