



The FermentOgram Editorial Board
Deepak Bhatnagar Jeffrey Cary
Lonnie O'Neal Ingram

SPRING, 2000

THE FERMENTOGRAM

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

NOTES FROM DIVISION O CHAIR

The 100th General Meeting of the American Society for Microbiology is scheduled this year for May 21-25 in Los Angeles. Division O has developed an extensive program highlighting not only the recent progress in microbial fermentation and biotechnology research, but also the trends in microbial technology for future commercial applications.

Two colloquia "Microbiology and Biotechnology: Hope vs. Hysteria" (cosponsored with Division W) and "Biological Control: A Proven Technology for the New Millennium" (cosponsored with Division P) are the highlights of this year's Division O program.

In keeping with the tradition of excellent speakers who have been chosen as *Divisional Lecturers* in previous years (since 1978), this year's lecture "Fleming's Fungus and Other Microbial Superstars" will be presented by a well-recognized member of Division O, Professor Joan W. Bennett. Dr. Bennett is a past President of ASM, with a long time fascination with secondary metabolism. In her presentation, she will discuss the way in which history, sociology and literature can influence our understanding of biotechnology, microbiology and chemistry.

The Divisional lecture will be followed by the Division O Symposia on a related topic, "Trends in Fungal Technology for Commercial Applications." Other Division O symposia include (1) a Student Presentation Session entitled "Aflatoxins" (for lack of a more coherent title!) Student sessions are a rarity at this year's annual meeting; (2) "Regulation of Gene Clusters in Toxigenic Fungi;" (3) "Metabolic Engineering: Biocatalysis at the Crossroad;" and (4) "Genomics, Post-Genomics and Biotechnology," making up a total of seven oral sessions. Three poster sessions, "Enzymes, Biotransformations and Genetics of Industrial Organisms," "Fermentations and

Fax: 504-286-4419
(dbhatnag@nola.srrc.usda.gov)

Products," and "Mycotoxins and Antimicrobials" are scheduled for Monday, Tuesday, and Wednesday, respectively.

Thanks to ASM and the Kikkoman Corporation, Japan, almost all of the eligible applicants for the student travel award were funded this year (14 received the awards at \$500 each). In addition, corporations such as New Brunswick Scientific Co., Inc. contributed to Division O to support student travel. We are very grateful for the generous support we have received from many corporations every year to support Division O activities (acknowledged on page 4).

The Division O mixer is a hallmark of our social program at the annual meeting. And we are grateful to Becton Dickinson Microbiology Systems for the sole sponsorship of the entire event this year.

In previous years, the *Division O Business Meeting* was not as well attended as it should have been. I am, therefore, requesting our membership to attend this event and thank all those who have contributed to making this year's program a reality. I express my sincere gratitude to Drs. Arny Demain and Joan Bennett for their guidance in every aspect of program development, past chair, Sima Sariaslani, for providing we with a solid foundation to build on, Drs. Lonnie Ingram and Jeff Cary for assistance with abstracts and newsletter and support in general, and Dr. David Wu for his support and advice.

I look forward to seeing all of you in Los Angeles.

Deepak Bhatnagar, Chair
Division O, ASM

U.S. Department of Agriculture
Agricultural Research Service
Telephone: 504-286-4388

MEMBERSHIP ALERT!

It is not yet time to panic, but as you can see from the graphs provided here, there is a trend towards lower membership in the last few years, and the submission of abstracts is at best treading water. We need to change this trend, and support the growth of Division O.

There are plenty of microbiologists engaged primarily in fermentation and biotechnology research or processes who are not members of Division O. Additionally, members of other Divisions could be requested to assign Division O as their choice for secondary membership.

