

1. Record Nr.	UNINA9910813672203321
Titolo	Extremophiles [[electronic resource]] : sustainable resources and biotechnological implications // edited by Om V. Singh
Pubbl/distr/stampa	Hoboken, N.J., : Wiley-Blackwell, c2013
ISBN	1-118-39411-9 1-118-39414-3 1-283-70546-X 1-118-39412-7
Edizione	[1st ed.]
Descrizione fisica	1 online resource (472 p.)
Altri autori (Persone)	SinghOm V
Disciplina	578.75/8
Soggetti	Extreme environments - Microbiology Microbial biotechnology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	EXTREMOPHILES; Contents; Contributors; Introduction; 1 MOLECULAR EVOLUTION OF EXTREMOPHILES; 1.1 Introduction; 1.2 Molecular Evolution of Thermophiles; 1.2.1 Habitat; 1.2.2 Cellular Organization; 1.2.3 Genome; 1.2.4 Proteome; 1.3 Molecular Evolution of Psychrophiles; 1.3.1 Habitat; 1.3.2 Cellular Organization; 1.3.3 Genome; 1.3.4 Proteome; 1.4 Molecular Evolution of Halophiles; 1.4.1 Habitat; 1.4.2 Cellular Organization; 1.4.3 Genome; 1.4.4 Proteome; 1.5 Molecular Evolution of Alkaliphiles; 1.5.1 Habitat; 1.5.2 Cellular Organization; 1.5.3 Genome; 1.5.4 Proteome 1.6 Molecular Evolution of Acidophiles1.6.1 Habitat; 1.6.2 Cellular Organization; 1.6.3 Genome; 1.6.4 Proteome; 1.7 Molecular Evolution of Barophiles; 1.7.1 Habitat; 1.7.2 Cellular Organization; 1.7.3 Genome; 1.7.4 Proteome; 1.8 Engineering Extremophiles; 1.8.1 Microbiology; 1.8.2 Molecular Biology; 1.8.3 Bioinformatics; 1.9 Case Studies; 1.9.1 Biofuel Production; 1.9.2 Bioremediation; 1.9.3 Pesticide Biodegradation; 1.9.4 Escherichia coli: A Candidate Extremophile; 1.9.5 Oil-Spill-Cleaning Bacteria; 1.9.6 Potential Applications and Benefits 1.10 Implications of Engineered Extremophiles on Ecology, Environment, and Health1.11 Conclusions and Recommendations;

References; 2 ATTAINING EXTREMOPHILES AND EXTREMOLYTES: METHODOLOGIES AND LIMITATIONS; 2.1 Introduction; 2.2 Extremophiles: Types and Diversity; 2.2.1 Thermophiles; 2.2.2 Psychrophiles; 2.2.3 Halophiles; 2.2.4 Alkaliphiles; 2.2.5 Acidophiles; 2.2.6 Barophiles; 2.3 Extremolytes; 2.3.1 Production and Purification of Extremolytes; 2.3.2 Detection, Identification, and Quantification of Extremolytes; 2.3.3 Limitations; 2.4 Conclusions; References
3 STRATEGIES FOR THE ISOLATION AND CULTIVATION OF HALOPHILIC MICROORGANISMS3.1 Introduction; 3.2 Thalassohaline and Athalassohaline Hypersaline Environments; 3.3 Case Studies; 3.3.1 Isolation of Aerobic Chemoheterotrophic Archaea from Solar Salterns; 3.3.2 Magnesium-Requiring and Magnesium-Tolerant Archaea from the Dead Sea; 3.3.3 Isolation of Acidophilic Halophilic Archaea; 3.3.4 Isolation of Unusual Anaerobic Halophiles from Deep-Sea Brines; 3.3.5 Isolation of Polyextremophilic Anaerobic Halophiles; 3.3.6 Isolation of Halophilic Microorganisms Associated with Plants and Animals 3.3.7 Isolation of Halophilic Archaea from Low-Salt Environments3.4 The Upper Salinity Limits of Different Types of Energy Generation; 3.5 Final Comments; References; 4 HALOPHILIC PROPERTIES AND THEIR MANIPULATION AND APPLICATION; 4.1 Introduction; 4.2 Industrial Applications of Halophilic Organisms and Their Proteins; 4.3 Extreme and Moderate Halophiles and Their Proteins; 4.4 Generation of Low-Salt Stable Extreme-Halophilic Proteins; 4.5 Interconversion of Halophilic and Nonhalophilic Proteins; 4.5.1 Dimer-Tetramer Conversion of HaNDK and PaNDK; 4.5.2 Generation of Halophilic PaNDK 4.6 Soluble Expression of Recombinant Proteins

Sommario/riassunto

Explores the utility and potential of extremophiles in sustainability and biotechnology Many extremophilic bio-products are already used as life-saving drugs. Until recently, however, the difficulty of working with these microbes has discouraged efforts to develop extremophilic microbes as potential drug reservoirs of the future. Recent technological advances have opened the door to exploring these organisms anew as sources of products that might prove useful in clinical and environmental biotechnology and drug development. Extremophiles features outstanding articl
