

# Program

## *Enzyme Engineering XIX*

Harrison Hot Springs, British Columbia, Canada

September 23-28, 2007

### *Conference Chairs*

**Romas Kazlauskas**  
University of Minnesota

**Stefan Lutz**  
Emory University

**David Estell**  
Danisco/Genencor



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**Sunday, September 23, 2007**

16:00 – 19:00	Registration
18:00 – 19:00	Opening Reception
19:00 – 20:00	Jay Keasling, University of California, Berkeley, USA <b>Engineering microbes for production of low-cost, effective, anti-malarial drugs</b>  Session Chair: Bryan Jones (University of Toronto)
20:00	Dinner Welcome: Conference Chairs ECI Liaison

**NOTES**

- **Please observe “No Smoking” at ECI technical sessions, meals and social hours.**
- **Speakers must allow 5 - 8 minutes at the end of their presentation for questions and discussion.**
- **Please silence your cell phone during technical sessions.**
- **All cameras, camera phones, audio, video and other recording devices are prohibited from technical sessions and poster sessions.**

**Monday, September 24, 2007**

07:00 – 08:30 Breakfast

***“Fundamentals of enzyme engineering”***

Session chair: Margaret Black, Washington State University

08:30 – 09:15 George Georgiou, University of Texas, USA  
**Engineering of highly specific and highly active endopeptidases for proteomic and therapeutic applications**

09:15 – 09:45 Marc Struhalla, c-LEcta, Germany  
**Expanding the scope of biocatalysis by c-LEcta’s enzyme engineering platform**

09:45 – 10:15 Joelle Pelletier, University of Montreal, Canada  
**Substrate binding revisited: directed evolution and dynamics of an enzyme active site**

10:15 – 10:45 Coffee break

10:45 – 11:30 Yasuhisa Asano, Toyama Prefectural University, Japan  
**Creation of a new enzyme, methionine dehydrogenase for the diagnosis of homocystinuria**

11:30 – 12:00 Barry Stoddard, Fred Hutchinson Cancer Research Institute, USA  
**Hypermutation, selection and engineering of homing endonucleases for targeted genetic applications**

12:30 – 13:30 Lunch

13:30 – 16:30 *ad hoc* discussions/free time

16:30 – 17:00 Afternoon coffee

Session chair: Ling Hua, Genencor

17:00 – 17:45 Richard Wolfenden, University of North Carolina at Chapel Hill, USA  
**Catalytic proficiency: conflicting structural requirements of substrate binding, transition state affinity and rapid product release**

17:45 – 18:15 David Estell, Genencor, USA  
**Rational engineering: systematic evaluation of sequence/activity relationships to guide library design**

18:15 – 18:45 Karl Hult, Royal Institute of Technology, Sweden  
**Molecular interactions of water and solvent affects the kinetics of *Candida antarctica* lipase B**

18:45 – 19:15 Peter Kamp Hansen, Novozymes, Denmark  
**Highly improved diversity generation by using transposon technology and outside restriction cutters**

**Monday, September 24, 2007 (continued)**

19:30 – 21:00          Dinner

21:00 – 23:00          Poster Session

**Tuesday, September 25, 2007**

07:00 – 08:30 Breakfast

***“Applications of enzyme engineering”***

Session chair: Robert DiCosimo, DuPont

08:30 – 09:15 Bernard Hauer, BASF, Germany  
**Biocatalysis in the chemical industry of today and tomorrow**

09:15 – 09:45 Lishan Zhao, Bioverdant, USA  
**An integrated approach to applying biocatalysis for drug manufacture**

09:45 – 10:15 Claire Moulis, CNRS Toulouse, France  
**How to control dextran polymerization**

10:15 – 10:45 Coffee break

10:45 – 11:15 Christian Wandrey, Research Center Jülich, Germany  
**The future of bioprocess development**

11:15 – 11:45 Andreas Schmid, University of Dortmund, Germany  
**Energy metabolism determines the efficiency of whole cell redox biocatalysts**

11:45 – 12:15 Anke Krebber/Vesna Michell, Codexis, USA  
**Accelerated development of biocatalysts via ProSAR-driven enzyme evolution**

12:30 – 13:30 Lunch

13:30 – 16:30 *ad hoc* discussions/free time

16:30 – 17:00 Afternoon coffee

Session chair: Stephen Withers, University of British Columbia

17:00 – 17:45 Bernard Witholt, ETH Zürich, Switzerland  
**Selection of biocatalysts**