Members are encouraged to invite their colleagues and other ASM members to join Division O, and submit their abstracts under a broad range of topics listed for Division O:

1. Fermentation and Products
2. Mycotoxins and Mycoviruses
3. Microbial Degradations and Bioconversions
4. Molecular Genetics of Industrial Microorganisms
5. Biomolecular Processes
6. Novel Organisms and Novel Products
7. Industrial Enzymes
8. New Pharmaceuticals
9. Biotechnology

Division O Contacts:

Deepak Bhatnagar, Division O Chair, USDA, ARS, Southern Regional Research Center (Telephone: 504-286-4388; Fax: 504-286-4419; dbhatnag@nola.srrc.usda.gov)

Lonnie O'Neal Ingram, Division O Chair-elect (2000), The University of Florida (Telephone: 352-392-8176; Fax: 352-373-7034; lingram@micro.ifas.ufl.edu)

Jeffrey W. Cary, Editorial Board, FermentOgram, USDA, ARS, Southern Regional Research Center (Telephone: 504-286-4264; Fax: 504-286-4419;

jcary@nola.srrc.usda.gov)

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

A Nominating Committee, chaired by Dr. J-H. David Wu, University of Rochester (e-mail: davidwu@che.rochester.edu), has been appointed consisting of three division members for selecting two candidates from

within the division membership for election to the office of Chair-Elect. The information on the proposed candidates will be provided to ASM no later than May 15, 2000.

Division O Fermentation and Biotechnology Officers July 1, 2000
--

- | | | |
|---|---|---|
| Chair: | Lonnie O'Neal Ingram, Ph. D.
Dept. of Micro. & Cell Science
Box 110700 Bldg. 981
University of Florida
Gainesville, FL 32611-0700 | (352) 392-8176
FAX 392-5922
lingram@micro.ifas.ufl.edu |
| Chair-Elect: | Nancy P. Keller, Ph. D.
Dept. of Plant Pathology and
Microbiology
Texas A&M University
2132 TAMUS
College Station, TX 77843-2132 | (979) 845-0963
FAX 845-6483
nkeller@tamu.edu |
| Councilor: | Matthew D. Hilton, Ph. D.
Research Scientist
Lilly Research Labs
Lilly Corp. Center
Indianapolis, IN 46285 | (317) 276-3584
FAX 276-5281
hilton@lilly.com |
| Alternate Councilor: | J. H. David Wu, Ph. D.
Univ. of Rochester
Room 206 Grave H Hall
Rochester, NY 14627 | (716) 275-8499
FAX 273-1348
davidwu@che.rochester.edu |
| Former Chair:
(Advisor) Research Geneticist | Deepak Bhatnagar, Ph. D.
U. S. Department of Agriculture
1100 Robert E. Lee Blvd.
New Orleans, LA 70124 | (504) 286-4388
FAX 286-4419
dbhatnagar@nola.srrc.usda.gov |

DIVISIONAL ACTIVITIES

DIVISION O HOME PAGE

ASM maintains the Division O website on the Worldwide Web:



Fermentation and Biotechnology Division
(<http://www.asmusa.org/division/o/index.htm>)

Members are encouraged to visit this website. Our homepage is also accessible through the Membership section of the ASM Website. The site includes lists of Division O officers; a general profile on membership; newsletter; information about upcoming meetings, awards; and a list of websites of interest to Division O members.

Although the website has not been adequately organized since its inception last year, all efforts will be made this year to keep it up-to-date. Any suggestions for improvement of the site (such as additional information, graphics, etc.) are encouraged. Please contact the Division Chair or Chair-elect with your recommendations.

THE DIVISIONAL LECTURE



The Divisional Lecture entitled "*Fleming's Fungus and Other Microbial Superstars*," will be presented by Dr. Joan W. Bennett (Professor of Cell and Molecular Biology, Tulane University, New Orleans, LA) on Tuesday, May 23, 2000 at 8:00 a.m. (Room 406AB). The presentation will introduce some interesting bioactive "small molecules" and discuss the way in which history, sociology, and literature can influence our understanding of biotechnology, microbiology, and chemistry. Pressures to increase the pace of drug discovery ensure that the study of natural products will continue to be a robust field.

