INTERNATIONAL MICROBIOLOGY (2004) 7:233–234
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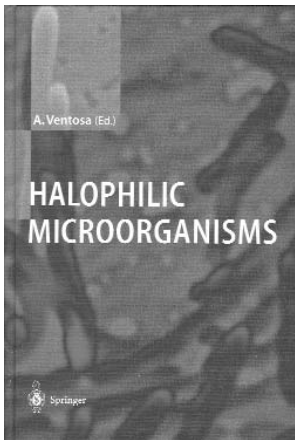

Halophilic Microorganisms

A. VENTOSA

2004. Springer-Verlag,
Berlin, Germany
349 pp, 16 × 26 cm
Price: 149.00 €
ISBN 3-540-00926-4

"Salt-loving" microorganisms include a great variety of heterotrophic and methanogenic archaea; photosynthetic, lithotrophic and heterotrophic bacteria; and some photosynthetic and heterotrophic eukaryotes (such as algae, protozoa and certain fungi). Halophiles are adapted to life at high salt concentrations and at the high osmotic pressures of their environments that result from the high salinity. They have the capacity both to balance this osmotic pressure and to resist the denaturing effects of salts. Halophilic microorganisms are found all over the world in a wide range of hypersaline environments, including soda lakes, salterns, saline soils and salted food products.

The book *Halophilic microorganisms* originated at the international meeting "Halophiles 2001", held in Seville, Spain, in September 2001. The book is edited by Antonio Ventosa, Professor at the University of Seville (Department of Microbiology and Parasitology, Faculty of Pharmacy). His current research focuses on extremophilic microorganisms, mainly halophilic prokaryotes, and he is one of the world's leading experts in this subfield of microbiology. The book is more than a compilation of relatively unconnected contributions related to the main topic. Instead, the well coordinated efforts of the authors have resulted in a complete and easy-to-read book that can be considered a textbook on halophilics. Divided into 22 chapters, *Halophilic microorganisms* provides state-of-the-art knowledge in the field of halophiles. In three large sections, a wide array of topics, comprising all the different lines of research in this field, are thoroughly discussed.

William D. Grant (University of Leicester, UK) has written an excellent introduction entitled "Half a lifetime in soda lakes". Grant takes the reader on a tour of the world's major soda lakes and halite deposits and introduces their microscopic inhabitants. The author then discusses some interesting aspects of the possible survival capabilities of halophilic microorganisms entrapped within fluid inclusions inside halite crystals. If this ability actually exists, microbiologists will be able to study the phylogeny of ancient, entrapped halophilic microbes—or perhaps such microbes are waiting for us inside those red Martian rocks! Chapters 1 to 6 focus on the ecological and taxonomic aspects of halophiles, such as the environments where these organisms are found and the interactions among them. The chapters on taxonomy describe several studies in halophilic phylogeny. The central sections (Chapters 7 to 18) deal with the physiology and molecular biology of halophiles, with particular emphasis on their adaptation to the salty environments in which they thrive and their capacity of osmoregulation. Halophilic enzymology and the biotechnological applications of these organisms are the main subjects of the last section (Chapters 19 to 22), which includes several examples of the importance of halophilic bacteria as organisms of industrial interest, e.g. as enzyme- and polysaccharide-producers or biodegraders of toxic contaminants. Currently, halophiles are of great interest to the food industry, where they are employed in the fermentation of soy and fish sauces, β-carotene production and aquaculture. Research in new halophilic biomolecules will allow their use in specialized applications in biocomputing or bioengineering. Three additional chapters take the reader deeper into the world of halophile research. The Prologue is a brief homage to the late Donn J. Kushner (1927–2001), who was Professor Emeritus, University of Ottawa and University of Toronto; former president of the Canadian Society for Microbiology and Editor-in-Chief of the *Canadian Journal of Microbiology*. Born in Lake Charles, Louisiana (USA), his scientific career developed mainly in Canada. For over 50 years; Prof. Kushner dedicated his life to research in different fields of microbiology, including halophilic microorganisms.

