

The



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

SPRING, 2001

FERMENTOGRAM

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

NOTES FROM DIVISION O CHAIR

The Division O Program at the 101st General Meeting of the American Society for Microbiology will feature two colloquia, five symposia, and 122 poster presentations between May 20-24 in Orlando, Florida. This represents a 40% increase in poster presentations, a record number of presentations for Division O.

Symposia and colloquia span a wide range of areas in fermentation and biotechnology. Colloquia were organized by Dr. Burton Pogell (New Metabolites from Actinomycetes) and by Dr. Gregory Stephanopoulos (Metabolic Engineering). Symposium sessions will include Mycotoxins and other Secondary Metabolites from Fungi (Dr. Cary and Dr. Linz), Directed Evolution of Proteins (Dr. Pienkos and Dr. Keller), Industrial Enzymes (Dr. Luli), Production of Industrial Chemicals (Dr. Sariaslani and Dr. Bothast), and Functional Genomics and Regulation (Dr. Conway and myself; co-sponsored with Division K).

The past year has been a particularly exciting one for Division O with regard to membership. We have reversed the trend of modest declines and now boast a total of 1,063 members. Division O is growing stronger each day! This increase in membership is due in part to the outstanding presentations from Division O at the General meetings and to the continuing efforts of many members. Thank you all for your help in making this a premier Division of ASM.

Dr. Roy Doi, an outstanding microbial physiologist and geneticist, will deliver the Divisional Lecture for Division O. His lecture will discuss recent discoveries concerning the multiple types of hydrolases for cellulose and hemicellulose which are organized into complexes by

At the recent planning session for the General meeting in Orlando, the Division O Mixer was recognized as the premier social event by the ASM organizers. This recognition and the scientific comradeship achieved at the mixer are made possible by generous contributions from

Clostridium cellulovorans, and their potential applications for the conversion of lignocellulose to fuels and chemicals. Following Dr. Doi's lecture, the theme of industrial enzyme applications will be continued in the accompanying Division O Symposium, with a prestigious international group of speakers including Dr. Teeri from Sweden, Dr. Wilson from Cornell, Dr. Buelter from Cal. Tech, and Dr. Mitchinsons from Genencor.

A record 22 graduate students were eligible for travel grants of \$500 each to help defray the cost of participating in the General meeting. Ten were selected for funding. Travel grants were made possible by the generous support of Kikkoman Corporation, B.C. International, New Brunswick Scientific, Schering-Plough, Eli Lilly, and ASM. We are most grateful for sponsorship from these industrial employers of Division O members and hope to further increase, in the coming years, the number of companies supporting Division O activities.

Some of these donations arrived after the selection of travel awards. These funds will remain available to support graduate students for the 102nd meeting in 2002. In the 2000 General Meeting, Dr. Deepak Bhatnagar provided travel awards to support quality presentations by almost all eligible students. I encourage each of you to help us to further increase funding of travel awards through contributions by your employers. With your help, we should be able to provide travel grants to support all meritorious presentations by Division O students. Considering the companies employing Division O members, this is an attainable goal and will be a solid investment in the future of the Division.

Becton Dickinson Microbiology Systems. We are most grateful for their continuing support, the sole sponsor of the social event of year in Orlando for Fermentation and Biotechnology scientists, the Division O Mixer.

The Division O Business meeting will be held on

Tuesday, following the symposium on Industrial Enzymes and the Divisional lecture. Please begin thinking about two items which need our attention. The Division O web site could serve an expanded function to facilitate interactions among members, to advertise significant research contributions, and to recruit new members. It is time that we formalized a committee to maintain and guide this important tool. Members interested in this activity should E-mail me soon, please. Also, it is already time to begin identifying symposia and colloquia topics for the General meeting in 2002. Sessions must be submitted with speakers and titles near the end of the summer, amazingly early. I am sure that Dr. Nancy Keller will appreciate your timely help in this area.