THE DIVISION O MIXER



With the very generous support of **Becton Dickinson Microbiology Systems**, the Division O mixer will be held on Tuesday, May 23, 2000 from 7:00 p.m. to 9:00 p.m. at the ASM HQ Hotel (Westin Bonaventure) in the Santa Barbara Room. 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 meeting will be held on Tuesday, May 23 in Room 406AB from 11:15 a.m. to 12:30 p.m. Please bring your ideas on: **(1)** scientific sessions for the Year 2001 ASM meeting to the business meeting (or contact Dr. Lonnie Ingram, the Division O Chair-elect); **(2)** enhancing the membership of Division O; **(3)** any changes to the format of Division O activities to encourage participation from its members. Any other suggestions will also be welcome. **(4)** Attend and give a helping hand to your elected representatives. Student Travel Award recipients will be recognized at this meeting.

DIVISION O NEWSLETTER

The newsletter will be published twice a year — one in the fall and one in spring. **The Spring issue** will deal primarily with the annual meeting and **the Fall issue** will contain all other pertinent information to the membership. Any suggestions and news notes will be welcome for both issues. Please contact the Editorial Board for any comments.



SPECIAL THANKS!

We are indebted to the following companies which, in 1999-2000, have financially supported the Division O activities:



BECTON DICKINSON MICROBIOLOGY SYSTEMS
KIKKOMAN CORPORATION, JAPAN
DUPONT COMPANY

MERCK RESEARCH LABORATORIES
NEW BRUNSWICK SCIENTIFIC CO., INC.
SCHERING-PLOUGH RESEARCH INSTITUTE

ARCHER DANIELS MIDLAND CO.

ELI LILLY & CO.

GENENCOR INTERNATIONAL, INC.

The Editorial Board is grateful to **Peter Baum, Jason Eggleston, 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.

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. This year we have made an effort to avoid any conflict between the Division O social and scientific sessions. Please try to attend all of them.

DIVISION O MEETINGS/DIVISIONAL LECTURE

Day, Date, Time, Location	Description
Tuesday, May 23, 2000 11:00 a.m.-12:30 p.m. Room 406 AB	<i>Annual Business Meeting</i>
Tuesday, May 23, 2000 8:00 a.m. Room 406 AM	<i>Fleming's Fungus and Other Microbial Superstars</i> (Divisional lecture)
Tuesday, May 23, 2000 7:00 p.m.-9:00 p.m. Westin Bonaventure Hotel (Santa Barbara Room)	<i>Mixer</i>

DIVISION O SYMPOSIA

Day, Date, Time, Location	Description	
Monday, May 22 (8:00-10:30 a.m.) Room 408 B	<i>Microbiology and Biotechnology: Hope vs. Hysteria</i>	Colloquium (Joint with Division W)
Monday, May 22 (10:45 -11:45 a.m.) Room 406 AB	<i>Aflatoxins</i>	Division O Student Symposium
Tuesday, May 23 (8:00 a.m.) Room 406 AB	<i>Fleming's Fungus and Other Microbial Superstars</i>	Division O Lecture
Tuesday, May 23 (8:45 a.m.) Room 406 AB	<i>Trends in Fungal Technology for Commercial Applications</i>	Division O Symposium
Wednesday, May 24 (8:00-10:30 a.m.) Room 406 AB	<i>Regulation of Gene Clusters in Toxigenic Fungi</i>	Division O Symposium
Wednesday, May 24 (8:00-10:30 a.m.) Room 408 B	<i>Biological Control: A Proven Technology for the New Millennium</i>	Colloquium (Joint with Division P)
Thursday, May 25 (8:00-10:30 a.m.) Room 408 A	<i>Metabolic Engineering: Biocatalysis at the Crossroad</i>	Division O Symposium
Thursday, May 25 (8:00-10:30 a.m.) Room 408B	<i>Genomics, Post-Genomics and Biotechnology</i>	Division O Symposium

DIVISION O POSTER SESSIONS

Day, Date, Time, Location	Description
57/O Monday (1:00-2:30 p.m.) Poster Board Nos. 333-355 Poster Presentation No. O-1 to O-25	<i>Enzymes, Biotransformations and Genetics of Industrial Organisms</i>
143/O Tuesday (1:00-2:30 p.m.) Poster Board Nos. 296-319	<i>Fermentation and Products</i>

Poster Presentation No. O-25 to O-48

222/O Wednesday (1:00-2:30 p.m.)

