

Pseudomonas

BIOTRANSFORMATIONS, PATHOGENESIS, AND EVOLVING BIOTECHNOLOGY

Edited by **Simon Silver** and **Ananda M. Chakrabarty**, *University of Illinois College of Medicine, Chicago*; **Barbara Iglewski**, *University of Rochester, Rochester, New York*; and **Samuel Kaplan**, *University of Texas Medical School, Houston*

Scientific interest in the genus *Pseudomonas* is now as multifaceted as the organisms themselves. Pseudomonads are variously pathogens of plants and animals, including humans; producers of siderophores which are beneficial to plants; natural scavengers whose activity results in biodegradation and removal of many natural and synthetic compounds; extremely useful systems for the study of metabolic pathways, gene structure, and gene expression; and producers of interesting industrial products. Because *Pseudomonas* species are so extremely important, there has been an explosive growth in research and information during the past several years, and state-of-the-art research methods are being applied to their fullest potential in these investigations.

All major aspects of *Pseudomonas* research, as well as investigations of several closely related bacteria, are encompassed in this review of the field, which had its origins in the third international symposium, "Pseudomonas 89," held in Chicago, Ill. Included are reviews of biochemical, biophysical, genetic, and molecular studies. What emerges is a true reflection of the extraordinary amount and types of available information on this important genus.

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Preface (Silver)

Introduction (Silver and Chakrabarty)

I. Pathogenesis (4 chapters by Vasil et al., Zielinski et al., Ohman et al., and Iglewski et al.)

II. Plant-Bacterial Interactions (6 chapters by Mills and Mukhopadhyay, Chatterjee et al., Weisbeek et al., Mindrinos et al., Schott et al., and Keller et al.)

III. Biotransformations (12 chapters by Davies et al., Furukawa et al., Gibson et al., Nakazawa et al., Witholt et al., Rodwell et al., Davison et al., Schell, Burns et al., Schlömann et al., Spain, and Ornston et al.)

IV. Plasmids, Vectors, Gene Mapping, and Cloning (7 chapters by Morales et al., Davison et al., Miller et al., Holloway et al., Lessie et al., Chang et al., and Haas et al.)

V. Cell Envelope and Transport (5 chapters by Trias and Nikaido, Siehnel et al., Paranchych et al., Sano et al., and Cervantes and Silver)

VI. Honorary Pseudomonads (4 chapters by Penfold and Pemberton, Neilands, Kaplan and Suwanto, and Friedrich et al.)

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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.

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Dor and Paz, Jørgensen, Palmisano et al., Revsbech et al., Ghiorse, Skyring et al., Oremland and King, and Des Marais et al.)

- III. Regulation of Adhesion and Hydrophobicity of Cell Surfaces in the Formation of Microbial Mats** (6 chapters by Shilo, Bar-Or et al., Rosenberg et al., Low and White, Marshall, and Rosenberg)
- IV. Physiology of Major Mat-Building Microorganisms** (10 chapters by Stal et al., Padan, Caumette, Post et al., van Gemerden and de Wit, de Wit and van Gemerden, Paerl et al., Truper and Galinski, Kuenen, and Wimpenny)
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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.

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W. E. C. Moore and Lillian V. H. Moore

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