Please join me in thanking Deepak Bhatnagar and Jeff Cary for the Spring Newsletter. In addition, I greatly appreciate the help and advice of Dr. David Wu, Dr. Nancy Keller, Dr. Deepak Bhatnagar, Dr. Arnie Demain, and Dr. Greg Luli among others during the past year.

I wish happiness and success for each of you, and look forward to our visiting in Orlando.

*Lonnie O. Ingram, Chair
Division O, ASM
Department of Microbiology and Cell Science
P.O. Box 110700, Bldg. 981 Museum Road
University of Florida
Gainesville, FL 32611
Telephone: 352-392-8176
Fax: 352-846-0969
Email: ingram@ufl.edu*

MEMBERSHIP ALERT!

Dr. Nancy P. Keller, Chair-elect of Division O, has moved from Texas A&M University to the University of Wisconsin-Madison where she is jointly appointed to the Plant Pathology and Food Microbiology and Toxicology Departments. Her new address is:

Dr. Nancy P. Keller
882 Russell Labs
UW-Madison, Department of Plant Pathology
1360 Linden Drive
Madison, WI 53706
Phone: (608) 262-9795
Lab Phone Number: (608) 265-2060
Fax (608) 263-2626
E-mail: npk@plantpath.wisc.edu

We welcome Dr. Rod Bothast to our team. He will be Chair of Division O following Nancy's term.

Rodney J. Bothast
USDA-ARS-NCAUR-FBR, Room 3326
1815 N. University Street
Peoria, IL 61604-3999
Phone: (309) 681-6566
Fax: (309)681-6427
E-mail: rbothast@mail.ncaur

Division O Contacts:

Lonnie O'Neal Ingram, Division O Chair (2000), The University of Florida (Telephone: 352-392-8176; Fax: 352-846-0969; ingram@ufl.edu)
Deepak Bhatnagar, Editorial Board, FermentOgram, USDA, ARS, Southern Regional Research Center (Telephone: 504-286-4388; Fax: 504-286-4419; dbhatnag@srrc.ars.usda.gov)
Jeffrey W. Cary, Editorial Board, FermentOgram, USDA, ARS, Southern Regional Research Center (Telephone: 504-286-4264; Fax: 504-286-4419; jcary@srrc.ars.usda.gov)

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

A Nominating Committee, chaired by Dr. Nancy Keller, University of Wisconsin-Madison (e-mail: npk@plantpath.wisc.edu), 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, Lonnie Ingram and Deepak Bhatnagar. The information on the proposed candidates will be provided to ASM **no later than June 1, 2001.**

Division O Fermentation and Biotechnology Officers July 1, 2000
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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 (352) 846-0969 ingram@ufl.edu
Chair-Elect:	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 npk@plantpath.wisc.edu
Chair-Elect (2002):	Rodney J. Bothast, Ph.D. Microbiologist USDA-ARS-NCAUR-FBR, Room 3326 1815 N. University Street Peoria, IL 61604-3999	(309) 681-6566 Fax: (309)681-6427 rbothast@mail.ncaur
Councilor:	Matthew D. Hilton, Ph. D. Research Scientist Lilly Research Labs Lilly Corp. Center Indianapolis, IN 46285	(317) 276-3584 FAX (317) 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 (716) 273-1348 davidwu@che.rochester.edu
Former Chair: (Advisor) Research Geneticist	Deepak Bhatnagar, Ph. D. 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 dbhatnagar@srrc.ars.usda.gov

DIVISIONAL ACTIVITIES

DIVISION O HOME PAGE

ASM maintains the Division O website on the Worldwide Web:



Fermentation and Biotechnology Division
(<http://www.asmus.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 two years ago, 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. In addition, as the Chair Dr. Lonnie Ingram has indicated that a committee will be formed to maintain the website. **Volunteers are needed!!**

THE DIVISIONAL LECTURE



Dr. Roy Doi, an outstanding microbial physiologist and geneticist, will deliver the Divisional Lecture for Division O. His lecture, "*Clostridium cellulovorans*: A Versatile Degrader of Biopolymers," will discuss recent discoveries concerning the multiple types of hydrolases for cellulose and hemicellulose which are organized into complexes by *Clostridium cellulovorans*, and their potential applications for the conversion of lignocellulose to fuels and chemicals. The lecture is scheduled for 8:00 a.m. on Tuesday, May 22 in Room 312.



