



**International Congress on Biocatalysis 2014
Hamburg, Germany, August 31 - September 4, 2014**

Committees

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Scientific program

Sunday, August 31

Building A

15:30 – 17:00 Registration

Audimax II

17:00 Opening ceremony

Garabed Antranikian, chairman of the congress

Music by **Ensemble Formidable**, **Special Guest Ulita Knaus**

17:30 – 18:30 Opening lectures

Vincent Eijsink, Norwegian University of Life Sciences, Ås, Norway
"Novel tools for biomass processing - Oxidative cleavage of polysaccharides by lytic polysaccharide monooxygenases"

Gjalt Huisman, Codexis, Redwood City, USA
"Innovations in biocatalysis for pharmaceutical applications"

19:00 – 22:00 Welcome reception at the Hamburg University of Technology (TUHH)

Monday, September 1

Audimax II

8:30 – 10:30 Morning session I: *Enzyme discovery, production and application*

8:30 – 9:00 **Martin S. Borchert**, Novozymes A/S, Bagsværd, Denmark
"Hyperthermophilic enzymes and their industrial applications. A plea for more diversity"

9:00 – 9:30 **Anett Schallmeyer**, University of Amsterdam, Amsterdam, The Netherlands
"*In silico* discovery of novel enzymes for industrial biotechnology"

9:30 – 10:00 **Kerstin Steiner**, Austrian Centre of Industrial Biotechnology, Graz, Austria
"The potential of enzymes with cupin fold in biocatalysis"

10:00 – 10:30 **Gideon Grogan**, University of York, York, Great Britain
"Structure, mechanism and application of NADPH-dependent Imine Reductases (IREDs)"

10:30 – 11:00 Coffee break

Monday, September 1

Audimax II

- 11:00 – 13:00** **Morning session II: *Structure-function analysis and enzyme design / Enzymatic and whole cell biotransformations***
- 11:00 – 11:20 **Jürgen Pleiss**, University of Stuttgart, Stuttgart, Germany
"Systematic analysis of sequences and structures of thiamine diphosphate-dependent enzymes"
- 11:20 – 11:40 **Christoph Loderer**, Technical University Dresden, Dresden, Germany
"Investigation of structural determinants for substrate specificity in zinc dependent alcohol dehydrogenases"
- 11:40 – 12:00 **Spyros Chatziefthimiou**, EMBL, Hamburg, Germany
"The structure of a thermoactive lipase from *Thermoanaerobacter thermohydrosulfuricus*: snapshots of the lipase mechanism"
- 12:00 – 12:20 **Jan Deska**, University of Cologne, Cologne, Germany
"Achmatowicz goes green – oxidative ring rearrangements based on oxygen-activating enzymes"
- 12:20 – 12:40 **Frank Hollmann**, Delft University of Technology, Delft, The Netherlands
"Photocatalysis enables using water as sacrificial electron donor in redox biocatalysis"
- 12:40 – 13:00 **Florian Rudroff**, Vienna University of Technology of Technology, Vienna, Austria
"An enzymatic 'in vivo' toolbox for RedOx cascade reactions: from feedstock limonene to biorenewable polyesters"

13:00 – 14:30 **Lunch at Mensa and Coffee break in Building A**

Building A

- 14:30 – 15:15** **Lightning Talks: *Enzymatic and whole cell biotransformations***
- 14:30 – 15:30** **Poster session: *Enzyme discovery, production and application***
(P1-1 to P1-80)
- 15:30 – 16:30** **Poster session: *Enzymatic and whole cell biotransformations / Sustainable industrial processes*** (P3-1 to P3-104 / P5-1 to P5-26)

Audimax II

- 16:30 – 16:50** **Coffee break**
- 16:50 – 18:30** **Afternoon session: *Bioprocess engineering and downstream processing / Enzymatic and whole cell biotransformations***
- 16:50 – 17:10 **Cormac Murphy**, University College Dublin, Dublin, Ireland
"Biocatalysis with filamentous fungal biofilms"

- 17:10 – 17:30 **Winnie Dejonghe**, Flemish Institute for Technological Research, Mol, Belgium
"Galacto-oligosaccharide production in a mixed matrix membrane reactor"
- 17:30 – 17:50 **Sonja Borchert**, Enzymicals AG, Greifswald, Germany
"Scale-up of a recombinant pig liver esterase-catalyzed
desymmetrization of dimethyl cyclohex-4-ene-*cis*-1,2-dicarboxylate"
- 17:50 – 18:10 **Jan von Langermann**, University of Rostock, Rostock, Germany
"Hxdroxy nitrile lyase-catalyzed synthesis of enantiopure cyanohydrins
in biocatalytic active static emulsions (BASE)"
- 18:10 – 18:30 **Christoph Syldatk**, Karlsruhe Institute of Technology, Karlsruhe, Germany
"Enzymatic synthesis of surface-active glycolipids - state of the art and
challenges"