Poster Board Nos. 275-296

Poster Presentation No. O-49 to O-70

Mycotoxins and Antimicrobials

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

Poster Session Number/Day	Description	Student
57/O Monday	Construction of <i>Zymomonas mobilis</i> Expression Vector	O. D. Delgado , C. M. Abate, D. A. S. Callieri, F. Siñeriz; PROIMI, S. M. de Tucuman, ARGENTINA
57/O Monday	Utilization of Phosphotriesters as Sole Phosphorus Sources by <i>Escherichia coli</i> , K-12	B. C. Ericksen and M. Syvanen; University of California, Davis, CA
57/O Monday	Characterization of an N-acetyl-beta-D-glucosaminidase from the Hyperthermophile <i>Thermotoga neapolitana</i>	G. Khan-Koticha ¹ , D. Davis ¹ , D. A. Yernool ² , and D. E. Eveleigh ¹ ; ¹ Rutgers University, New Brunswick, NJ, ² Columbia University, New York, NY
143/O Tuesday	Ammoniation Pressurization-Depressurization as a Pretreatment for the Enzymatic Hydrolysis of Sugar Beet Pulp	B. L. Foster and J. B. Doran; Central Michigan University, Mt. Pleasant, MI
222/O Wednesday	Promoter Analysis of the Aflatoxin Biosynthesis Gene <i>nor-1</i> in <i>Aspergillus parasiticus</i> Using β -glucuronidase Reporter Constructs	M. J. Miller and J. E. Linz; Michigan State University, East Lansing, MI
222/O Wednesday	Molecular Characterization of the <i>aflR</i> and <i>verB</i> Genes from an Aflatoxigenic <i>Aspergillus ochraceoroseus</i>	C. A. Bennett , J. W. Cary, and M. A. Klich; USDA-ARS-Southern Regional Research Center, New Orleans, LA

KIKKOMAN CORP. DIVISION O STUDENT TRAVEL AWARDS

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

Poster Session No.	Description	Student
143/O Tuesday	Studies on the Fermentation Strategies for Production of the High-Viscosity Scleroglucan Polysaccharide	J. L. Fariña , C. F. González, N. I. Perotti, O. E. Molina, L. I. C. de Figueroa; PROMI, Tucumán, ARGENTINA
143/O Tuesday	Effect of Precursors in Riboflavin Production by <i>Ashbya gossypii</i> in Agroindustrial Waste	G. Lizama-Uc , B. Ortega-Morales, E. Ortiz-Vázquez; Instituto Tecnológico de Mérida, Mérida, MEXICO
143/O Tuesday	Assessment of Factors Affecting Biosurfactant and Bioemulsifier Production by <i>Bacillus subtilis</i> 09	A. C. Moran , N. G. Barengo, F. Siñeriz; PROIMI, Tucuman, ARGENTINA
143/O Tuesday	Indigenous Production of Cephamycin C by <i>Streptomyces clavuligerus</i>	K. K. Srinivasan , G. Sailaja, V. Sridevi, I. Sarada, P. Sridhar; Osmania University, Hyderabad, INDIA
143/O Tuesday	Production and Characterization of a New Bacterial Polysaccharide	P. Sukplang ¹ , A. Thongmee ² , N. Tarasub ² , and G. R. Vela ¹ ; ¹ Univ. of North Texas, Denton, TX, ² Rangsit Univ., Pratunthani, THAILAND
222/O Tuesday	Extracts of <i>Yucca sp.</i> and <i>Larrea tridentata</i> Inhibit Aflatoxin Production in Corn Kernels	C. A. Sanchez-Garcia , N. L. Heredia, and J. S. Garcia; Universidad de Nuevo Leon, San Nicolas, N.L., MEXICO
222/O Wednesday	Function of <i>aflJ</i> in Regulating Aflatoxin Biosynthesis	W. L. Du and G. A. Payne, North Carolina State University, Raleigh, NC
222/O	Extracts of Agaves Induced Morphological Changes in	S. Lozano , N. L. Heredia, J. S. Garcia; Universidad

DIVISION O MEETING DETAILS

COLLOQUIUM (Mon., May 22, 8:00-10:30 a.m.)