We are indebted to the following companies which, in 2000-2001, have financially supported the Division O activities:

BECTON DICKINSON MICROBIOLOGY SYSTEMS
KIKKOMAN CORPORATION, JAPAN
DUPONT COMPANY

ARCHER DANIELS MIDLAND CO.

GENENCOR INTERNATIONAL, INC.



THE DIVISION O MIXER

With the very generous support of **Becton Dickinson Microbiology Systems**, the Division O mixer will be held on Tuesday, May 22, 2001 from 7:00 p.m. to 10:00 p.m. in the Signature 1 Room of the Rosen Center Hotel (next door to the Orange County 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 meeting will be held on Tuesday, May 22 in Room 312 from 11:00 a.m. to 12:00 noon following the Division O Symposium on "Industrial Enzyme and Application." Please bring your ideas on: (1) scientific sessions for the Year 2002 ASM meeting to the business meeting (or contact Dr. Nancy Keller, 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 desire is to have this newsletter published twice a year — one in the fall and one in spring. **The Spring issue** will deal primarily with the general 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. 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

SPECIAL THANKS!



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

ELI LILLY & CO.

BC INTERNATIONAL

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

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

Day, Date, Time, Location	Description
Tuesday, May 22, 2001 11:00 a.m.-12:00 noon Room 312	Annual Business Meeting
Tuesday, May 22, 2001 8:00 a.m. Room 312	Divisional lecture <i>Clostridium cellulovorans</i> : A Versatile Degradator of Biopolymers
Tuesday, May 22, 2001 7:00 p.m.-9:00 p.m. Signature 1 Room, Rosen Center Hotel	Mixer (supported by Becton Dickinson Microbiology Systems)

DIVISION O SYMPOSIA

Day, Date, Time, Location	Description	
Monday, May 21 (8:00-10:30 a.m.) Room 311E	<i>Microbial Secondary Metabolites: From Farm to Pharmaceuticals</i>	Division O Symposium
Monday, May 21 (8:00-10:30 a.m.) Room 315	<i>Benefits and Risks of Molecular Biotechnology</i>	Colloquium (Developed by Divisions K & O)
Monday, May 21 (2:30-5:00 p.m.) Room 307	<i>Directed Evolution: From Proteins to Pathways</i>	Division O Symposium
Monday, May 21 (2:30-5:00 p.m.) Room 415A	<i>Functional Genomics: Global Regulation of Metabolism and Stress</i>	Division O Symposium
Tuesday, May 22 (8:00-10:30 a.m.) Room 312	<i>Industrial Enzymes and Applications</i>	Division O Symposium
Tuesday, May 22 (8:00 a.m.) Room 312	<u><i>Clostridium cellulovorans</i></u> : A Versatile Degradator of Biopolymers	Division O Lecture
Wednesday, May 23 (8:00-10:30 a.m.) Room 307	<i>New Metabolites from Actinomycetes with Novel Physiological Functions</i>	First Joint Colloquium of ASM and SAJ
Wednesday, May 23 (2:30-5:00 p.m.) Room 206	<i>Genetic Engineering for Production of Industrial Chemicals</i>	Division O Symposium

DIVISION O POSTER SESSIONS

Day, Date, Time, Location	Description
38/O Monday, May 21 (10:30 a.m.-12:00 noon) Poster Board Nos.: 372-375 Poster Presentation No. O-1 to O-4	<i>Mycotoxins and Mycoviruses</i>
72/O Monday, May 21 (1:00-2:30 p.m.) Poster Board Nos.: 366-399 Poster Presentation No. O-5 to O-29A	<i>Renewable Chemicals from Biomass</i>
169/O Tuesday, May 22 (1:00-2:30 p.m.) Poster Board Nos.: 354-373 Poster Presentation No. O-30 to O-49	<i>Antibiotics, Antimicrobials and New Pharmaceuticals</i>
170/O Tuesday, May 22 (1:00-2:30 p.m.) Poster Board Nos.: 374-389 Poster Presentation No. O-50 to O-65	<i>Industrial Enzymes and Applications</i>
230/O Wednesday, May 23 (10:30 a.m.-12:00 noon) Poster Board Nos.: 372-395	<i>Biocatalysis, Bioremediation, and Microbial Degradation</i>

