

Final Program

Enzyme Engineering XX

September 20-24, 2009
Groningen, the Netherlands

Sunday, September 20, 2009

14.30 – 17.00	Registration (Academy Building) Opening Lectures (Chair: Dick Janssen)
17:00 – 17:15	Opening Remarks – Dick Janssen
17:15 – 18:00	Marcel Wubbolts (DSM Pharmaceutical Products, The Netherlands) <i>Enzyme Engineering: Innovations by Design</i>
18:00 – 19:00	Manfred T. Reetz (Max-Planck-Institut für Kohlenforschung, Mülheim, Germany) <i>Directed Evolution of Enantioselective Enzymes: Probing Protein Sequence Space Efficiently</i>
19:00 – 19:15	Welcome Address (Frans Zwarts, Dean, University of Groningen)
19:15 – 20:30	Welcome Reception (Academy Building)

Notes

- The technical sessions and poster sessions from Monday through Thursday will be held at Martiniplaza.
- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the conference.

Monday, September 21, 2009

Bioinformatics and Enzyme Discovery (Chairs: Bernhard Hauer & Yasuhisa Asano)

- 08:45 – 09:30 Patricia Babbitt (University of California, San Francisco, CA, USA)
Choosing Starting Structures for Enzyme Engineering: Learning from Natural Evolution
- 09:30 – 10:00 Lawrence P. Wackett (University of Minnesota, St. Paul, MN, USA)
Enzyme Engineering for Degrading and Detecting s-Triazines
- 10:00 – 10:30 Henk-Jan Joosten (Wageningen University, The Netherlands)
3DM: A Tool for Optimal Use of Super-Family Data for Enzyme Engineering
- 10:30 – 11:00 Coffee/Tea Break
- 11:00 – 11:30 Wolfgang Streit (University of Hamburg, Germany)
Metagenomics, biotechnology with not yet-cultured microbes
- 11:30 – 12:00 Marco W. Fraaije (University of Groningen, The Netherlands)
Discovery and Redesign of Flavoprotein Oxidases
- 12:00 – 12:30 Anton Glieder (Graz University of Technology, Austria)
Engineering, Expression and Screening Enzymes from Eukaryotes Using Pichia pastoris
- 12:30 – 13:00 Nadia Skorupa Parachin (Lund University, Sweden)
Development of High-Throughput Screening Methods for Metagenome Libraries
- 13:00 – 14:00 Lunch (Martiniplaza)
- 14:00 – 16:00 **Poster Session** with Coffee/Tea
- Computational and Statistical Approaches (Chair: Andreas Bommarius)**
- 16:00 – 16:45 Richard J. Fox (Codexis, Inc., Redwood City, CA, USA)
Principles of Enzyme Optimization for the Rapid Creation of Industrial Biocatalysts
- 16:45 – 17:15 Ullrich Schwaneberg (RWTH Aachen University, Germany)
Steering Directed Protein Evolution: Strategies To Benchmark And To Manage Combinatorial Complexity Of Mutant Libraries
- 17:15 – 17:45 Paolo Braiuca (Paolo Braiuca, University of Trieste, Italy)
QSAR Computational Routes For The Prediction Of Enzyme Properties

Monday, September 21, 2009 (continued)

- 17:45 – 18:15 Denis Pompon (Centre de Génétique Moléculaire du CNRS, Gif-sur-Yvette, France)
The Function Mapping of Cytochrome P450s, an Approach to Turn Around Combinatorial Limitations in Protein Engineering
- 18:15 – 20:00 Dinner (Martiniplaza)
- 20:00 – 21:30 **Poster Session** and Social Hour (coffee, tea, drinks)

Tuesday, September 22, 2009

Structure-Based Protein Engineering and Directed Evolution (Chair: Lawrence Wackett)

- 08:45 – 09:30 Bengt Mannervik (Uppsala University, Sweden)
GSTs as a Paradigm for Enzyme Redesign and Evolution
- 09:30 – 10:00 Julie Rannes (University of Manchester, UK)
Enzyme Engineering of New Variants of Galactose Oxidase for Glycan and Glycoprotein Labelling
- 10:00 – 10:30 Claes Gustafsson (DNA2.0 Inc., Menlo Park, CA, USA)
Synthetic Genes + Design of Experiment = Bioengineering

