



The

**FERMENT OGRAM**

SPRING, 2003

The FermentOgram Editorial Board  
Deepak Bhatnagar Jeffrey Cary  
Rodney Bothast

FERMENTATION AND BIOTECHNOLOGY THE DIVISION O NEWSLETTER THE AMERICAN SOCIETY FOR MICROBIOLOGY

## NOTES FROM DIVISION O CHAIR

The Division O Program at the 103rd General Meeting of the American Society of Microbiology will feature three symposia and 134 poster presentations between May 18-22, in Washington, D.C. This is a record number of poster presentations for Division O.

Symposia span a wide range of areas in fermentation and biotechnology and include: New Insights into Microbial Toxin Production (J. W. Cary and K. C. Ehrlich), Nutritional Aspects of Lactic Acid Bacteria: Nutraceuticals and Intestinal Delivery (J. Hugenholz and W. Sybesma; cosponsored with Division P), and Metabolic Engineering of Industrially Significant Microbes (H. P. Blaschek and myself).

Posters will be presented in six sessions and include: Novel Organisms and Novel Products; Genetics and Gene Expression; Biotransformations, Microbial Degradation and Bioremediation; Industrial Enzymes and Fermentations; Renewable Chemicals from Biomass; and Biotechnology.

We continue to increase our membership and now have a total of 1,076 primary members and 655 secondary members. Thanks to the continuing efforts and outstanding presentations of our many members, we are a premier division of ASM.

Dr. Jens Nielsen, Director, Center for Process Biotechnology, Technical University of Denmark and an outstanding biochemical engineer and microbial physiologist will deliver our Division O lecture. He will discuss "From the Genome to the Fluxome: A Metabolic Engineering Challenge." Following Dr. Nielsen's lecture, the theme of metabolic engineering will continue in the accompanying symposium with prestigious

speakers from academia and industry.

All 15 graduate students eligible for travel grants of \$500 each to help defray the cost of participating in the general meeting were funded. Travel grants were made possible by the generous support of the Kikkoman Corporation, Dupont Company, Schering Plough, Elanco Animal Health, Division O, and ASM. We appreciate very much the industrial support very much in helping achieve our goal of providing travel grants to all those students making meritorious presentations in the Division O program.

The Division O Mixer is frequently recognized as a premier social event of the Annual Meeting. This recognition and the networking achieved at the mixer are made possible by a generous contribution from BD Diagnostic Systems. We are most grateful for their continuing support as the sole sponsor of our social event which will be held in Room 206 at the Washington Convention Center, Tuesday, May 20th from 7:00pm-10:00pm.

Finally, I would like to encourage our members to attend our Division O Business Meeting which will follow our symposium on Metabolic Engineering of Industrially Significant Microbes and will be held in Room 152 at 10:45am. A "free box lunch" will be served at the end of the meeting.

I would like to thank the ASM staff and the many members for their outstanding help over the past year. I look forward to seeing everyone in Washington.

*Rod Bothast, Chair, Division O, ASM*

## DIVISIONAL ACTIVITIES

### DIVISION O WEBSITE

I hope that by now many of you have been able to visit the ASM Division O website. The site can be accessed through the American Society for Microbiology main webpage ([www.asmya.org](http://www.asmya.org)) under "Scientific Divisions" or directly at <http://www.asmya.org/division/o/index.html>.



Two companies, Pfizer and Microbia, provided funding to cover about three quarters (\$750.00) of the cost of website development. Their kind support is recognized by inclusion of the corporate logos and links to their corporate websites on the main webpage. The remaining funds (\$250.00) needed to complete development of the website were provided from ASM Division O funds. **Additional funds are solicited to maintain and constantly upgrade the website. Please send your monetary support to the undersigned. Recognition of support will be given to each and every contributor.**

The site provides information such as Division Officers, a history of Division O by Arnie Demain, membership profile, news of upcoming meetings and events, Division O newsletters, links of interest, and much more. We think you will find the Division O website quite informative and a useful tool for outreach to potential new members. This site will only be as good as the Division O membership makes it, so please be sure to visit the site and give me or any of the Newsletter editorial board members your feedback.

*Jeff Cary, FermentOgram Editorial Board*

### THE DIVISIONAL LECTURE



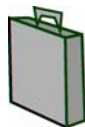
Dr. Jens Nielsen, Director, Center for Process Biotechnology, Technical University of Denmark and an outstanding biochemical engineer and microbial physiologist will deliver our Division O lecture. He will discuss "From the Genome to the Fluxome: A Metabolic Engineering Challenge." Following Dr. Nielsen's lecture, the theme of metabolic engineering will continue with prestigious speakers from academia and industry. The 2003 lecture will be held in Room 152 of the Washington Convention Center at 8:00am, Monday, May 19.

