

Program

Enzyme Engineering XVII

November 9-14, 2003

Hilton of Santa Fe
Sweeney Conference Center
Santa Fe, New Mexico

Conference Co-Chairs:

Professor Stephen Benkovic
Pennsylvania State University

Dr. Jeffrey Moore
Merck & Co., Inc.

Professor Chi-Huey Wong
The Scripps Research Institute

Poster Chair

Dr. Birgit Kosjek
Merck & Co., Inc.

ECI

Engineering Conferences International
6 MetroTech Center
Brooklyn, NY 11201
T: 1-718-260-3743 - F: 1-718-260-3754
info@eci.poly.edu - www.engconfintl.org

Engineering Conferences International

Engineering Conferences International (ECI) is the successor program to the United Engineering Foundation conferences program that was established in 1962 to provide an opportunity for the exploration of problems and issues of concern to engineers from many disciplines. ECI is a not-for-profit partnership between the Engineering Conferences Foundation and Polytechnic University.

The format of the weeklong research conference provides morning and late afternoon sessions in which oral presentations are made and posters are on display. Available time is included during the afternoons for *ad hoc* meetings, informal discussions, and/or recreation. This format is designed to enhance rapport among participants and promote dialogue on the development of the meeting. We believe the conferences have been instrumental in generating ideas and disseminating information to a greater extent than is possible through more conventional forums.

All participants are expected both to attend the entire conference and to contribute actively to the discussions.

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**Hilton of Santa Fe
100 Sandoval Street
Santa Fe, New Mexico 87501**

**Tel: 1-505-988-2811
Fax: 1-505-598-6435**

Sweeney Center Fax: 1-505-955-6223

Notes

All technical sessions will be held at the Sweeney Convention Center.

Audiotaping, videotaping and photography of presentations are prohibited.

Speakers – Please leave at least 5 - 10 minutes for questions and discussion.

Please do not smoke at any conference functions.

Turn your cellular telephones to vibrate or off during technical sessions.

Poster Sessions – All posters will be on display all week; however, poster presenters will be available by their posters only during their scheduled session (either I, II, or III). Posters should be removed on Thursday before the banquet.

All breakfasts are buffets. Most dinners are sit-down plated meals. Out of courtesy to other participants, please be on time for dinner for efficient service!

Sign-ups for Tuesday's "dinner on your own" should be done by Monday at 7:30 pm.

Please sign up by Monday at 7:30 pm at one of our selected restaurants if you'd like to join other Enzyme Engineering participants for an evening out in Santa Fe.

The organizers would like to thank the following for their generous support of this conference:

E.I. DuPont De Nemours

Genencor International, Inc.

Japanese Society of Enzyme Engineering

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Novozymes NA, Inc.

Proctor & Gamble

Sunday, November 9, 2003

- 04:00 pm – 07:00 pm Registration (Ortiz Room, Hilton Hotel)
- 05:00 pm – 07:00 pm A representative from the Santa Fe Convention and Visitors Bureau will be available for questions.
- 06:00 pm – 07:30 pm Welcome *reception* (Chamisa, Hilton Hotel)
- 07:30 pm *Dinner* (Mesa Ballroom, Hilton Hotel)
Presentation by the Santa Fe Convention and Visitors Bureau at
08:00 pm

Monday, November 10, 2003

- 07:00 am – 08:30 am *Breakfast* (Mesa Ballroom, Hilton Hotel)
- 08:30 am – 08:55 am Conference Opening
Welcome: Conference Chairs: Benkovic, Moore, Wong
Allen Laskin, ECI
- 08:55 am **SESSION I**
Directed Evolution of Biocatalysts – Part 1
Chairperson: Carsten Andersen, Novozymes
- 09:00 am – 09:45 am Reinhard Sterner, University of Cologne, Germany
Evolution and design of (beta/alpha)-barrel enzymes
- 9:45 am – 10:30 am Barry Stoddard, Hutchison Cancer Research Center, USA
Engineering homing endonucleases to recognize novel target sites: The creation of gene-specific reagents
- 10:30 am – 11:00 am Coffee Break
- 11:00 am – 11:45 am Mark Burk, Diversa Corporation, USA
Discovery and optimization of enzymes for chemical transformations through biodiversity access and directed evolution technologies
- 11:45 am – 12:30 pm Nicholas Turner, University of Edinburgh, Scotland
Deracemization reactions using enzymes obtained by directed evolution
- 12:30 pm – 02:30 pm *Lunch*
Poster Session #1
- 02:30 pm – 05:00 pm Free time for recreation/ *ad hoc* meetings
(poster area remains open)
- 05:00 pm - **SESSION II**
Directed Evolution of Biocatalysts – Part 2
Chairperson: Paul Swanson, Dow Chemical
- 05:00 pm – 05:45 pm Don Hilvert, Swiss Federal Institute of Technology
Genetic selection as a tool for creating and characterizing enzymes
- 05:45 pm – 06:30 pm George Georgiou, University of Texas, USA
Engineering of highly selective, highly active enzymes

Monday, November 10, 2003 (continued)

06:30 pm –07:15 pm Ranjini Chatterjee, Codexis, Inc., USA
Applications of gene shuffling in commercial biocatalytic
processes.

