Microbial Biodegradation Genomics and Molecular Biology

Edited by: Eduardo Díaz, Centro de Investigaciones Biologicas (CIB)-CSIC, 28040 Madrid, Spain
xiv + 402 pp., Jan. 2008
ISBN 978-1-904455-17-2, \$3% /£15-

Interest in the microbial biodegradation of pollutants has intensified in recent years as mankind strives to find sustainable ways to cleanup contaminated environments. The development of novel methodological

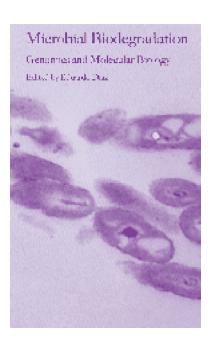
strategies, enabling detailed genomic, metagenomic, proteomic, bioinformatic and other high-throughput analyses of environmentally relevant microorganisms, has heralded a new era in microbial biodegradation and allowed unprecedented insights into key biodegradative pathways and the ability of organisms to adapt to changing environmental conditions.

In this unique book expert international authors critically review all of the most important topics in this exciting field from a molecular biology and genomics perspective. Essential reading for microbial degradation and bioremediation scientists and of general interest for microbiologists working in the field of environmental microbiology.



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Detecting Active Bacteria Involved in Biodegradation in the Environment Lee J. Kerkhof and Max M. Häggblom • Ch 4: Systems Biology Approach to Bioremediation with Extracellular Electron Transfer Derek R. Lovley, Radhakrishnan Mahadevan, and Kelly P. Nevin • Ch 5: Signalling Networks and Design of Pollutant Biosensors Manuel Carmona, María A. Prieto, Beatriz Galán, José L. García and Eduardo Díaz • Ch 6: Bioavailability, Chemotaxis, and Transport of Organic Pollutants Rebecca E. Parales, Kou-San Ju, Janet B. Rollefson and Jayna L. Ditty • Ch 7: Genomic Insights into Solvent Tolerance and Pumps That Extrude Toxic Chemicals María-Trinidad Gallegos, Antonio J. Molina-Henares, Xiaodong Zhang, Wilson Terán, Patricia Bernal, Yilmaz Alguel, María-Eugenia Guazzaroni, Tino Krell, Ana Segura, and Juan-Luis Ramos • Ch 8: A Genomic View on the Evolution of Catabolic Pathways and Bacterial Adaptation to Xenobiotic Compounds J.R. van der Meer • Ch 9: Genomic Insights into Oil Biodegradation in Marine Systems Vitor A.P. Martins dos Santos, Michail M. Yakimov, Kenneth N. Timmis and Peter N. Golyshin • Ch 10: Emerging Technologies to Analyze Natural Attenuation and Bioremediation Kazuya Watanabe and Yuki Kasai • Ch 11: High-Throughput Approaches to Analyze Waste Biotreatmentin Confined Environments Ben Stenuit, Laurent Eyers, Spiros N. Agathos and Isabelle George • Ch 12: Genomics in Metabolic Engineering and Biocatalytic Applications of the Pollutant Degradation Machinery Andreas Meyer and Sven Panke



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