10:30 – 11:00 Coffee/Tea Break

Emerging Applications I (Chair: Oliver May)

- 11:00 – 11:30 Michihiko Kobayashi (University of Tsukuba, Japan)
Discovery of a New Post-Translational Modification and Development of a New Expression System in Streptomyces
- 11:30 – 12:00 Zhanglin Lin (Tsinghua University, Beijing, China)
Terminal Amphipathic Alpha-Helix Induced in Vivo Formation of Active Enzyme Aggregates
- 12:00 – 12:30 Akihiko Kondo (Kobe University, Japan)
Production of Bio-Fuels and Chemicals from Biomass by Consolidated Bioprocessing Using Cell Surface Engineered Yeast Cells
- 12:30 – 13:00 Hak Sung Kim (KAIST, Korea)
Development of High-Throughput Assay Format for Evolution of Potential Therapeutic Enzymes

13:00 – 14:00 Lunch (Martiniplaza)

Innovations in Gene Synthesis, Library Generation and Screening (Chair: Marco Fraaije)

- 14:00 – 14:45 Henrik Moellgaard (Direvo Industrial Biotechnology GmbH, Cologne, Germany)
DIREVO IBT'S Highly Efficient Toolbox for Improvement of Biomass Degrading Enzymes
- 14:45 – 15:15 Jan van den Brulle (Sloning BioTechnology, Puchheim, Germany)
Slonomics - A Unique Technology for the Controlled Generation of Truly Randomized Gene Libraries
- 15:15 – 15:45 Christian Kranz (GENEART AG, Regensburg, Germany)
On the Benefit of Rationally Designed Synthetic Libraries
- 15:45 – 16:15 Coffee/Tea Break

Tuesday, September 22, 2009 (continued)

Directed Evolution (Chair: Jiri Damborsky)

- 16:15 – 17:00 Dan S. Tawfik (Weizmann Institute of Science, Rehovot, Israel)
Directed Enzyme Evolution – Beyond the Low-Hanging Fruit
- 17:00 – 17:30 Joelle N. Pelletier (Université de Montréal, Canada)
*Engineering Enzymes with High Drug Resistance: Ligand
Discrimination Provides Efficient Selective Markers for Mammalian
Cells*
- 17:30 – 18:00 Patrice Soumillon (Université Catholique de Louvain, Belgium)
Engineering a Beta-Lactamase Allosterically Regulated by Kanamycin
- 18:00 – 18:30 Wim J. Quax (University of Groningen, The Netherlands)
*Lipase Enantioselectivity Engineered by Loop Engrafting and Genetic
Selection*
- 18:30 – 20:00 Dinner (Martiniplaza)

Wednesday, September 23, 2009

Engineering Industrial Enzymes (chair: Patricia Babbitt & Akihiko Kondo)

- 08:45 – 09:30 Philip N. Bryan (University of Maryland Biotechnology Institute, Rockville, MD, USA)
Engineering Tightly-Regulated, High-Specificity Proteases
- 09:30 – 10:00 David Estell (Genencor, Palo Alto, CA, USA)
Altering Enzyme Surfaces to Dramatically Improve Performance
- 10:00 – 10:30 Jan-Metske van der Laan (DSM Food Specialties, The Netherlands)
Biodiversity Guided Design of Food Enzymes: Opportunities and Limitations
- 10:30 – 11:00 Coffee/Tea Break
- 11:00 – 11:30 Masakazu Sugiyama (AJINOMOTO AminoScience Laboratories, Japan)
Aldolase-Catalyzed Syntheses of L-Sugars and Iminocyclitols
- 11:30 – 12:00 Theo Sonke (DSM Pharmaceutical Products, The Netherlands)
Engineering of Threonine Aldolases for Diastereoselective Carbon-Carbon Bond Formation
- 12:00 – 12:30 Yasuhisa Asano (Toyama Prefectural University, Japan)
*Enzymatic Transcrystallization of Ω -Lauro lactam to 12-Aminolauric Acid by Ω -Lauro lactam Hydrolase from *Acidovorax* sp. T31*
- 12:30 – 13:00 Karl-Heinz Maurer (Henkel AG, Düsseldorf, Germany)
Low Temperature Protease Performance in Liquid Detergents
- 13:00 – 14:00 Lunch (Martiniplaza)
- 14:00 – 16:00 **Poster Session** with Coffee/Tea
- Emerging Applications II (Chair: Karl-Erich Jaeger)**
- 16:00 – 16:45 Craig A. Townsend (Johns Hopkins University, Baltimore, MD, USA)
Structural and Mechanistic Understanding of Type I Iterative Polyketide Synthases and Their Potential for Unnatural Product Synthesis
- 16:45 – 17:15 Saulius Klimasauskas (Institute of Biotechnology, Vilnius, Lithuania)
Engineering Methyltransferase Reactions for Targeted Labeling Of Biopolymers
- 17:15 – 17:45 Magali Remaud-Simeon (Université de Toulouse, France)
Engineering Amylosucrases with New Specificities for a Programmed Chemo-Enzymatic Synthesis of Oligosaccharides Entering in Carbohydrate-Based Vaccines