Tuesday, September 2**Audimax II**

- 8:30 – 10:30** **Morning session I: *Bioprocess engineering and downstream processing***
- 8:30 – 9:00 **Alex Zaks**, Akermin Inc., St. Louis, USA
"Advanced low energy enzyme-catalyzed capture of CO₂"
- 9:00 – 9:30 **Zongbao Zhao**, Dalian Institute of Chemical Physics, Dalian, China
"Microbial lipid production by oleaginous yeasts"
- 9:30 – 10:00 **Ivan Lavandera**, University of Oviedo, Oviedo, Spain
"Biocatalytic tandem and dynamic processes applied to the synthesis of high-added value derivatives"
- 10:00 – 10:30 **Carlos M. G. A. Fontes**, University of Lisbon, Lisbon, Portugal
"Mining *Ruminococcus flavefaciens* cellulosome to discover novel Carbohydrate Active enZymes (CAZYmes) and Carbohydrate Binding Modules (CBMs)"
- 10:30 – 11:00** **Coffee break**
- 11:00 – 12:40** **Morning session II: *Sustainable industrial processes***
- 11:00 – 11:20 **Roger Sheldon**, Delft University of Technology, Delft, The Netherlands
"Industrial application of glucoamylase Cross-Linked Enzyme Aggregates (CLEAs) in starch processing"
- 11:20 – 11:40 **Stefan Marcus Gaida**, Fraunhofer IME, Aachen, Germany
"Targeted proteomics enabled metabolic engineering of *Clostridium cellulolyticum* for n-butanol production"
- 11:40 – 12:00 **Michael J. Fink**, Vienna University of Technology, Vienna, Austria
"Scalable chemo-enzymatic synthesis of polyamide-9 monomers"
- 12:00 – 12:20 **Katarzyna Wrzosek**, Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany
"Resolution of mandelic acid enantiomers using enantioselective chromatography coupled with enzymatic racemization"
- 12:20 – 12:40 **Carlos Diaz Blanco**, Polytechnic University of Catalonia, Terrassa, Spain
"Building a dual antimicrobial/antifouling coating on urinary catheters using a laccase-triggered bottom-up approach"
- 12:40 – 14:15** **Lunch at Mensa and Coffee break in Building A**

Building A

- 14:15 – 14:50** **Lightning Talks:** *Structure-function analysis and enzyme design / Bioprocess engineering and downstream processing*
- 14:15 – 15:15** **Poster session:** *Enzymatic and whole cell biotransformations* (P3-1 to P3-104)
- 15:00 – 15:45** **Poster session:** *Structure-function analysis and enzyme design / Bioprocess engineering and downstream processing* (P2-1 to P2-38 / P4-1 to P4-30)

Audimax II

- 15:45 – 16:00** **Coffee break**
- 16:00 – 17:00** **Afternoon session: *Enzymatic and whole cell biotransformations***
- 16:00 – 16:20 **Isaac Vizcaino-Caston**, The University of Birmingham, Birmingham, UK
"Engineered *E. coli* biofilms as a platform for biocatalysis"
- 16:20 – 16:40 **Jessica Rehdorf**, BRAIN AG, Zwingenberg, Germany
"Multistep enzyme conversion: exploring bacterial microcompartments"
- 16:40 – 17:00 **Stephanie Klatte**, Bielefeld University, Germany
"Redox self-sufficient amination of alcohols by an *E. coli* whole cell biotransformation system"
- 17:00** Group photo
- 17:15** Excursion and congress dinner on a boat
- Biocat-Award ceremony

Wednesday, September 3
Audimax II

9:00 – 11:00 **Morning session I: *Enzymatic and whole cell biotransformations / Sustainable industrial processes***

9:00 – 9:30 **Michihiro Araki**, Kobe University, Kobe, Japan
"Computational platform for designing synthetic metabolic pathways"

9:30 – 10:00 **Dörte Rother**, Forschungszentrum Jülich, Jülich, Germany
"Synthetic enzyme cascades for the production of valuable building blocks with multi-chiral centers – new approaches to increase economic and ecologic efficiency"

10:00 – 10:30 **Shota Atsumi**, University of California, Davis, USA
"Biological conversion of sugar and CO₂ to chemicals"

10:30 – 11:00 **Ulrich Kettling**, Clariant, Munich, Germany
"Trends in industrial biocatalysis based on multi-enzyme concepts"

11:00 – 11:30 **Coffee break**

11:30 – 13:30 **Morning session II: *Structure-function analysis and enzyme design / Enzymatic and whole cell biotransformations***

11:30 – 11:50 **Simon Ladevèze**, University of Toulouse, Toulouse, France
"Functional metagenomics reveals novel pathways of carbohydrate foraging by human gut bacteria"