### THE DIVISION O MIXER



With the very generous support of **BD Diagnostic Systems** (manufacturers of DIFCO, and BBL products), the Division O mixer will be held on Tuesday, May 20, 2003 from 7:00 p.m. to 10:00 p.m. in Room 206 of the Washington Convention Center. A large crowd is expected, so come early and register for exciting door prizes!! Compare notes with other Divisional members over good food and drinks.

### THE DIVISION O BUSINESS MEETING



The Division O Business Meeting will be held on Monday, May 19, 2003 from 10:45-11:45 a.m. in Room 152 of the Washington Convention Center. Refreshments will be served. Please make every effort to attend. Free box lunches will be available.

### DIVISION O NEWSLETTER

The desire is to have this newsletter published twice a year — one in the fall and one in spring only if enough information is available to do so. **The Spring issue** will deal primarily with the general meeting and **the Fall issue** will contain all other pertinent information to the membership particularly regarding the ASM Annual meeting. Two issues will be possible only if the membership provides suggestions and news notes for both issues. **Members are encouraged to send short articles or viewpoints for inclusion in the Fall issue.** Please contact the Editorial Board for any comments.

*FermentOgram Editorial Board*

## MEMBERSHIP ALERT!





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## SPECIAL THANKS!



We are indebted to the following companies which, in 2002-2003, have financially supported the Division O activities:

**BD DIAGNOSTIC SYSTEMS  
DUPONT COMPANY**

**KIKKOMAN CORPORATION, JAPAN  
SCHERING-PLOUGH RESEARCH INSTITUTE**

**ELANCO ANIMAL HEALTH**

The Editorial Board is grateful to **Peter Baum**, **Lori A. Smith**, **Linda Barnes-Pretlow** and **Jennifer Mercurio** (ASM) for helping us with programming details (thanks for their patience!), to **Althea Hunt** of New Orleans for assistance in preparation of the Newsletter.

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### Division O Contacts:

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**Jeffrey W. Cary**, Editorial Board, FermentOgram, USDA, ARS, Southern Regional Research Center (Telephone: 504-286-4264; Fax: 504-286-4419; [jcary@srcc.ars.usda.gov](mailto:jcary@srcc.ars.usda.gov))

## NOMINATION FOR CHAIR, DIVISION O (Year 2002-2003)

A Nominating Committee, chaired by Dr. Jeffrey Cary, USDA-ARS-Southern Regional Research Center (e-mail: [jcary@srrc.ars.usda.gov](mailto:jcary@srrc.ars.usda.gov)), has been appointed consisting of three division members for selecting candidates from within the division membership for election to the office of Chair-Elect. The Committee consists of Drs. Arnold

Demain, Joan Bennett, Rod Bothast and Gary Payne. The information on the proposed candidates will be provided to ASM **no later than June 1, 2003**. Please direct your suggestions and comments to any of the committee members.

**Division O**  
**Fermentation and Biotechnology Officers**  
**July 1, 2002**

<b>Chair:</b>	Rodney J. Bothast, Ph.D. Director and Research Professor National Corn-to-Ethanol Research Pilot Plant Southern Illinois University Edwardsville 400 University Park Drive Edwardsville, Illinois 62025-3604	(618) 659-6737 FAX (618) 659-9163 <a href="mailto:rbothast@mail.ncaur">rbothast@mail.ncaur</a>
<b>Chair-Elect:</b>	Jeffrey W. Cary, Ph.D. Molecular Biologist U. S. Department of Agriculture Southern Regional Research Center 1100 Robert E. Lee Blvd. New Orleans, LA 70124	(504) 286-4264 FAX (504) 286-4419 <a href="mailto:jcary@srrc.ars.usda.gov">jcary@srrc.ars.usda.gov</a>
<b>Chair-Elect (2003):</b>	Gary A. Payne, Ph.D. North Carolina State University Department of Plant Pathology 1212 Partners II Raleigh, NC 27695-7567	(919) 515-6994 FAX (919) 513-0024 <a href="mailto:gary_payne@ncsu.edu">gary_payne@ncsu.edu</a>
<b>Councilor:</b>	J. H. David Wu, Ph. D. Univ. of Rochester Room 206 Grave H Hall Rochester, NY 14627	(716) 275-8499 FAX (716) 273-1348 <a href="mailto:davidwu@che.rochester.edu">davidwu@che.rochester.edu</a>
<b>Alternate Councilor:</b> (Advisor)	Deepak Bhatnagar, Ph. D. Research Geneticist U. S. Department of Agriculture Southern Regional Research Center 1100 Robert E. Lee Blvd. New Orleans, LA 70124	(504) 286-4388 FAX (504) 286-4419 <a href="mailto:dbhatnag@srrc.ars.usda.gov">dbhatnag@srrc.ars.usda.gov</a>
<b>Former Chair:</b>	Nancy P. Keller, Ph. D. 822 Russell Labs UW-Madison, Dept. of Plant Pathology 1630 Linden Drive Madison, WI 53706	(608) 262-9795 Lab (608) 265-2060 FAX (608) 263-2626 <a href="mailto:npk@plantpath.wisc.edu">npk@plantpath.wisc.edu</a>