Wednesday, September 23, 2009 (continued)

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| 17:45 – 18:15 | Kouichi Kuroda (Kyoto University, Japan)
<i>Construction of Whole Cell Biocatalyst for Biorefinery by Cell Surface Display of Laccase</i> |
| 18:15 – 20:00 | Dinner (Martiniplaza) |
| 20:00 – 21:30 | Poster Session and Social Hour (coffee, tea, drinks) |

Thursday, September 24, 2009

Innovations in Expression (Chairs: Philip Bryan & David Estell)

- 08:45 – 09:30 Karl-Erich Jaeger (Research Centre Juelich, Germany)
Novel Biocatalyst Expression Systems
- 09:30 – 10:00 Helmut Schwab (Graz University of Technology, Austria)
Pig Liver Esterase: An Old Enzyme Made Fit for Broad Applications by Molecular Engineering
- 10:00 – 10:30 Richard A. Gross (Polytechnic Institute of NYU, NY, USA)
Engineering Candida tropicalis for Conversions of Fatty Acids to Ω -Hydroxy Fatty Acids
- 10:30 – 11:00 Coffee/Tea Break
- Medical Applications (Chair: Bengt Mannervik)**
- 11:00 – 11:30 David Ackerley (Victoria University of Wellington, New Zealand)
Development of Novel Bacterial Nitroreductase Enzymes for Anti-Cancer Gene Therapy
- 11:30 – 12:00 Thomas Scanlon (Dartmouth College, Hanover, NH, USA)
Genetically Engineered Lysozyme for Treatment of Pulmonary Infections
- 12:00 – 12:30 Teruyuki Nagamune (The University of Tokyo, Japan)
Sortase-Mediated Site-Specific Labeling of Cell Surface Proteins on Living Cells
- 12:30 – 13:00 Stefan Lutz (Emory University, Atlanta, GA, USA)
Making The Lock Fit The Key - Engineering Kinases to Phosphorylate Nucleoside Analogs for Antiviral and Cancer Therapy
- 13:00 – 14:00 Lunch (Martiniplaza)
- Enzyme Design (Chair: Dan Tawfik)**
- 14:00 – 14:30 Bernhard Hauer (University of Stuttgart, Germany)
The Challenge of Designing Biocatalysts
- 14:30 – 15:00 Daniela Grabs (Arzeda Corp., Seattle, WA, USA)
Custom-Made Biocatalysts
- 15:00 – 15:30 Jiri Damborsky (Masaryk University, Brno, Czech Republic)
Engineering of Biocatalysts with Modified Activity, Specificity and Stability by Modification of Access Tunnels
- 15:30 – 16:00 Robertus J.M. Klein Gebbink (Utrecht University, The Netherlands)
Active-Site Selective Modification of Lipase With Organometallic Moieties
- 16:00 – 16:30 Coffee/Tea Break

Thursday, September 24, 2009 (continued)

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| 16:30 – 17:15 | Selected Oral Poster Presentations (Chair: Stephen Withers) |
| 17:30 – 18:30 | Enzyme Engineering Award Lecture (Chair: Christian Wandrey)
Sakayu Shimizu (Kyoto University, Japan)
<i>2009 Enzyme Engineering Award Lecture</i> |
| 18:30 | Conference Closure |
| 19:00 – 23:00 | Conference Dinner |