

ADVANCES IN
APPLIED MICROBIOLOGY

VOLUME 104

GAD/A
922



CONTENTS

Contributors

vii

1. <i>Salmonella</i> Cold Stress Response: Mechanisms and Occurrence in Foods	1
Steven C. Ricke, Turki M. Dawoud, Sun Ae Kim, Si Hong Park, and Young Min Kwon	
1. Introduction	2
2. Molecular Mechanisms to Counter Cold Shock	4
3. <i>Salmonella</i> –Cold Shock Interaction With Other Stress Responses	18
4. <i>Salmonella</i> Responses to Cold Temperatures in Food Production	21
5. Conclusions	27
Acknowledgments	28
References	28
2. Applications of Microbial Processes in Geotechnical Engineering	39
Grainne El Mountassir, James M. Minto, Leon A. van Paassen, Emmanuel Salifu, and Rebecca J. Lunn	
1. Introduction	40
2. Natural Microbial Activity	42
3. Engineered Microbial Activity	44
4. Conclusions	77
Acknowledgments	77
References	78
3. Ecology of Contaminant Biotransformation in the Mycosphere: Role of Transport Processes	93
Anja Worrich, Lukas Y. Wick, and Thomas Banitz	
1. Introduction	94
2. Key Drivers of Contaminant Biotransformation in Soil	97
3. Computational Models to Investigate Contaminant Biotransformation	100
4. Mycosphere Transport Processes Driving Contaminant Biotransformation	108
5. Modeling Mycosphere Transport Processes and Their Effects on Contaminant Biotransformation	115

6. Perspectives for Mycosphere Transport and Contaminant Biotransformation in Microbial Ecosystems	120
Glossary of Relevant Terms	122
References	123
4. Enhancement of <i>Metallosphaera sedula</i> Bioleaching by Targeted Recombination and Adaptive Laboratory Evolution	135
Samuel McCarthy, Chenbing Ai, and Paul Blum	
1. Introduction	136
2. Targeted Recombination in <i>M. sedula</i>	139
3. Adaptive Laboratory Evolution of <i>M. sedula</i>	148
References	160