

Genetics and Molecular Biology of Industrial Microorganisms

Editors: **Charles L. Hershberger** and **Stephen W. Queener**, *Eli Lilly & Co., Indianapolis, Indiana*, and **George Hegeman**, *Indiana University, Bloomington*

This far-reaching volume has been produced in recognition of recent advances in our understanding of bacterial and nonbacterial microbial systems in industry, including a great deal of new interest in products of eucaryotic microorganisms, and of the true industrial status of recombinant organisms. It brings together the work of leading researchers moving to maximize the industrial potential of recombinant DNA technology. The contents, summarized below, are based on the Fourth ASM Conference on the Genetics and Molecular Biology of Industrial Microorganisms (popularly known as the "Bloomington Conference"), held in 1988.

CONDENSED CONTENTS

- I. **Perspectives with Industrial Microorganisms** (4 chapters by Demain, Hopwood, Cundliffe, and Archer et al.)
- II. **Biosynthesis of Macrocyclic Lactones** (4 chapters by Epp et al., Richardson et al., Streicher et al., and Donadio et al.)
- III. **Genes for Antibiotic Resistance and Biosynthesis** (4 chapters by Mansouri et al., Strohl et al., Donovan et al., and Suárez et al.)
- IV. **Genes for Developmental and Biosynthetic Pathways** (4 chapters by Chater, Champness et al., Schottel et al., and Tiraby et al.)
- V. **Genetic Structure and Plasticity in Streptomyces** (4 chapters by Cullum et al., Schrempf et al., Kinashi, and Hershberger et al.)
- VI. **Genetic Analysis and Manipulation in Streptomyces** (4 chapters by Stuttard, Baltz and McHennex, Chung and Crose, and Beckmann et al.)
- VII. **Applications of Dividing Bacteria** (4 chapters by Lazarus et al., Wubbolts and Timmis, DeVault et al., and Reeve)
- VIII. **Heterologous Protein Products from Cell Culture** (2 chapters by Kellems et al. and Grimmell et al.)
- IX. **Molecular Studies in β -Lactam-Producing Fungi and Streptomyces** (5 chapters by Jensen et al., Miller and Ingolia, Penalva et al., Veenstra et al., and Baldwin et al.)
- X. **Molecular Biology and Regulation in Filamentous Fungi** (5 chapters by Marzluf and Fu, Ward, Finkelstein et al., Devchand et al., and Hynes and Andrianopoulos)
- XI. **Expression of Heterologous Proteins in Yeasts** (5 chapters by Meyhack et al., Thim et al., Bitter, Shuster et al., and Cregg et al.)

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A comprehensive review of the field of sporulation research

REGULATION OF PROCARYOTIC DEVELOPMENT

Structural and Functional Analysis of Bacterial Sporulation and Germination

Edited by **Issar Smith**, *Public Health Research Institute, New York, N.Y.*,
Ralph A. Slepecky, *Syracuse University, Syracuse, N.Y.*, and
Peter Setlow, *University of Connecticut Health Center, Farmington*

The process of differentiation, by which a cell of one type gives rise to cells with a different morphology, physiology, and function, raises some of the most important questions in modern biology. This book presents an up-to-date review of current research on differentiation in procaryotes, especially in *Bacillus* and *Streptomyces* species, of which sporulation is the best studied example of this process. Other phenomena, i.e., the production of extracellular enzymes, antibiotics, and other secondary metabolites such as anti-insect spore crystals, all of which are of commercial importance, are reviewed. Thus, a nearly comprehensive picture of this spore field is given. Authors with specific expertise in the areas covered were chosen so that the emphasis would be on aspects not yet covered in detail or about which another viewpoint might be useful.

Microbiologists, biotechnologists, scientists in the food and pharmaceutical industries, molecular biologists, and workers interested in cellular differentiation will greatly benefit from this book, arising from the Tenth International Spores Conference, March 1988.

CONTENTS

1. Revised Genetic Map of *Bacillus subtilis* 168 (Pigot)
2. Spore Thermoresistance Mechanisms (Gerhardt and Marquis)
3. Genetic Manipulation, Cloning, and Functional Analysis of Sporulation Genes in *B. subtilis* (Youngman et al.)
4. Trigger Mechanism of Bacterial Spore Germination (Foster and Johnstone)
5. Metabolic Regulation of Sporulation and Other Stationary-Phase Phenomena (Sonenshein)
6. Subtilisin: a Redundantly Temporally Regulated Gene? (Valle and Ferrari)
7. Competence Regulon of *B. subtilis* (Dubnau)
8. Sigma Factors and Regulation of Transcription (Moran)

9. Initiation of Sporulation (Smith)
10. Forespore-Specific Genes of *B. subtilis* (Setlow)
11. Dependence Pathways for the Expression of Genes Involved in Endospore Formation in *B. subtilis* (Losick and Kroos)
12. Temporal and Spatial Control of Gene Expression during Sporulation (Stragier)
13. Role, Structure, and Molecular Organization of the Genes Coding for the Parasporal Delta Endotoxins of *B. thuringiensis* (Lereclus et al.)
14. Sporulation in *Streptomyces* spp. (Chater)

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MICROBIAL MATS

Physiological Ecology of Benthic Microbial Communities

Editors: **YEHUDA COHEN**, *Interuniversity Institute of Eilat, Eilat, and* **EUGENE ROSENBERG**, *Tel Aviv University, Ramat Aviv, Israel*

Microbial mats are probably the oldest form of life on earth as witnessed in the fossil record. They are common in a large spectrum of environments and play a key role in elemental transformations. Microbial mats pose interesting evolutionary questions now being addressed through comparative physiology and analysis of molecular structure, and benthic microbial mats provide fascinating ecosystems for the study of microbial adhesion, growth and development at interfaces, cell-to-cell interactions, and metabolic interlock among closely interacting microbial communities.

