

Contents

1 Growth and Metabolism of Extremophilic Microorganisms	1
Ching Tse and Kesen Ma	
2 Biodiversity, Adaptation and Biotechnological Importance of Bacteria Occurring in Cold Climates	47
Gundlapally Sathyanarayana Reddy, Madhab Kumar Chattopadhyay, and Sisinthy Shivaji	
3 Antimicrobial Potential of Cold-Adapted Bacteria and Fungi from Polar Regions	83
Angelina Lo Giudice and Renato Fani	
4 Thermophiles as a Promising Source of Exopolysaccharides with Interesting Properties.....	117
Margarita Kambourova, Nadja Radchenkova, Iva Tomova, and Ivanka Bojadjieva	
5 Ecophysiology and Application of Acidophilic Sulfur-Reducing Microorganisms.....	141
Anna P. Florentino, Jan Weijma, Alfons J.M. Stams, and Irene Sánchez-Andrea	
6 The Biofilm Lifestyle of Acidophilic Metal/Sulfur-Oxidizing Microorganisms.....	177
Ruiyong Zhang, Sören Bellenberg, Thomas R. Neu, Wolfgang Sand, and Mario Vera	
7 Acidophilic Microbes: Biology and Applications	215
Archana Sharma, Deepak Parashar, and Tulasi Satyanarayana	
8 Alkaliphilic Microorganisms in Biotechnology	243
Gashaw Mamo and Bo Mattiasson	

9	Recent Advances in the Nitrogen Metabolism in Haloarchaea and Its Biotechnological Applications	273
	Julia Esclapez, Mónica Camacho, Carmen Pire, Vanessa Bautista, Anna Vegara, Laia Pedro-Roig, Francisco Pérez-Pomares, Rosa María Martínez-Espinosa, and María José Bonete	
10	A Proteomics Approach for the Identification of Novel Proteins in Extremophiles	303
	Sung Ho Yun, Chi-Won Choi, Sang-Yeop Lee, Edmond Changkyun Park, and Seung Il Kim	
11	Functional Screening for the Discovery of New Extremophilic Enzymes	321
	Freddy Boehmwald, Patricio Muñoz, Patricio Flores, and Jenny M. Blamey	
12	Lipolytic Extremozymes from Psychro- and (Hyper-)Thermophilic Prokaryotes and Their Potential for Industrial Applications.....	351
	Skander Elleuche, Carola Schröder, and Garabed Antranikian	
13	Halophilic Bacteria and Archaea as Producers of Lipolytic Enzymes.....	375
	María de Lourdes Moreno, M. Carmen Márquez, María Teresa García, and Encarnación Mellado	
14	Extremophilic Proteases: Developments of Their Special Functions, Potential Resources and Biotechnological Applications	399
	Aneta Białkowska, Ewa Gromek, Tomasz Florczak, Joanna Krysiak, Katarzyna Szulczewska, and Marianna Turkiewicz	
15	Cold-Active β-Galactosidases: Sources, Biochemical Properties and Their Biotechnological Potential	445
	Hubert Cieśliński, Marta Wanarska, Anna Pawlak-Szukalska, Ewelina Krajewska, Monika Wicka, and Józef Kur	
16	Engineering of Extremophilic Phosphotriesterase-Like Lactonases for Biotechnological Applications	471
	Elena Porzio, Immacolata Del Giudice, and Giuseppe Manco	
17	α-Amylases from <i>Archaea</i>: Sequences, Structures and Evolution	505
	Štefan Janeček	
18	Proteins of DNA Replication from Extreme Thermophiles: PCR and Beyond	525
	Dennis W. Grogan	

19	Technical Developments for Vegetable Waste Biomass Degradation by Thermophiles	539
	Annarita Poli, Ilaria Finore, Annabella Tramice, Paola Di Donato, Barbara Nicolaus, and Licia Lama	
20	A Strategy for Designing Thermostable Enzymes by Reconstructing Ancestral Sequences Possessed by Ancient Life	581
	Satoshi Akanuma and Akihiko Yamagishi	
21	A Systems Biology View on Bacterial Response to Temperature Shift.....	597
	Marco Fondi, Emanuele Bosi, Angelina Lo Giudice, and Renato Fani	
22	Experimental Microbial Evolution of Extremophiles.....	619
	Paul Blum, Deepak Rudrappa, Raghuveer Singh, Samuel McCarthy, and Benjamin Pavlik	
23	Solid-Binding Peptides: Immobilisation Strategies for Extremophile Biocatalysis in Biotechnology	637
	Andrew Care, Peter L. Bergquist, and Anwar Sunna	
24	Molecular Dynamics Simulations to Study Structure-Function Relationship in Psychrophilic Enzymes	675
	Elena Papaleo, Matteo Tiberti, and Gaetano Invernizzi	
25	<i>Halobacterium</i> Expression System for Production of Full-Length <i>Plasmodium falciparum</i> Circumsporozoite Protein	699
	Wolf T. Pecher, Jong-Myoung Kim, Priya DasSarma, Ram Karan, Photini Sinnis, and Shiladitya DasSarma	
	Index.....	711

Biotechnology of Extremophiles:

Advances and Challenges

Rampelotto, P.H. (Ed.)

2016, XXIII, 720 p. 105 illus., 49 illus. in color.,

Hardcover

ISBN: 978-3-319-13520-5