## DIVISION O PROGRAM AT A GLANCE

*We have tried to provide the correct seminar and poster information in this newsletter, but please consult your meeting program and bulletin boards at the conference site for last-minute changes in schedule or location. Please try to attend all of them.*

### DIVISION O MEETINGS/DIVISIONAL LECTURE

Date, Time, Location	Description
Monday, May 19, 2003 8:30 a.m. Room 152, Washington Convention Center	<b><i>Divisional lecture</i></b> J. Nielsen "From the Genome to the Fluxome: A Metabolic Engineering Challenge"
Monday, May 19, 2003 8:45 a.m. - 11:45 a.m. Room 152, Washington Convention Center	<b><i>Annual Business Meeting</i></b>
Monday, May 20, 2003 7:00 p.m. - 10:00 p.m. Room 206, Washington Convention Center	<b><i>Mixer</i></b> (Generously supported by BD Diagnostic Systems)

### DIVISION O SYMPOSIA

Location	Description	
Room 152 (8:00 am)	<i>From the Genome to the Fluxome: A Metabolic Engineering Challenge</i>	Division O Lecture
Room 152 (9:00am-10:30am)	<i>Metabolic Engineering of Industrially Significant Microbes</i>	Division O Symposium
Room 152 (8:00-10:30am)	<i>Nutritional Aspects of Lactic Acid Bacteria: Nutraceuticals and Intestinal Delivery</i>	Division O Symposium
Room 152 (9:00-10:30am)	<i>New Insights into Microbial Toxin Production</i>	Division O Symposium

### DIVISION O POSTER SESSIONS

Location	Description
Room 139 (9:00am-12:00 noon)	<i>Genetics and Gene Expression</i>
Room 138 (9:00 am-12:00 noon)	<i>Industrial Enzymes and Fermentations</i>
Room 282 (3:00pm -4:00pm)	<i>Novel Organisms and Novel Products</i>
Room 180 (3:00pm-4:00pm)	<i>Renewable Chemicals from Biomass</i>
Room 181 (3:00pm-4:00pm)	<i>Biotechnology</i>



## STUDENT TRAVEL GRANTS (DIVISION O)

### CORPORATE PARTNERS STUDENT TRAVEL GRANTS

The following students are supported by an educational grant through the ASM Corporate Partners Program

