

CONTENTS

Preface

**FRONTIERS IN POLYPEPTIDE PRODUCTION : SYMPOSIUM I**

*Expression in Prokaryotes : Session A*

Optimization of Heterologous Gene Expression Using Gram Negative Bacteria

Allan R. Shatzman

High-Level Expression of Proteins in *Pseudomonas* sp.

Taro Iizumi, Koichi Nakamura, Kyoichiro Sanda, and Tetsuro Fukase

Mono and Bivalent Antibody Fragments Produced in *Escherichia coli* : Binding Properties and Folding in Vivo

Peter Pack, Achim Knappik, Claus Krebber, and Andreas Pluckthun

A Novel Approach for Efficient *Escherichia coli* Production of Human IGF-I

Judy Chang and James Swartz

Gene Expression Using Gram-Positive Bacteria

Tadayuki Imanaka

*Expressing, Processing, and Secretion in Eukaryotes : Session B*

Secretion and Surface Expression in Microorganisms of Heterologous Proteins Important or Medical Research and Clinical Applications

Walter Fiers, Jan Demolder, Ronny Leemans, Marc Logghe, Marleen Maras, Nico ertens, Johan Robbens, Lothar Steidler, Roland Contreras, and Erik Remaut

Hybridoma culture : Optimization, Characterization, and Cost

Brian Maiorella

*Expression in Transgenic Systems : Session C*

Production of Human Hemoglobin in Transgenic Swine

J. Kevin O'Donnell, Mark E. Swanson, Michael J. Martin, Stephen H. Pilder, athleen M. Hoover, Victoria M. Huntress, Cynthia T. Karet, Carl A. Pinkert, illiam J. P. Lago, and John S. Logan

Expression of Human Protein C in Transgenic Swine

William H. Velander, Anuradha Subramanian, Arthur W. Degener, Tulin Morcol, ohn L. Johnson, Tracy D. Wilkins, Francis C. Gwazdauskas, Robert M. Akers, enryk Lubon, and William N. Drohan

Expression of Human Lactoferrin in Milk of Transgenic Animals

Rein Strijker, Gerard Platenburg, Jan Nuyens, Frank Pieper, Paul Krimpenfort, Will Eyestone, Adriana Rademakers, Erika Kootwijk, Patricia Kooiman, Harry van Veen, and Herman de Boer

## **FRONTIERS IN PRODUCTION OF METABOLITES : SYMPOSIUM II**

### ***Pathway Analysis and Pathway Engineering : Session A***

Optimization of Recombinant Fermentation Processes through the Analysis of Effects of Promoter Derepression and Metabolic Flux Change

Dewey D. Y. Ryu and Jeong-Yoon Kim

High-Level Expression of a Bacterial *cefE* Gene in *Penicillium chrysogenum*

Stephen W. Queener, Robert J. Beckmann, Cathleen A. Cantwell, Roland L.

Hodges, Deborah L. Fisher, Joe E. Dotzlaf, Wu-Kuang Yeh, and Derek McGilvray

Production of Tropane Alkaloids by Recombinant Plant Cells and Analysis of Metabolic Pathway

Yasuyuki Yamada, Takashi Hashimoto, and Dae Jin Yun

Two-Dimensional Gel Electrophoretic Approaches to the Analysis of Secondary Metabolic Pathway

Tom G. Holt, Karen M. Karlis, Richard L. Monaghan, and Charles J. Thompson

### ***Designing Novel Pathways : Session B***

Genetic Manipulation of Central Carbon Metabolism in *Escherichia coli*

Neilay Dedhia, Thomas Hottiger, Wilfred Chen, and James E. Bailey

The Synthesis of New Carbohydrate-Based Materials and Their Use for the Stabilization of Proteins

Matthew R. Callstrom, Tara G. Hill, Charles A. Wartchow, Michael E. Huston, M.

Bradley Smith, Mark D. Bednarski, Lynn M. Oehler, and Peng Wang

Manipulation of the Genes for Polycyclic Aromatic Hydrocarbon Degradation

Gerben J. Zylstra, Xiao Ping Wang, and Varsha A. Didolkar

### ***High Throughput Screens : Session C***

Mechanism-Based Screens for Natural Product Leads as Sources for Antitumor Drugs

Hirofumi Nakano, Tatsuya Tamaoki, and Fusao Tomita

### ***Nonprotein Biomaterials : Session D***

Emerging Technologies and Future Prospects for Industrialization of Microbially Derived Cellulose

R. Malcolm Brown, Jr.

Rheological Characteristics of Microbially Derived Sodium Hyaluronate

L. P. Yu, J. W. Burns, A. Shiedlin, Y. Guo, T. Jankowski, P. Pradipasena, and C. Rha

Production and Properties of Microbial Poly (hydroxyalkanoates)

Yoshiharu Doi, Yasushi Kawaguchi, Shigeo Nakamura, and Naoyuki Koyama

Potential Biomedical Applications of Partial Esters of the Polysaccharide Gellan

Vittorio Crescenzi, Mariella Dentini, and Lanfranco Callegaro

## **MICROBIOLOGY AND PHYSIOLOGY : SYMPOSIUM III**

### ***Primary Metabolites : Session A***

Production of Polyhydroxyalkanoic Acids by Bacteria and Their Application

Hans G. Schlegel and Alexander Steinbuechel

Bioenergetics and Application of Metabolite Excretion

Wil N. Konings, Bert Poolman, and Arnold J. M. Driessen

Physiological Improvements in Acetone Butanol Fermentation

Gerhard Gottschalk and Helga Gurpe

Physiological, Molecular, and Applied Aspects of Acetogenic Bacteria

Lars G. Ljungdahl

Thermophilic Enzymes : New Sources Uses, and Biodesigns

J. Gregory Zeikus, Saroj Mathupala, Yong-Eok Lee, Sergey Podkovyrov, Badal C. Saha,  
Menghsiao Meng, and Michael Bagdasarian