

Contents



List of contributors	vii	9	Specialist Article	
Preface	xi		Plasmids	105
			<i>Georg Lipps</i>	
1 Introductory Chapter		10	Specialist Article	
The birth of the Archaea: a personal retrospective	1		Integration mechanisms: possible role in genome evolution	113
<i>Carl R. Woese</i>			<i>Qunxin She, Haojun Zhu and Xiaoyu Xiang</i>	
2 Review		11	Review	
Natural history of the archaeal domain	17		Genetics	125
<i>Patrick Forterre, Simonetta Gribaldo and Celine Brochier-Armanet</i>			<i>Moshe Mevarech and Thorsten Allers</i>	
3 Specialist Article		12	Specialist Article	
The root of the tree: lateral gene transfer and the nature of the domains	29		Genetic properties of <i>Sulfolobus acidocaldarius</i> and related Archaea	137
<i>David A. Walsh, Mary Ellen Boudreau, Eric Baptiste and W. Ford Doolittle</i>			<i>Dennis W. Grogan</i>	
4 Review		13	Review	
Diversity of uncultivated Archaea: perspectives from microbial ecology and metagenomics	39		Chromatin and regulation	147
<i>Christa Schleper</i>			<i>John N. Reeve and Kathleen Sandman</i>	
5 Specialist Article		14	Review	
Nanoarchaeota	51		DNA replication and the cell cycle	159
<i>Harald Huber and Reinhard Rachel</i>			<i>Victoria L. Marsh and Stephen D. Bell</i>	
6 Review		15	Review	
Families of DNA viruses infecting hyperthermophilic Crenarchaea	59		DNA repair	171
<i>David Prangishvili</i>			<i>Malcolm F. White</i>	
7 Review		16	Review	
Features of the genomes	75		Transcriptional mechanisms	185
<i>Hans-Peter Klenk</i>			<i>Michael Thomm and Winfried Hausner</i>	
8 Specialist Article		17	Specialist Article	
<i>Sulfolobus</i> genomes: mechanisms of rearrangement and change	95		Transcriptional regulation in Haloarchaea	199
<i>Kim Brügger, Xu Peng and Roger A. Garrett</i>			<i>Felicitas Pfeifer, Torsten Hechler, Sandra Scheuch and Simone Sartorius-Neef</i>	

18	Specialist Article Aminoacyl-tRNAs: deciphering and defining the genetic message <i>Alexandre Ambrogelly, Juan Carlos Salazar, Kelly Sheppard, Carla Polycarpo, Hiroyuki Oshikane, Yuko Nakamura, Shuya Fukai, Osamu Nureki and Dieter Söll</i>	207	23	Specialist Article Metabolism of inorganic sulfur compounds in Archaea <i>Arnulf Kletzin</i>	261
19	Specialist Article Translational mechanisms and protein synthesis <i>Paola Londei</i>	217	24	Specialist Article Methyl-coenzyme M reductase in methanogens and methanotrophs <i>Rudolf K. Thauer and Seigo Shima</i>	275
20	Review Expanding world of small noncoding RNAs in Archaea <i>Arina Omer, Maria Zago and Patrick P. Dennis</i>	229	25	Specialist Article Methylation of metal(loid)s by Methanoarchaea: production of volatile derivatives with high ecotoxicological impact and health concern <i>Klaus Michalke, Jörg Meyer and Reinhard Hensel</i>	285
21	Specialist Article Transcriptomics, proteomics, and structural genomics of <i>Pyrococcus furiosus</i> <i>Michael W. W. Adams, Francis E. Jenney Jr, Chung-Jung Chou, Scott Hamilton-Brehm, Farris L. Poole II, Keith R. Shockley, Sabrina Tachdjian and Robert M. Kelly</i>	239	26	Review Biotechnology <i>Ksenia Egorova and Garabed Antranikian</i>	295
22	Specialist Article The glycolytic pathways of Archaea: evolution by tinkering <i>John van der Oost and Bettina Siebers</i>	247		Wolfram Zillig	323
				References	325
				Index	377