17:45 – 18:15 Martin Schürmann, DSM, The Netherlands  
**Directed evolution and specific engineering of industrial biocatalysts for enantioselective C-C bond formation**

18:15 – 18:45 Andreas Bommarius, Georgia Institute of Technology, USA  
**New models to predict protein stability in aqueous media**

18:45 – 19:15 Steven Goldberg, Bristol-Myers Squibb, USA  
**Synthesis of ethyl-(3R,5S)-dihydroxy-6-benzyloxy hexanoates via diastereoand enantioselective microbial reduction: Cloning and expression of a recombinant ketoreductase from *Acinetobacter* sp.**

**Tuesday, September 25, 2007 (continued)**

19:30 – 21:00          Dinner

21:00 – 23:00          Poster Session

**Wednesday, September 26, 2007**

07:00 – 08:30 Breakfast

***“Pathway engineering”***

Session chair: Pierre Monsan, LISBP

08:30 – 09:15 Bernard Henrissat, Universites Aix-Marseille, France  
**Carbohydrate-active enzymes in the genomic era**

09:15 – 09:45 Manuel Ferrer, Institute of Catalysis, Spain  
**Expanding protein diversity space by “one-pot” in vitro homologous recombination of pools of metagenomic libraries**

09:45 – 10:15 Paula Hicks, Cargill, USA  
**Biosynthetic pathways for the production of a natural high-intensity sweetener**

10:15 – 10:45 Coffee break

10:15 – 10:45 Paul Dalby, University College London, UK  
**De novo pathway design and directed evolution for improved ketodiol and aminodiol synthesis**

10:45 – 11:15 Daniel O’Keefe, DuPont, USA  
**Screening microbial enzyme activity by ToF-SIMS surface analysis**

11:15 – 11:45 Eric Strauss, Stellenbosch University, South Africa  
**Towards an efficient process to prepare CoA: Engineering the CoA biosynthetic enzymes for use in column reactors based on cellulose immobilization**

12:30 – 13:30 Lunch

13:30 – 16:30 ad hoc discussions/free time

16:30 – 17:00 Afternoon coffee

Session chair: Manfred Schneider, Bergische University

17:00 – 17:45 Hiromichi Ohta, Keio University, Japan  
**Enzymatic transformation via enolate intermediates**

17:45 – 18:15 Vlada Urlacher, University of Stuttgart, Germany  
**Selective oxidations using monooxygenases and laccases**

18:15 – 18:45 Byung-Gee Kim, Seoul National University, South Korea  
**Asymmetric synthesis using transaminase and expanding its substrate spectrum**

18:45 – 19:15 Burckhard Seelig, Harvard Medical School, USA  
**In vitro selection and evolution of novel enzymes**

**Wednesday, September 26, 2007 (continued)**

19:30 – 21:00          Dinner

21:00 – 23:00          Poster Session



**Thursday, September 27, 2007**

- 07:00 – 08:30 Breakfast
- “The future of enzyme engineering”***
- Session chair: Alex Zaks, Schering-Plough
- 08:30 – 09:15 David Baker, University of Washington, USA  
**Computational design of new enzyme catalysts**
- 09:15 – 09:45 Jiri Damborsky, Masaryk University, Czech Republic  
**Keyhole-lock-key model of enzymatic catalysis: engineering of tunnels in proteins with buried active sites**
- 09:45 – 10:15 Gerrit Poelarends, University of Groningen, The Netherlands  
**Catalytic promiscuity and the divergence of enzyme activity in the tautomerase superfamily**
- 10:15 – 10:45 Coffee break
- 10:45 – 11:30 Jon Thorson, University of Wisconsin, USA  
**An enzymatic toolbox for small molecule glycosylation**
- 11:30 – 12:00 Sridhar Govindarajan, DNA 2.0, USA  
**Mapping sequence space: Applications in protein engineering**
- 12:30 – 13:30 Lunch
- 12:30 – 16:30 *ad hoc* discussions/free time
- 16:30 – 17:00 Afternoon coffee
- 17:00 – 18:00 Selected presentations from posters  
Session chairs: Dick Janssen, University of Groningen
- 18:00 – 19:15 Enzyme Engineering Award lecture  
Frances Arnold, California Institute of Technology, USA  
**Enzymes by Evolution**  
Session chair: Jeffrey Moore, Merck
- 19:15 – 21:00 Conference banquet

**Friday, September 28, 2007**

07:30 – 09:00      Breakfast

09:30              Departures