

ADVANCES IN APPLIED MICROBIOLOGY

Edited by

GEOFFREY MICHAEL GADD

Dundee, Scotland, UK

SIMA SARIASLANI

Wilmington, Delaware, USA



Sting Mongkolsuk Library and Information Division





CONTENTS

Со	ntributors	vii
1.	The Genus <i>Macrococcus</i> : An Insight Into Its Biology, Evolution, and Relationship With <i>Staphylococcus</i> Shahneela Mazhar, Colin Hill, and Olivia McAuliffe	1
	1. Introduction	2
	2. Defining the Genus Macrococcus	4
	3. Comparative Genomics and Evolution	23
	4. Antibiotic Resistance	31
	5. Occurrence of Macrococcus caseolyticus in Food Systems	38
	6. Concluding Remarks	39
	Acknowledgments	41
	References	41
2.	Electrochemical Bioreactor Technology for Biocatalysis and Microbial Electrosynthesis	51
	Clifford Morrison, Elizabeth Heitmann, William Armiger, David Dodds, and Mattheos Koffas	
	1. Introduction to Electrochemical Bioreactors	52
	2. Biocatalysis	54
	3. Microbial Biogeochemistry	63
	4. Microbial Electrosynthesis	80
	5. Conclusions	81
	References	82
3.	Enhancing Yeast Alcoholic Fermentations	87
	Graeme M. Walker and Roy S.K. Walker	
	1. Introduction	88
	2. Alcohol Fermentations by Yeast	89
	3. Industrial Alcohol Fermentations	96
	4. Optimizing Yeast Fermentations	101
	5. Yeast Strain Engineering for Improved Alcohol Fermentations	108
	6. Conclusions and Future Perspectives	120
	Acknowledgments	121
	References	121

٦.	Diversity-Function Relationships in Natural, Applied, and Engineered Microbial Ecosystems	131
	Andrew Free, Michael A. McDonald, and Eulyn Pagaling	
	1. Introduction	132
	2. Attributing Function to Microbial Diversity in Well-Understood	
	Systems I—Anaerobic Digestion	145
	3. Attributing Function to Microbial Diversity in Well-Understood	1.5.4
	Systems II—Nutrient-Cycling Microbial Microcosms	154
	4. Attributing Function to Microbial Diversity in Well-Understood	161
	Systems III—Microbiota of the Mammalian GI Tract 5. Manipulation of Microbial Community Diversity to Direct	101
	Ecosystem Function	165
	6. Future Perspectives	176
	Acknowledgments	176
	References	176
5		
٦.	Epigenetic and Posttranslational Modifications in	
٦.	Regulating the Biology of Aspergillus Species	191
J.	. 5	191
٥.	Regulating the Biology of Aspergillus Species	191
<i>J</i> .	Regulating the Biology of Aspergillus Species Xinyi Nie, Bowen Li, and Shihua Wang	
J.	Regulating the Biology of Aspergillus Species Xinyi Nie, Bowen Li, and Shihua Wang 1. Introduction	192
٥.	Regulating the Biology of Aspergillus Species Xinyi Nie, Bowen Li, and Shihua Wang 1. Introduction 2. Controversy About DNA Methylation in Aspergillus	192 194
٥.	Regulating the Biology of Aspergillus Species Xinyi Nie, Bowen Li, and Shihua Wang 1. Introduction 2. Controversy About DNA Methylation in Aspergillus 3. Protein Methylation Relevant to Development and Metabolism	192 194 196
<i>3</i> .	Regulating the Biology of Aspergillus Species Xinyi Nie, Bowen Li, and Shihua Wang 1. Introduction 2. Controversy About DNA Methylation in Aspergillus 3. Protein Methylation Relevant to Development and Metabolism 4. Protein Acetylation 5. Phosphorylation 6. Ubiquitination	192 194 196
<i>3</i> .	Regulating the Biology of Aspergillus Species Xinyi Nie, Bowen Li, and Shihua Wang 1. Introduction 2. Controversy About DNA Methylation in Aspergillus 3. Protein Methylation Relevant to Development and Metabolism 4. Protein Acetylation 5. Phosphorylation 6. Ubiquitination 7. Sumoylation and Neddylation	192 194 196 199 204 208 211
<i>3</i> .	Regulating the Biology of Aspergillus Species Xinyi Nie, Bowen Li, and Shihua Wang 1. Introduction 2. Controversy About DNA Methylation in Aspergillus 3. Protein Methylation Relevant to Development and Metabolism 4. Protein Acetylation 5. Phosphorylation 6. Ubiquitination 7. Sumoylation and Neddylation 8. Other Posttranslational Modifications	192 194 196 199 204 208 211 213
<i>3</i> .	Regulating the Biology of Aspergillus Species Xinyi Nie, Bowen Li, and Shihua Wang 1. Introduction 2. Controversy About DNA Methylation in Aspergillus 3. Protein Methylation Relevant to Development and Metabolism 4. Protein Acetylation 5. Phosphorylation 6. Ubiquitination 7. Sumoylation and Neddylation 8. Other Posttranslational Modifications 9. Conclusions	192 194 196 199 204 208 211 213
<i>5</i> .	Regulating the Biology of Aspergillus Species Xinyi Nie, Bowen Li, and Shihua Wang 1. Introduction 2. Controversy About DNA Methylation in Aspergillus 3. Protein Methylation Relevant to Development and Metabolism 4. Protein Acetylation 5. Phosphorylation 6. Ubiquitination 7. Sumoylation and Neddylation 8. Other Posttranslational Modifications	192 194 196 199 204 208 211 213