

METHODS IN MICROBIOLOGY
V O L U M E 3 5

Extremophiles

Edited by
Fred A. Rainey & Aharon Oren



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Extremophiles Volume 35 Methods In Microbiology

John Robert Norris



Extremophiles Volume 35 Methods In Microbiology:

Extremophiles Ravi V. Durvasula, D. V. Subba Rao, 2018-01-09 Highly recommended by CHOICE Oct 2018 Extremophiles are nature's ultimate survivors thriving in environments ranging from the frozen Antarctic to abyssal hot hydrothermal vents. Their lifeforms span bacteria to fishes and are categorized as halophiles from hypersaline environments, acidophiles from acidic waters, psychrophiles from cold habitats, and thermophiles from warm waters. Extremophiles From Biology to Biotechnology comprehensively covers the basic biology, physiology, habitats, secondary metabolites for bioprospecting, and biotechnology of these extreme survivors. The chapters focus on the novel genetic and biochemical traits that lend these organisms to biotechnological applications. Couples studies of marine extremophile biology, genomics, and extremophile culture for biotechnological applications with the latest advances in bio-prospecting and bio-product development. Includes practical experiments that a laboratory can use to replicate extreme habitats for research purposes. Presents latest advances in extremophile genomics to give the reader a better understanding of the regulatory mechanisms of extremophiles. Offers insights into the production of commercially important extremozymes, carotenoids, bioactive compounds, and secondary metabolites of medicinal value. This unique guide serves as a resource for biotechnologists who wish to explore extremophiles for their commercial potential as well as a valuable reference for teaching undergraduate, graduate, and postgraduate students.

Manual of Environmental Microbiology Cindy H. Nakatsu, Robert V. Miller, Suresh D. Pillai, 2020-08-11 The single most comprehensive resource for environmental microbiology. Environmental microbiology, the study of the roles that microbes play in all planetary environments, is one of the most important areas of scientific research. The Manual of Environmental Microbiology, Fourth Edition, provides comprehensive coverage of this critical and growing field. Thoroughly updated and revised, the Manual is the definitive reference for information on microbes in air, water, and soil, and their impact on human health and welfare. Written in accessible, clear prose, the manual covers four broad areas: general methodologies, environmental public health microbiology, microbial ecology, and biodegradation and biotransformation. This wealth of information is divided into 18 sections, each containing chapters written by acknowledged topical experts from the international community. Specifically, this new edition of the Manual contains completely new sections covering microbial risk assessment, quality control, and microbial source tracking. Incorporates a summary of the latest methodologies used to study microorganisms in various environments. Synthesizes the latest information on the assessment of microbial presence and microbial activity in natural and artificial environments. The Manual of Environmental Microbiology is an essential reference for environmental microbiologists, microbial ecologists, and environmental engineers, as well as those interested in human diseases, water and wastewater treatment, and biotechnology.

Alkaliphiles in Biotechnology Gashaw Mamo, Bo Mattiasson, 2020-06-26 This book is devoted to alkaliphiles, their microbiology, biotechnological applications, and adaptive mechanisms. Alkaliphiles are extremophilic organisms that are adapted to thrive in alkaline environments. Over the years, a

wide variety of alkaliphiles belonging to domain Bacteria Archaea and Eukarya have been isolated and studied These organisms use various adaptive mechanisms to thrive in extreme alkaline environments and some of these adaptive mechanisms are of immense importance to a range of biotechnological applications In this book readers will learn about the adaptive strategies of alkaliphiles in colonizing alkaline habitats with a main focus on 1 the production of enzymes that are active and stable in the high pH environment and 2 the production of acids that decrease the pH of their immediate surrounding environment Enzymes that are operationally stable at high pH also known as alkaline active enzymes are desirable in several applications such as detergent formulating and leather tanning processes and they are among the major selling enzymes and the most important industrial enzymes The growing demand in many existing and emerging biotechnological applications led to the discovery characterization engineering and evaluation of diverse types of alkaline active enzymes In addition to the use of these fascinating enzymes in biotechnological applications readers will discover the mechanisms of action and stability of these enzymes at extreme pH Studies have shown that some alkaliphiles decrease the severity of the high pH of their media by producing substantial amount of organic acids which could be of great interest in various applications presented in this book In addition to enzymes and organic acids other products of biotechnological importance such as carotenoids bioactive substances and chelators have also attracted researchers attention Whole cells of alkaliphiles have been used as food and feed and are also useful in environmental applications such as in waste treatment and construction