Description	Student
Characterization of an EGFP Reporter for Monitoring Flatotoxin Enzyme Localization in <i>Aspergillus parasiticus</i>	<b>S. Hong</b> , J. E. Linz; Michigan State University, East Lansing, MI
Implementation of a PID controlled scheme for the regulation of methanol levels in the <i>Pichia pastoris</i> expression system	<b>I. A. Pla</b> <sup>1,2</sup> , H. J. Chang <sup>1</sup> , L. Damasceno <sup>1,3</sup> , T. Vannelli <sup>1,4</sup> , F. Lee <sup>1,4</sup> , G. Ritter <sup>4</sup> , L. J. Old <sup>4</sup> , C. Batt <sup>1,5</sup> , M. Shuler <sup>2</sup> ; <sup>1</sup> Cornell University/Ludwig Institute for Cancer Research Partnership, Ithaca, NY, <sup>2</sup> School of Chemical and Biomolecular Engineering, Cornell University, Ithaca, NY, Dept. of Microbiology, Cornell University, Ithaca, NY, <sup>4</sup> Ludwig Institute for Cancer Research, New York, NY, <sup>5</sup> Dept. of Food Science, Cornell University, Ithaca, NY
Engineering the Metabolism of <i>Escherichia coli</i> W3110 for Ethanol Acetate Production	<b>T. B. Causey</b> , S. Zhoe, K. T. Shanmugam, L. O. Ingram; University of Florida, Gainesville, FL
Expression of the <i>Vibrio fischeri luxI</i> Gene in <i>Bacillus subtilis</i> Strain 4Q7	<b>A. M. Tomaszewski</b> , J. Sanseverino, G. S. Saylor; University of Tennessee, Dept. of Microbiology and The Center for Environmental Biotechnology, Knoxville, TN
Enhancement of Trehalose Synthesis in Dairy Propionibacteria	<b>F. S. Cardoso</b> <sup>1</sup> , P. Gaspar <sup>1</sup> , J. Hugenholtz <sup>2</sup> , A. Ramos <sup>1</sup> , H. Santos; <sup>1</sup> IBET-ITQB/UNL, Oeiras, PORTUGAL, <sup>2</sup> NIZO Food Research, Ede, NETHERLANDS
Effect of a Subinhibitory Concentration of a Novel Furanone Compound on <i>Staphylococcus epidermidis</i> Biofilm Gene Expression	J. Baveja, Sydney, NSW, AUSTRALIA
Identification of a gene cluster encoding bile salt hydrolase and other transporter proteins from a bile salt resistance strain of <i>Lactobacterium infantis</i>	<b>G. Kim</b> <sup>1</sup> , B. Lee <sup>1,2</sup> ; <sup>1</sup> McGill University, Ste-Anne-de-Bellevue, PQ, CANADA, <sup>2</sup> Food Res. & Dev. Center, Agricultural & Agri-Food Canada, Saint-Hyacinthe, PQ, CANADA

### DUPONT COMPANY DIVISION O STUDENT TRAVEL AWARDS

The following students are supported by an educational grant from Dupont Company

Description	Student
Precipitation of Lead as Pb <sub>9</sub> (PO <sub>4</sub> ) <sub>6</sub> by Marine and Freshwater Bacteria	<b>W. F. O'Brien</b> <sup>1</sup> , C. E. Mire <sup>2</sup> , L. Jones <sup>1</sup> , L. E. Matejicka <sup>1</sup> , K. V. Ramanujachary <sup>1</sup> , G. B. Hecht <sup>1</sup> ; <sup>1</sup> Rowan University, Glassboro, NJ, <sup>2</sup> University Health Center, University of Tennessee, Memphis, TN
Microbial Succession During 2,4,6-Trinitrotoluene (TNT) Degradation in Bioreactors Inoculated with Naturally Occurring Microbes	<b>C. M. Jung</b> , D. A. Newcombe, N. L. Gardner, R. L. Crawford, D. L. Crawford; University of Idaho, Moscow, ID

## STUDENT TRAVEL GRANTS (DIVISION O)

### KIKKOMAN CORP. DIVISION O STUDENT TRAVEL AWARDS

The following students are supported by an educational grant from the Kikkoman Corporation, Japan

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Description	Student
Comparison and Analysis of Pyruvate Decarboxylase Gene Expression in a Gram-Positive Host	<b>L. A. Talarico</b> , L. O. Ingram, J. A. Maupin-Furlow; University of Florida, Gainesville, FL
Large-Scale Production and Partial Purification of Single-Chain Variable Domain Fragment Antibody (scFv-A33) in <i>Pichia pastoris</i>	<b>L. Damasceno</b> <sup>1,2</sup> , H. J. Chang <sup>1</sup> , I. Pla <sup>1,3</sup> , C. Rader <sup>4</sup> , L. Cohen <sup>5</sup> , F. Lee <sup>1,5</sup> , T. Vannelli <sup>1,5</sup> , G. Ritter <sup>5</sup> , L. J. Old <sup>5</sup> , C. Batt <sup>1,6</sup> ; <sup>1</sup> Cornell University/Ludwig Institute for Cancer Research Partnership, Ithaca, NY, <sup>2</sup> Dept. of Microbiology, Cornell University, Ithaca, NY, <sup>3</sup> School of Chemical and Biomolecular Engineering, Cornell University, Ithaca, NY, <sup>4</sup> The Scripps Research Institute, La Jolla, CA, <sup>5</sup> Ludwig Institute for Cancer Research, New York, NY, <sup>6</sup> Dept of Food Science, Cornell University, Ithaca, NY

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### DIVISION O STUDENT TRAVEL AWARDS

The following students are supported by an educational grant from the Division O general fund donations. (Schering-Plough Research Institute and Elanco Animal Health)