11:50 – 12:10 **Marcelo Masman**, University of Groningen, Groningen, The Netherlands
"Loop engineering in enzymes: fine-tuning reaction specificity"

12:10 – 12:30 **Hanna M. Dudek**, University of Groningen, Groningen, The Netherlands
"Extended substrate scope of a Baeyer-Villiger monooxygenase engineered by multiple-site mutagenesis"

12:30 – 12:50 **Kristyna Slámová**, Institute of Microbiology, Prague, Czech Republic
"The first transglycosidase derived from a β -N-acetylhexosaminidase"

12:50 – 13:10 **Yufeng Miao**, University of Groningen, Groningen, The Netherlands
"Biocatalytic Michael-type additions yielding enantioenriched precursors of GABA-based pharmaceuticals"

13:10 – 13:30 **Kersten S. Rabe**, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany
"A new reporter protein for extremophiles"

13:30 – 15:00 **Lunch at Mensa and Coffee break in Building A**

Building A

15:00 – 15:45 **Lightning Talks:** *Enzyme discovery, production and application / Sustainable industrial processes*

15:00 – 16:00 **Poster session:** *Structure-function analysis and enzyme design / Bioprocess engineering and downstream processing / (P2-1 to P2-38 / P4-1 to P4-30)*

16:00 – 17:00 **Poster session:** *Enzyme discovery, production and application / Sustainable industrial processes (P1-1 to P1-104 / P5-1 to P5-26)*

Audimax II

17:00 – 17:20 **Coffee break**

17:20 – 18:40 **Afternoon session:** *Enzyme discovery, production and application*

17:20 – 17:40 **Alexander Pisarchik**, Arzeda Inc, Seattle, USA
"Computational design for the development of novel enzymes and biosynthetic pathways"

17:40 – 18:00 **Yuval Nov**, University of Haifa, Haifa, Israel
"The annealing bias in saturation mutagenesis"

18:00 – 18:20 **Martin Schuermann**, DSM Chemical Technology R&D, Geleen, The Netherlands
"Selective and sustainable P450 oxygenation technology for intermediate manufacturing on kilogram scale"

18:20 – 18:40 **Yutaka Kawarabayasi**, Kyushu University, Fukuoka, Japan
"Experimental confirmation of the archaeal UDP-GlcNAc biosynthetic pathway unpredicted from the genomic data"

Thursday, September 4
Audimax II

- 8:30 – 10:30** **Morning session I: Sustainable industrial processes / Structure-function analysis and enzyme design**
- 8:30 – 9:00 **Herman Pel**, DSM Biotech Center, Delft, The Netherlands
"Optimizing enzyme cocktails and process conditions for production of cellulosic ethanol"
- 9:00 – 9:30 **Nediljko Budisa**, Technical University Berlin, Berlin, Germany
"Orthogonal translation as a tool for designing biocatalysts"
- 9:30 – 10:00 **Magali Remaud-Simeon**, LISBP/INSA, Toulouse, France
"Sweet advances in glucansucrase discovery and design for novel products"
- 10:00 – 10:30 **Gerrit Poelarends**, University of Groningen, Groningen, The Netherlands
"Discovery and engineering of new enzymes for carbon-nitrogen bond formation"
- 10:30 – 11:00** **Coffee break**
- 11:00 – 13:20** **Morning session II: Enzyme discovery, production and application**
- 11:00 – 11:20 **Christian Degering**, evocatal GmbH, Monheim am Rhein, Germany
"Improvement of biocatalysts for industrial applications"
- 11:20 – 11:40 **Solvej Siedler**, Technical University Denmark, Horsholm, Denmark
"Biosensors open the door for ultra-high-throughput screening of NADPH-dependent enzymes and flavonoid production in *E. coli*"
- 11:40 – 12:00 **Xu-Dong Kong**, East China University of Science and Technology, Shanghai, China
"A smart library of epoxide hydrolase variants for chemoenzymatic synthesis of (*R*)- and (*S*)- β -blockers"
- 12:00 – 12:20 **Alessandro Pellis**, University of Natural Resources and Life Sciences, Vienna, Austria
"Lipase-catalyzed functionalization of poly(L-lactic acid) films"
- 12:20 – 12:40 **Robert Kourist**, Ruhr-University Bochum, Bochum, Germany
"Photobiocatalytic decarboxylation of fatty acids for olefine synthesis"
- 12:40 – 13:00 **Susanne Lischka**, BAM Federal Institute for Materials Research and Testing, Berlin, Germany
"Enzyme-catalyzed synthesis of biolubricants from waste fat"
- 13:00 – 13:20 **Marco Moracci**, National Research Council, Naples, Italy
"Exploring and exploiting by metagenomics the biodiversity of hyperthermophilic communities for novel enzymes for plant biomass biodegradation"
- Closing remarks - **Garabed Antranikian**, chairman of the congress