This book focuses on microbial processes in microbial mats and their interaction with the environment of deposition. It is based on an international conference held in Eilat, Israel, in September 1987.

CONDENSED CONTENTS

- I. **Environments of Depositions** (8 chapters)
- II. **Structure and Function of Benthic Microbial Communities** (9 chapters)
- III. **Regulation of Adhesion and Hydrophobicity of Cell Surfaces in the Formation of Microbial Mats** (6 chapters)
- IV. **Physiology of Major Mat-Building Microorganisms** (10 chapters)
- V. **Evolution of Mat-Forming Photosynthetic Procaryotes** (3 chapters)
- VI. **Biogeochemistry of Microbial Mats** (4 chapters)

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An elegant view of a complex macromolecule . . .

THE RIBOSOME

STRUCTURE, FUNCTION, & EVOLUTION

Edited by **Walter E. Hill**, *University of Montana, Missoula*; **Albert Dahlberg**, *Brown University, Providence, R.I.*; **Roger A. Garrett**, *University of Copenhagen, Copenhagen, Denmark*; **Peter B. Moore**, *Yale University, New Haven, Conn.*; **David Schlessinger**, *Washington University School of Medicine, St. Louis, Mo.*; and **Jonathan R. Warner**, *Albert Einstein College of Medicine, Bronx, N.Y.*

This comprehensive overview is a major new addition to literature on the ribosome, covering the structure, function, and evolution of this complex macromolecule in both prokaryotic and eukaryotic systems. The authors, an international group of leading experts representing 13 countries, have written and illustrated their chapters for use by all life scientists, including those outside the field.

The book opens with a personal, historical retrospective and summary by Masayasu Nomura, followed by historical insights on ribosome preparation by Alexander S. Spirin. From there, chapters turn to recent developments in every arena of research into the ribosome. Much of the current knowledge about the detailed mechanisms by which the ribosome is involved in protein biosynthesis has only recently been delineated thanks to a host of new research techniques. Additional information about how antibiotics and ribosomes interact and a view of the ribosome in its evolutionary context are also included.

Arising from the August 1989 International Conference on Ribosomes, this reference will be extremely useful to advanced students as well as investigators whose work either directly or indirectly touches on this subject.

CONDENSED CONTENTS

Historical (2 chapters by Nomura and Spirin). **Structure of Ribosomes and rRNA** (12 chapters by Noller et al.; Brimacombe et al.; Frank et al.; Boublik, Mandyam, and Timminia; Stoffler-Meilicke and Stoffler; Yonath et al.; Ehresmann et al.; Draper; Egebjerg, Larsen, and Garrett; Oakes et al.; Serdyuk et al.; and Wool et al.). **Probing rRNA Function** (4 chapters by Raué et al.; Tappich et al.; Cunningham et al.; and Hill et al.). **Initiation** (5 chapters by Van Knippenberg; Hartz, McPheeters, and Gold; Gualerzi et al.; Merrick, and Munroe and Jacobson). **Elongation** (5 chapters by Liljas; Rheimberger et al.; Zimmermann, Thomas, and Wower; Wintermeyer, Lill, and Robertson; Barra, Kuechler, and Steiner; Hardesty, Odum, and Czworkowski; Ehrenberg et al.; and Möller). **Termination** (2 chapters by Tate, Brown, and Kastner and Murgola et al.). **Ribosome Formation** (7 chapters by Nilsson et al.; Pace and Burgin; Srivastava and Schlessinger; Musters et al.; Warner et al.; Gerbi et al.; and Ware and Khanna-Gupta). **Antibiotic Mechanisms and Probes**

(3 chapters by Cundliffe; Cooperman, Weitzmann, and Fernández; and Ballesta and Lazar). **Translational Fidelity** (6 chapters by Kurland et al.; Dix, Thomas, and Thompson; Weiss et al.; Buckingham et al.; Bogostan et al.; and Culbertson et al.). **Evolution of Ribosomes** (8 chapters by Gouy and Li; Lake; Gray and Schnare; Wittmann-Liebold et al.; Matheson et al.; Finley, Bartel, and Varshavsky; Amils et al.; and Subramanian, Smooker, and Giese).

August 1992

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The First International Marine Biotechnology Conference (IMBC '89) in Tokyo, Japan in Sept. 1989 was organized by the Japanese Society for Marine Biotechnology. The Tokyo conference was a highly acclaimed success, and IMBC '91 should prove to be an equally exciting event. IMBC '91 will serve all those interested in marine biotechnology—from academic scientists to technologists to policy-makers. The event will focus on new breakthroughs in science, industrial applications, commerce and international policy issues of marine biotechnology. The technical presentations will consist of invited papers and poster sessions.

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Suggested Topics

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- Hydrothermal Vent Communities
- Global Change
- Marine Biodiversity
- Marine Systematics
- Symbiosis in Marine Environments
- Molecular Biology

TECHNOLOGY and APPLICATIONS

- Aquaculture
- Bioactive Substances
- Bioadhesion
- Biofouling and Corrosion
- Bioprocess Engineering
- Bioremediation
- Biosensors and Bioelectronics
- Cell Culture
- Deep Sea Exploration and Robotics
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POLICY

- Coastal Zone Development
- Intellectual Property Rights
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Registration

The deadline for conference pre-registration is **September 14, 1991**. Late or on-site registration can be made but at a higher fee. Payment must be made in U.S. dollars drawn from a bank in the United States.

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