Methods in Microbiology John Robert Norris,1969 **Biohydrometallurgy 2009** Edgardo R. Donati,M. Viera,Eduardo L. Tavani,Maria Alejandra Giaveno,Teresa L. Lavalle,Patricia A. Chiacchiarini,2009-05-19 a meeting point between Microbial Ecology Metal Recovery Processes and Environmental Remediation Selected peer reviewed papers from the 18th IBS IBS 2009 13 17 September 2009 Bariloche Argentina Livestock Production and Climate Change Pradeep K Malik,Raghavendra Bhatta,Junichi Takahashi,Richard Kohn,Cadaba S Prasad,2015-04-22 In a changing climate livestock production is expected to exhibit dual roles of mitigation and adaptation in order to meet the challenge of food security This book approaches the issues of livestock production and climate change through three sections I Livestock production II Climate change and III Enteric methane amelioration Section I addresses issues of feed quality and availability abiotic stress heat and nutritional and strategies for alleviation livestock generated nitrogen and phosphorus pollution and approaches for harnessing the complex gut microbial diversity Section II discusses the effects of climate change on livestock diversity farm animal reproduction impact of meat production on climate change and emphasising the role of indigenous livestock in climatic change to sustain production Section III deals with the most recent approaches to amelioration of livestock methane such as breeding for low methane emissions reductive acetogenesis immunization vaccine based concepts and archaea phage therapy *Methods in Microbiology* Fred A. Rainey,Aharon Oren,2006 *International Journal of Systematic and Evolutionary Microbiology* ,2009 **Extremophiles** ,2006-09-07 This latest volume in the Methods in

Microbiology series provides an overview of the methods used for the isolation cultivation and handling of a wide variety of extremophiles both at the stage of their isolation from natural samples and in pure culture It contains protocols specific for work with extremophiles as well as adaptations of standard microbiology protocols modified to enable the handling of extremophiles Emphasis will be on detailed time tested protocols that are specific for work with extremophiles and adaptations of standard microbiology protocols that have to be modified to be suitable for handling extremophiles Guides newcomers in the field of extremophile microbiology in the techniques used Provides an overview of all areas of extremophile research Many protocols could be adapted for use with a wide range of organisms *Extremophiles* Koki Horikoshi, William D. Grant, 1998-01-30 This text is devoted to a particular class of microbe focuses on its ecology systematics physiological molecular biology Also included is a discussion of potentially exploitable biotechnological industrial uses for extremophiles

Instruments, Methods, and Missions for Astrobiology, 2004 *Applications of Extremophiles in Biotechnology and Temperature-pressure Effects on Enzyme Activity and Stability* Jan Marie Ludlow, 1990 Molecular Biology and Biotechnology of Extremophiles R. A. Herbert, R. J. Sharp, 1992 **Comprehensive Medicinal Chemistry II, Volume 1** John Bodenhan Taylor, D. J. Trigg, 2007 This e book comprises 8 volumes with all chapter sections available as PDF or HTML and includes bibliographical references and index *Extremophiles* Charles Gerday, Nicolas Glansdorff, 2009 Extremophiles Overview of the Biomes Phylogeny of Extremophiles Survival Strategies and Membrane Properties of Bacteria and Archaea in Extreme Environments *Integration of Scientific and Industrial Knowledge on Biohydrometallurgy* Nicolas Guiliani, Cecilia Demergasso, Raquel Quatrini, Francisco Remonsellez, Carol Davis-Belmar, Gloria J. Levicán, Pilar Parada, Carlos Barahona, Rebekah Zale, 2013-10-07 Selected peer reviewed papers from the 20th International Biohydrometallurgy Symposium IBS2013 October 8-11 2013 Antofagasta Chile **Manual of Industrial Microbiology and Biotechnology** Arnold L. Demain, Julian E. Davies, Ronald M. Atlas, 1999 The editors have enlisted a broad range of experts including microbial ecologists physiologists geneticists biochemists molecular biologists and biochemical engineers who offer practical experience not found in texts and journals This comprehensive perspective makes MIMB a valuable how to resource the structure of which resembles the sequence of operation involved in the development of a commercial biological process and product **Applied and Environmental Microbiology**, 2007 **Can J Microbiol**, 2014 *Methods for General and Molecular Bacteriology* Philipp Gerhardt, 1994 A major revision of the classic manual from ASM This is the long awaited revision of ASM's extremely popular title Manual of Methods for General Bacteriology 1981 The goal of the book remains to provide a compact but thorough compendium of reliable methods of working with many different kinds of bacteria in laboratory settings New to this edition is the recognition of the dramatic role of molecular biological techniques and their impact on bacteriology

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