Poster Presentation No. O-66 to O-86
256/O Wednesday, May 23 (1:00-2:30 p.m.)
Poster Board Nos.: 402-419

Biotechnology: Novel Organisms and Novel Products

Poster Presentation No. O-87 to O-104
303/O Thursday, May 24 (10:30 a.m.-12:00 noon)
Poster Board Nos.: 209-225

Genetics and Gene Expression in Industrial Microorganisms

Poster Presentation No. O-105 to O-121

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
72 Monday	<i>Responses to Changes in the Dilution Rate on 1,3-Propanediol Production by an Adhesive Strain of <u>Lactobacillus reuteri</u> CRL 1100</i>	P. Ledesma ¹ , A. L. Ragout ¹ , P. R. Cordoba ¹ , G. M. Font de Valdez ² , F. Siñeriz ¹ ; ¹ PROIMI, Tucumán, ARGENTINA; ² CERELA, Tucumán, ARGENTINA
169 Tuesday	<i>Response Surface Methods for Optimizing the Fermentation of a Cycloheximide Producing Streptomycete</i>	W. E. Carter , J. K. Mitchell; Ball State University, Muncie, IN
169 Tuesday	<i>The Isolation of a Stilbene-Degrading Bacterium for Use in the Synthesis of Hydroxylated Stilbene Derivatives</i>	P. J. Morin , M. C. Setzer, W. C. Setzer, J. G. Leahy; University of Alabama in Huntsville, Huntsville, AL
303 Thursday	<i>A New Low-Copy Positive Selection Vector for <u>Escherichia coli</u> and Lactic Acid Bacteria</i>	Y. J. Choi , B. H. Lee; McGill University, Ste-Anne-de-Bellevue, PQ, CANADA
303 Thursday	<i>Isolation of Genes Differentially Expressed in Primordium and Studies of Their Expression during Fruit Body Development of Shiitake Mushroom <u>Lentinula edodes</u></i>	X. Bian , W. L. Ng., H. S. Kwan; The Chinese Univ. of Hong Kong, Shatin, NT, HONG KONG SPECIAL ADMINISTRATIVE REGION OF CHINA

KIKKOMAN CORP. DIVISION O STUDENT TRAVEL AWARDS

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

Poster Session Number/Day	Description	Student
72 Monday	<i>An Innovative Purification Technique for Lactic Acid from <u>Lactobacillus casei</u>. Study of different operational conditions</i>	A. V. Sosa ¹ , P. R. Cordoba ¹ , N. I. Perotti ² ; ¹ PROIMI, Tucuman, ARGENTINA; ² PROIMI-UNT, Tucuman, ARGENTINA
303 Thursday	<i>Expression of Yeast Alcohol Acetyltransferase Genes in <u>Escherichia coli</u> and <u>Clostridium acetobutylicum</u> for the Production of CoA Esters</i>	C. E. Horton , G. N. Bennett, F. B. Rudolph; Rice University, Houston, TX

BC INTERNATIONAL DIVISION O STUDENT TRAVEL AWARDS

The following students are supported by an educational grant from BC International

Poster Session Number/Day	Description	Student
170 Tuesday	<i>Changing Substrate Specificity of <u>Thermotoga neapolitana</u> 1,4-β-D-glucan glucohydrolase by Directed Evolution</i>	J. K. McCarthy ¹ , D. A. Yernool ² , D. E. Eveleigh ¹ ; ¹ Cook College, Rutgers University, New Brunswick, NJ; ² Columbia University, New York, NY
170 Tuesday	<i>Isolation, Characterization, and Enzymatic Activities of a Fungus Isolated from Sugar Beet Pulp</i>	D. Slakovic , J. B. Doran-Peterson, A. Sharma; Central Michigan University, Mt. Pleasant, MI

SCHERING-PLOUGH RESEARCH INSTITUTE DIVISION O STUDENT TRAVEL AWARDS

The following students are supported by an educational grant from Schering-Plough Research Institute

Poster Session Number/Day	Description	Student
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DIVISION O MEETING DETAILS

DIVISION O SYMPOSIUM (Mon., May 21, 8:00-10:30 a.m.)