Universidad de Nuevo Leon, San Nicolas, N. L., MEXICO

MICROBIOLOGY AND BIOTECHNOLOGY:

HOPE VS. HYSTERIA

(COSPONSORED BY DIVISION W)

CONVENERS: NORMAN P. WILLETT, Temple University School of Medicine, Philadelphia, PA

late FRANK X. BIONDO, C.W. Post-Long Island University, Oyster Bay, NY

DEEPAK BHATNAGAR, USDA/ARS/SRRC, New Orleans, LA

The Changing Face of Industrial Microbiology

ARNOLD DEMAIN, Massachusetts Institute of Technology, Cambridge, MA

Edible Vaccines: From Concepts to Clinical Trails

CHARLES ARNTZEN, Boyce Thompson Institute, Ithaca, NY

Is the Threat of Bioterrorism Real?

D. A. HENDERSON, Johns Hopkins Center for Civilian Biodefense Studies, Baltimore, MD

Thinking Past Genomics

KAREN KETCHUM, The Institute of Genomic Research, Rockville, MD

Biotechnology: Ethics, Benefits & Pitfalls

DANIEL KOSHLAND, University of California, Berkeley, CA

DIVISION O STUDENT SESSION (Mon., May 22, 10:45-11:45 a.m.)

AFLATOXINS

CONVENERS: JEFFREY W. CARY, USDA/ARS/SRRC, New Orleans, LA

LONNIE O. INGRAM, University of Florida, Gainesville, FL

Molecular Characterization of the *afIR* and *verB* Genes from an Aflatoxigenic *Aspergillus ochraceoroseus*

C. A. BENNETT, J. W. CARY, and M. A. KLICH, USDA/ARS/SRRC, New Orleans, LA

Function of *afIJ* in Regulating Aflatoxin Biosynthesis

W. L. DU and G. A. PAYNE, North Carolina State University, Raleigh, NC

Promoter Analysis of the Aflatoxin Biosynthesis Gene *nor-1* in *Aspergillus parasiticus* Using β -glucuronidase Reporter Constructs

M. J. MILLER and J. E. LINZ, Michigan State University, East Lansing, MI

Extracts of *Yucca* sp. and *Larrea tridentata* Inhibit Aflatoxin Production in Corn Kernels

C. A. SANCHEZ-GARCIA, N. L. HEREDIA, and J. S. GARCIA,



DIVISION O LECTURE

(Tuesday, May 23, 8:00 a.m.)

FLEMING'S FUNGUS AND OTHER MICROBIAL SUPERSTARS

JOAN W. BENNETT, Tulane Univ., New Orleans, LA

Introduction

DEEPAK BHATNAGAR, Division O Chair

DIVISION O SYMPOSIUM (Tues., May 23, 8:45-10:30 a.m.)

TRENDS IN FUNGAL TECHNOLOGY FOR COMMERCIAL APPLICATIONS

CONVENER: JAN S. TKACZ, Merck Research Laboratories, Rahway, NJ

DOUGLAS E. EVELEIGH, Rutgers University, New Brunswick, NJ

Therapeutic Agents from Fungi

JAN S. TKACZ, Merck Research Laboratories, Rahway, NJ

Discovery of Novel Fungal Enzymes by Molecular Screening

LENE LANGE, Bagsvaerd, DENMARK

Commercial Mushrooms: Strain Development

RICHARD W. KERRIGAN, Sylvan Spawn Research, Kittanning, PA

Mycoprotein, a meat analogue from *Fusarium venenatum*

ANTHONY TRINCI, University of Manchester, Manchester, ENGLAND

Entomopathogenic Fungi as Biological Control Agents for Agriculture

STEPHEN WRAIGHT, USDA/ARS/U. S. Plant Soil Science & Nutrition Laboratory, Ithaca, NY



DIVISION O SYMPOSIUM (Wed., May 24, 8:00-10:00 a.m.)

REGULATION OF GENE CLUSTERS IN TOXIGENIC FUNGI

CONVENERS: *G. A. PAYNE, North Carolina State University, Raleigh, NC*

DEEPAK BHATNAGAR, USDA/ARS/SRRC, New Orleans, LA

Molecular Regulation of Aflatoxin Biosynthesis in *Aspergillus* spp.