An appropriate epilogue adds an interesting historical aspect to the book. Hans Trüper (University of Bonn, Germany) devotes this final chapter to the use of salt by mankind throughout history. By knowing the history of this white gold, we also learn more about those organisms that live on, in and for it. *Halophilic microorganisms* will surely be a reference work in the field of extremophiles, and a must-read for students and researchers embarking on a study of halophiles. In addition, it is also recommended to anyone interested in knowing more about those microorganisms that, like humans, also love salt.

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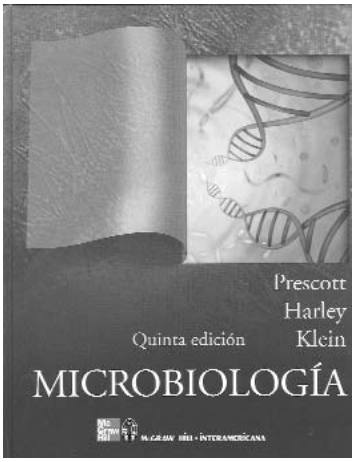

Microbiología (5ª ed.)*

LANSING M. PRESCOTT
JOHN P. HARLEY
DONALD A. KLEIN

2004. McGraw-Hill Interamericana, Madrid, Spain
1280 pp, 21.5 × 27.5 cm
Price: 95.00 €
ISBN 84-486-0525

* Spanish translation of *Microbiology* (5th ed.). McGraw-Hill, New York, NY, USA. 2002. ISBN 0-07-232041-9

"Microbiology often has been defined as the study of organisms and agents too small to be seen clearly by the unaided eye. […] Because objects less than about one millimeter in diameter cannot be seen clearly and must be examined with a microscope, microbiology is concerned primarily with organisms and agents this small and smaller. Its subjects are viruses, bacteria, many algae and fungi, and protozoa. […] Yet other members of these groups, particularly some of the algae and fungi, are larger and quite visible. For example, bread molds and filamentous algae are studied by microbiologists, yet are visible to the naked eye. Two bacteria that are visible without a microscope, *Thiomargarita* and *Epulopiscium*, also have been discovered" [Microbiología, chapter 1 p. 2]. It is not easy to provide a unique definition of microbiology. The fields it encompasses are so diverse and complex that no single book on the subject can offer everything to everyone. *Microbiología*, however, is a good place to start in that it discusses all of the general topics that should be included in an introduction to microbiology. The careful reader of this book will be prepared to understand the microbial world, what microbes are, what they do. And he or she may even dare to offer yet another definition of microbiology.

The book is organized into 44 chapters comprising eleven units. Part I contains basic information about prokaryotic and eukaryotic cells. Part II discusses the growth and nutritional requirements of bacterial microorganisms as well as the "control" of microorganisms by physical methods, such as temperature, and chemical agents, such as disinfectants. The ability to control the numbers of microorganisms is indispensable to maintaining hygienic conditions in the food, pharmacy and electronics industries. Several chapters later (part X), the mechanism of action of antibiotics that control infectious diseases are described. Part III discusses microbial metabolism. The essential and current topics of microbial genetics and molecular biology are found in parts IV and V. A brief description of viruses is developed in part VI. Part VII provides a general overview of microbial evolution and diversity. There is a complete updating of bacterial classification that reflects the latest edition of *Bergey's Manual of Systematic Bacteriology*. Other eukaryotic microorganisms, such as fungi, algae and protozoa, are also reviewed. In part VIII, the nature of microbial relationships with other living organisms, or symbiosis, and the interaction of these living organisms with the environment are discussed. Two units are dedicated to medical microbiology; the first focuses on nonspecific resistance and the immune response, and the second on microbial diseases and their control. Microbial infectious diseases caused by prokaryotes, viruses, protozoa and fungi are extensively described as well. Within each chapter, diseases are covered according to their mode of transmission. Finally, part XI, describes the applications of microbial activities to improving food and industrial production. Microbiology offers insight into an invisible world that many humans never learn about or whose existence they have never suspected. *Microbiología* is recommended not only to students of biology or health sciences, but to anybody who wishes to expand his or her knowledge of the biology of microorganisms, mainly because it is a comprehensive textbook. It contains excellent illustrations; there are also tables and graphs that condense information into an easily understandable format. Most of the chapters contain boxes that highlight items of interest, offering anecdotes from the field and descriptions of extraordinary or unusual microorganisms.