Rhodococcus sp.

G. N. STEPHANOPOULOS, Massachusetts Institute of Technology,
Cambridge, MA



MICROBIAL SECONDARY METABOLITES: FROM FARM TO PHARMACEUTICALS

CONVENERS: J. W. CARY, USDA/ARS/SRRC, New Orleans, LA
J. E. LINZ, Michigan State University, East Lansing, MI

Mode of Action of Trichothecene Mycotoxins

J. J. PESKA, Michigan State University, East Lansing, MI

Fumonisin: Molecular Biology and Ecology

A. E. DESJARDINS, USDA/ARS/Peoria, IL

Aflatoxin Biosynthesis in *Aspergillus* spp.: Molecular Regulation and Control Strategies

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

Candida™, a New Antifungal Derived from a Natural Product

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



Engineering Precursor Pathways for Production of Complex Polyketides

J. KEALEY, Kosan Biosciences, Inc., Hayward, CA

COLLOQUIUM (Mon., May 21, 8:00-10:30 a.m.)

BENEFITS AND RISKS OF MOLECULAR BIOTECHNOLOGY

METABOLIC ENGINEERING (DEVELOPED BY DIVISIONS K AND O)

CONVENER: G. N. Stephanopoulos, Massachusetts Institute of Technology, Cambridge, MA

Metabolic Engineering by Molecular Breeding

W. P. C. STEMMER, Maxygen, Redwood City, CA

Remodeling Bacterial Metabolism for Small Molecule Synthesis and Degradation: Development of Gene Expression Tools and their Application to Metabolic Engineering

J. D. KEASLING, University of California, Berkeley, CA

DNA Microarrays and Metabolic Control

J. C. LIAO, University of California, Los Angeles, CA

Metabolic Engineering of Indene Biocatalysis in

DIVISION O SYMPOSIUM (Mon., May 21, 2:30-5:00 p.m.)

DIRECTED EVOLUTION: FROM PROTEINS TO PATHWAYS

CONVENERS: P. T. PIENKOS, *Enchira Biotechnology Corporation, The Woodlands, TX*

N. P. KELLER, *UW-Madison, Madison, WI*

Directed Evolution by Ultra High Throughput Flow Cytometry

G. GEORGIOU, *Univ. of Texas, Austin, TX*

Creation of Enantioselective Biocatalysts by Directed Evolution

K. JAEGER, *Ruhr-Universitat Bochum, Bochum, GERMANY*

Probing the Temperature Limits of Enzyme Function by Directed Evolution

H. BERK, *California Institute of Technology, Pasadena, CA*

Analyzing Lactamase Functionally by Codon Randomization and Selection

T. PALZKILL, *Baylor College of Medicine, Houston, TX*

Creating Natural Compound Diversity by Molecular Breeding of Pathways

C. SCHMIDT-DANNERT, *Univ. of Minnesota, St. Paul, MN*



DIVISION O SYMPOSIUM (Tues., May 22, 8:00-10:30 a.m.)

INDUSTRIAL ENZYMES AND APPLICATIONS

CONVENER: G. W. LULI, *B.C. International Corporation, Alachua, FL*

DIVISION O LECTURE

(Tuesday, May 22, 8:00 a.m.)