08:00 pm *Dinner* (Mesa Ballroom, Hilton Hotel)

Tuesday, November 11, 2003

- 07:00 am – 08:30 am *Breakfast* (Sweeney Center)
- 08:30 am – **SESSION III**
Industrial Biocatalysts – Part 1
Chairperson: Tom Graycar, Genencor International, USA
- 08:30 am – 09:15 am Chaitan Khosla, Stanford University, USA
Balancing protein-protein interactions and enzyme-substrate interaction in engineered polyketide synthases
- 09:15 am – 10:00 am Jon Stewart, University of Florida, USA
Asymmetric carbonyl reductions and oxidations, discovery and applications
- 10:00 am – 10:30 am *Coffee Break*
- 10:30 am – 11:15 am Alex Zaks, Schering-Plough, USA
Biocatalysis in drug development: From metabolism to commercial manufacturing
- 11:15 am – 12:00 noon Christian Wandrey, Research Center (FZ) Jülich, Germany
Biocatalytic production of chiral diols
- 12:30 pm – 02:30 pm *Lunch*
Poster Session #2
- 02:30 pm – 04:45 pm Free time for recreation/ *ad hoc* meetings
- 04:45 pm **SESSION IV:**
Industrial Biocatalysts – Part 2
Chairperson: Stephanie Burton, University of Cape Town, South Africa
- 04:45pm – 05:30 pm Robert DiCosimo, DuPont Central R&D, USA
Hydrolysis of 3-hydroxyalkanenitriles using microbial nitril hydratase/amidase biocatalysts
- 05:30 pm – 06:15 pm Peng George Wang, Wayne State University, USA
Glycoengineering: Making glycoconjugates available for R&D
- 06:15 pm – 07:00 pm Discussion
- 07:00 pm Evening on your own

Wednesday, November 12, 2003

- 07:00 am – 08:30 am Breakfast (Mesa Ballroom, Hilton Hotel)
- 08:30 am – **SESSION V:**
Structure/Mechanism Approach to Enzyme Catalysis – Part 1
Chairperson: Pierre Monsan, INSA Bioprocess Laboratory
- 08:30 am – 09:15 am Jack Kirsch, University of California, USA
Rational design versus directed evolution of tyrosind aminotransferase activity from aspartate aminotransferase
- 9:15 am – 10:00 am Stephen Withers, University of British Columbia, Canada
Engineering of glycosidases for glycoside synthesis: Glycosynthases and thioglycoligases
- 10:00 am – 10:30 am *Coffee Break*
- 10:30 am – 11:15 am Romas Kazlauskas, University of Minnesota, USA
Understanding and evolving more enantioselective enzymes
- 11:15 am – 12:00 noon David Cane, Brown University, USA
Mechanism and structure of biosynthetic enzymes
- 12:00 noon – 03:00 pm *Lunch*
Poster Session III
- 03:00 pm – 05:00 pm Free time for recreation/*ad hoc* sessions
- 05:00 pm **SESSION VI:**
Structure/Mechanism Approach to Enzyme Catalysis – Part 2
Chairperson: Hak-Sung Kim, KAIST
- 05:00 pm – 05:45 pm Andreas Bommarius, Georgia Institute of Technology, USA
A novel (R)-specific carbonyl reductase. But do we still need novel reductases and why?
- 05:45 pm – 06:30 pm Sakayu Shimizu, Kyoto University, Japan
Novel bioreduction system for large-scale production of chiral alcohols
- 06:30 pm – 07:15 pm Richard Gross, Polytechnic University, USA
Building and modifying polymers using lipases
- 07:15 pm *Dinner* (Mesa Ballroom, Hilton)

Thursday, November 13, 2003

- 07:00 am – 08:30 am *Breakfast* (Sweeney Center)
- 08:30 am – **SESSION VII:**
Pathway Engineering
Chairperson: Sima Sariaslani, DuPont Central Research
- 08:30 am – 09:15 am Seiichi Matsuda, Rice University, USA
Tinkering with terpene biosynthesis
- 09:15 am – 10:00 am John Frost, Michigan State University, USA
Delineation of shikimate pathway variants
- 10:00 am – 10:30 am *Coffee Break*
- 10:30 am – 11:15 am Jon Thorson, University of Wisconsin, USA
The impact of enzyme engineering and evolution on natural product glycorandomization
- 11:15 am – 12:00 noon Dick Janssen, Groningen Biomolecular Institute, The Netherlands
Engineered biocatalysts for the preparation of beta-lactam antibiotics
- 12:00 noon – 02:00 pm *Lunch*
- 02:00 pm – 02:45 pm Sima Sariaslani, DuPont Central Research, USA
Pathway engineering for conversion of renewable resources to industrial chemicals
- 02:45 pm – 03:45 pm Selected presentations from posters
- 03:45 pm – 04:15 pm *Coffee Break*
- 04:15 pm - **Enzyme Engineering Award Lecture**
Sponsor: Genencor International, Inc.
Presented by Thomas Graycor
- 07:30 pm – 08:00 pm *Reception*
- 08:00 pm *Banquet* (Mesa Ballroom, Hilton Hotel)
Entertainment by Chris Spears, Native American flautist

Friday, November 14, 2003

07:30 am – 08:30 am *Breakfast* (Hilton Hotel) and Departure

08:30 am Committee Meetings