Each new edition of *Microbiology* has been revised and updated in order to keep up with the pace of microbiological advances. The 5th edition introduces two new topics : (i) Part V pays tribute to what has been referred to as the Golden Age of genomics, in which knowledge about bacterial genomes accumulated with breathtaking results, beginning in July 1995 with the complete sequencing of *Haemophilus influenzae*. As of August 2004, 210 complete genome have been published; these include the genomes of 19 archaeal, 159 bacterial and 32 eukaryal organisms. (ii) Part VIII is entitled "Ecología y simbiosis". Historically, microorganisms became known to the public after they were incriminated as agents of disease. Today, it is common knowledge that the majority of microorganisms play essential roles in maintaining terrestrial life. We and our fellow "macrobes" are ultimately reliant on the manifold activities of the unseen microbial world. The miniscule size of its members belies their tremendous importance.

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Most halophilic and all halotolerant organisms expend energy to exclude salt from their cytoplasm to avoid protein aggregation ('salting out'). To survive the high salinities, halophiles employ two differing strategies to prevent desiccation through osmotic movement of water out of their cytoplasm. Both strategies work by increasing the internal osmolarity of the cell.Â "Diversity of halophilic microorganisms: environments, phylogeny, physiology, and applications". Journal of Industrial Microbiology & Biotechnology. 28 (1): 56â€“63. doi:10.1038/sj/jim/7000176.Â ^ Gutierrez MC, Kamekura M, Holmes ML, Dyall-Smith ML, Ventosa A (December 2002). "Taxonomic characterization of Haloferax sp. (" H. alicantei") strain Aa 2.2: description of Haloferax lucentensis sp. nov". Keywords: Halophilic microorganisms, salt, NaCl, hypersaline, biodiversity, physico-chemistry, extreme environment, saline lakes, salterns, saline soils, osmotic stress, compatible solutes, biotechnology. Contents. 1. Introduction 2. Halophilism: Concept and Classifications 3. Phylogeny and Taxonomy 3.1.Â EXTREMOPHILES â€“ Vol. II - Halophily (Halophilism and Halophilic Microorganisms) - Ventosa, A. and Arahal, D. R. phylogenetic branches of the bacteria (Proteobacteria, High- and Low G+C Gram-positive bacteria, Spirochetes, Cytophaga-Flexibacter-Bacteroides branch, Cyanobacteria, etc.); and iii) some eukaryotic organisms, such as the brine shrimp Artemia salina or the blue green algae Dunaliella. Halophilic Microorganisms book. Read reviews from worldâ€™s largest community for readers. Microorganisms from extreme environments have attracted the atte...Â Let us know whatâ€™s wrong with this preview of Halophilic Microorganisms by A. Ventosa. Problem: Itâ€™s the wrong book Itâ€™s the wrong edition Other. In Halophilic Microorganisms pp 297â€“314 Edited by Ventosa A. Heidelberg: Springer; [Google Scholar]. RodrÃguez-Valera F., Ruiz-Berraquero F., Ramos-Cormenzana A. 1981; Characteristics of the heterotropic bacterial populations in hypersaline environments of different salt concentrations.Â Valderrama M.J., Quesada E., BÃ©jar V., Ventosa A., Gutierrez M.C., Ruiz-Berraquero F., Ramos-Cormenzana A. 1991; Deleya salina sp. nov., a moderately halophilic Gram-negative bacterium. Int J Syst Bacteriol 41:377â€“384 [CrossRef]. [Google Scholar].