***Clostridium cellulovorans*: A Versatile Degradere of Biopolymers**

R. H. DOI, *University of California, Davis, CA*

***Trichoderma reesei* Cellobiohydrolases: Action on Crystalline Cellulose**

T. TEERI, *Royal Institute of Technology, Stockholm, SWEDEN*

Structure-Function Studies of *Thermobifida fusca* Cellulases: Thermostable Catalysts with Broad pH Optima

D. B. WILSON, *Cornell University, Ithaca, NY*

Directed Evolution of Laccase

T. BUELTER, *California Institute of Technology, Pasadena, CA*

Protein Engineering of *Trichoderma reesei* EGIII

DIVISION O SYMPOSIUM (Mon., May 21, 2:30-5:00 p.m.)

FUNCTIONAL GENOMICS: GLOBAL REGULATION OF METABOLISM AND STRESS (COSPONSORED BY DIVISION O)

CONVENERS:

L. O. INGRAM, *University of Florida, Gainesville, FL*

T. CONWAY, *University of Oklahoma, Norman, OK*

Functional Genomic Approaches for Understanding Global Regulatory Circuits and Multidrug Resistance in Bacteria

M. H. SAIER, *University of California at San Diego, La Jolla, CA*

Genome-Wide Expression Profiling with Bioluminescent Reporter Gene Fusions in *Escherichia coli*

T. K. VAN DYK, *DuPont Company, Wilmington, DE*

Exploring the Anaerobic Metabolism of *Bacillus subtilis* by DNA Microarray

R.. YE, *Dupont Lifce Sciences, Wilmington, DE*

The Global Implications of Growth on Glucose

T. CONWAY, *University of Oklahoma, Norman, OK*



Global Regulatory Networks in *E. coli*

C. A. GROSS, *University of California, San Francisco, CA*

C. MITCHINSON, *Genecor International, Palo Alto, CA*

DIVISION O SYMPOSIUM (Wed., May 23, 2:30-5:00 p.m.)

GENETIC ENGINEERING FOR PRODUCTION OF INDUSTRIAL CHEMICALS

CONVENERS: S. SARIASLANI, *Dupont Central Research and Development, Wilmington, DE* and R. J. BOTHAST, *National Center for Agricultural Utilization Research, Peoria, IL*

Gene Expression Arrays Define the Physiological Basis for Increased Sugar Metabolism during Ethanol Production by Genetically Engineered *Escherichia coli* KO11

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

Production of Chemical Intermediates in Micoorganisms

A. A. GATENBY, *Dupont Central Research and Development, Wilmington, DE*

Towards Industrial Biocatalysts

B. WITHOLT, *Institute of Biotechnology, Zurich, SWITZERLAND*

**Metabolic Control Engineering for Production of Carotenoids
in *Escherichia coli***

J. C. LIAO, Univ. of California, Los Angeles, CA

**Green Chemistry for Production of Industrial Chemicals by
Microorganisms**

*S. SARIASLANI, Dupont Central Research and Development,
Wilmington, DE*



**THE FIRST JOINT COLLOQUIUM OF ASM AND
SOCIETY OF ACTINOMYCETES, JAPAN (SAJ)
(Wed., May 23, 8:00-10:30 a.m.)**

**NEW METABOLITES FROM ACTINOMYCETES WITH
NOVEL PHYSIOLOGICAL FUNCTIONS**

CONVENERS:

H. OGAWARA, Meiji Pharmaceutical University, Tokyo, JAPAN

B. M. POGELL, University of Maryland, College Park, MD

Screening and Biochemical Use of Cell Cycle Inhibitors

H. OSADA, Riken Institute, Riken, JAPAN

**Development of Transcription Regulators from Microbial
Products**

M. OTSUKA, Kumamoto University, Kumamoto, JAPAN

Screening and Molecular Design of Antidiabetic Agents

K. UMEZAWA, Keio University, Yokohama, JAPAN

**Molecular Mechanism and Physiological Functions of
Rapamycin**

S. L. SCHREIBER, Harvard University, Cambridge, MA

Peptide Deformylase Inhibitors from Actinomycetes

Z. YUAN, Versicor, Inc., Fremont, CA

*This is the first joint symposium of the ASM with the Society for
Actinomycetes, Japan (SAJ). Suggestions for future
collaborations would be welcomed by Dr. Ogawara or Dr. Pogell.*