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Description	Student
Purification of a Non Heme Bromoperoxidase from an Acorn Bark Associated Bacterium and Identification of the Bacterium	<b>J. Kaur</b> , S. Rech; San Jose State University, San Jose, CA
Novel Structural Organization of Two Lactate Dehydrogenase Genes from the Genome of a <i>Lactobacillus</i> Strain Isolated from High-Temperature Fermenting Grape Musts	<b>J. Weekes</b> , G. Ü. Yüksel; University of Idaho, Moscow, ID
Cloning, Expression and Characterization of a Putative Multifunctional Cellulase from <i>Teredinibacter turnerae</i> , a Symbiont of Wood-boring Mollusks	<b>A. Burgoyne</b> , W. Morrill, D. L. Distel; The University of Maine, Orono, ME
Antioxidants Stimulate Growth and Ethanol Production by Anaerobic <i>Escherichia coli</i>	<b>S. A. Underwood</b> , K. T. Shanmugum, L. O. Ingram; University of Florida, Gainesville, FL

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## DIVISION O MEETING DETAILS

### DIVISION O LECTURE

(Monday, May 19, 8:00 am)

Room 152

#### From the Genome to the Fluxome: A Metabolic Engineering Challenge

*J. Nielsen, Tech. Univ. of Denmark, Lyngby, DENMARK*

#### Production of Low-Calorie Sugars

*P. Hols, Univ. catholique de Louvain-la-Neuve, Louvain-La-Neuve, BELGIUM*

#### Removal of Undesirable Sugars from Dairy and Soy Sources

*J. Piard, INRA, Jouy-en-Josas, FRANCE*

#### In Vivo Expression Technology (IVET) for *Lactobacillus plantarum*

*M. Kleerebezem, Wageningen Center for Food Science, Wageningen, NETHERLANDS*

### DIVISION O SYMPOSIUM (Monday, May 19, 8:00-10:30 am) Room 152

#### METABOLIC ENGINEERING OF INDUSTRIALLY SIGNIFICANT MICROBES

CONVENERS: *H. P. Blaschek, Univ. of Illinois, Urbana, IL*  
*R. J. Bothast, Southern Illinois Univ., Edwardsville, IL*

#### Engineering *Escherichia coli* for the Production of Higher Value Fermentation Products

*L. O. Ingram, Univ. of Florida, Gainesville, FL*

#### Pathway Manipulation in *Clostridium beijerinckii* for Butanol

*H. P. Blaschek, Univ. of Illinois, Urbana, IL*

#### Gene Array Technology and Metabolite Profiling as Guides for Genetic Engineering

*J. D'Elia, Archer Daniels Midland, Decatur, IL*

### DIVISION O SYMPOSIUM (Wed., May 21, 8:00-10:30 am) Room 206

#### NUTRITIONAL ASPECTS OF LACTIC ACID BACTERIA: NUTRACEUTICALS AND INTESTINAL DELIVERY

CONVENERS: *J. Hugenholtz, NIZO Food Research, Ede, NETHERLANDS*  
*W. Sybesma, Wageningen Agricultural Univ., Wageningen, NETHERLANDS*

#### Nutraceutical Production by Food-Grade Microorganisms

*J. Hugenholtz, NIZO Food Research, Ede, NETHERLANDS*

#### Increased Production of B-Vitamins through Metabolic Engineering

*W. Sybesma, Wageningen Agricultural Univ., Wageningen, NETHERLANDS*

### DIVISION O SYMPOSIUM (Thurs., May 22, 8:00-10:30 am) Room 101

#### NEW INSIGHTS INTO MICROBIAL TOXIN PRODUCTION

CONVENERS: *J. W. Cary and K. C. Ehrlich, USDA/ARS/SRRC, New Orleans, LA*

#### Gene Structure and Evolution of Fungal Secondary Metabolites Involved in Plant Disease

*J. D. Walton, Michigan State Univ., East Lansing, MI*

#### Mobile Morbidity: The Role of Gene Transfer in the Evolution of Pathogens and Toxin-Producing Microorganisms

*J. G. Lawrence, Univ. of Pittsburgh, PA*

#### Evidence for Adaptive Evolution of the Aflatoxin Gene Cluster

*K. C. Ehrlich, USDA/ARS/SRRC, New Orleans, LA*

#### Molecular Control of Fusarium Trichothecene Toxin Production

*S. P. McCormick, USDA/ARS/NCAUR, Peoria, IL*

#### On the Origin of Dinoflagellate Derived Polyketide Toxins: Dinoflagellate or Bacterial?

*K. S. Rein, Florida International Univ., Miami, FL*