DEEPAK BHATNAGAR, USDA/ARS/SRRC, New Orleans, LA

Signaling Pathways Connecting Secondary Metabolism and Development in *Aspergillus*

NANCY P. KELLER, Texas A&M University, College Station, TX

Differential Expression Analysis as an Approach to Understanding the Regulation of Aflatoxin Biosynthesis

GARY A. PAYNE, North Carolina State University, Raleigh, NC

Mycotoxin Biosynthesis in *Fusarium*

ROBERT H. PROCTOR, NCAUR ARS USDA, Peoria, IL

Microarrays and Applications to Secondary Metabolism Studies in *Fusarium*

MARIAN BEREMAND, Texas A&M University, College Station, TX

COLLOQUIUM (Wed., May 24, 8:00-10:30 a.m.)

BIOLOGICAL CONTROL: A PROVEN TECHNOLOGY FOR THE NEW MILLENNIUM (COSPONSORED WITH DIVISION P)

CONVENERS: *GREGORY R. SIRAGUSA, USDA/ARS/ARC, Athens, GA*

JEFFREY W. CARY, USDA/ARS/SRRC, New Orleans, LA

Functional Aspects of Probiotics for Disease Prevention and Control in Man

PATRICIA CONWAY, University of New South Wales, Sydney AUSTRALIA

Therapeutic Bacteriophage as a Natural Alternative to Antibiotics

ELIZABETH KUTTER, Evergreen State College, Olympia, WA

H-Mutant Phage Prevention of Harmful Plant Diseases

LEE JACKSON, Agri Phi, Inc., Logan, UT

Use of Biocontrol by Farmer Communities to Reduce Aflatoxin Contamination

PETER COTTY, USDA/ARS/SRRC, New Orleans, LA

Experiences with Normal Intestinal Microflora to Competitively Exclude *Salmonellae* in Poultry

STAN BAILEY, USDA/ARS/Richard Russell Research Center, Athens, GA

DIVISION O SYMPOSIUM (Thur., May 25, 8:00-10:30 a.m.)

METABOLIC ENGINEERING: BIOCATALYSIS AT THE CROSSROAD

CONVENERS: *PHILIP T. PIENKOS, Energy BioSystems Corp., The Woodlands, TX*
GREGG WHITED, Genencor International, Inc., Palo Alto, CA

Construction of a Recombinant *E. coli* for Ethanol Production
LONNIE O'NEAL INGRAM, University of Florida, Gainesville, FL

Strategies for Metabolic Engineering of *Clostridium acetobutylicum*
GEORGE BENNETT, Rice University, Houston, TX

Expansion of the Substrate Range for PCB Degradation
W. REINEKE, Wuppertal, Germany

Renewable Biocatalysis: Metabolic Pathway Engineering for the Production of 1,3-propanediol from glucose
GREGG WHITED, Genencor International, Inc., Palo Alto, CA

Building a Biocatalyst for the Oxidation of Hydrophobic Molecules
PHILIP PIENKOS, Energy BioSystems Corp., The Woodlands, TX

DIVISION O SYMPOSIUM (Thur., May 25, 8:00-10:30a.m.)

GENOMICS, POST-GENOMICS AND BIOTECHNOLOGY

CONVENER: *JOAN W. BENNETT, Tulane University, New Orleans, LA*

Fungal Natural Products Drug Discovery in the Genomic Era
ZHIQIANG AN, Merck Research Labs, Rahway, NJ

Using Genomics to Speed Up Drug Discovery
BETH D. DIDOMENICO, Schering-Plough Research Institute, Kenilworth, NJ

Microbial Genome Sequencing: A Window into Physiology and Evolution
KAREN NELSON, The Institute of Genomic Research, Rockville, MD

The Human and Mouse Genome Projects: A View from the Trenches
BRUCE ROE, University of Oklahoma, Norman, OK

Small Genomes and Big Questions: Politics, Money, and Ethics in the Postgenomic Era
JOAN W. BENNETT, Tulane University, New Orleans, LA