

Contents

Introduction to Genetic, Genomic and System Analyses of Pure Cultures	1
Víctor de Lorenzo	
Broadening the SEVA Plasmid Repertoire to Facilitate Genomic	
Editing of Gram-Negative Bacteria	9
Tomás Aparicio, Víctor de Lorenzo, and Esteban Martínez-García	
Protocols on Regulation of Gene Expression	29
Sofía Hernández-Arranz, Ruggero La Rosa, Renata Moreno, Emma Sevilla, Luis Yuste, and Fernando Rojo	
Genetic, Genomic, and System Analyses for Pure Cultures and	
Communities: Protocol – Ultra-High-Throughput Transposon	
Scanning of Bacterial Genomes	51
Clémence Roggo and Jan Roelof van der Meer	
Knock-In-Leave-Behind (KILB): Genetic Grafting of Protease-	
Cleaving Sequences into Permissive Sites of Proteins with a	
Tn5-Based Transposition System	71
Belén Calles and Víctor de Lorenzo	
Deep Sequencing to Study Microbial Transcriptomic Responses	
to Hydrocarbon Degradation/Production/Stress	87
Juhyun Kim and Víctor de Lorenzo	
Shotgun Proteomics for Hydrocarbon Microbiology	97
Erica M. Hartmann, Jean-Charles Gaillard, and Jean Armengaud	
Interatomic Characterization of Protein–Protein Interactions in	
Membrane-Associated Mega-complexes	103
José Manuel Borrero-de Acuña, Lothar Jänsch, Manfred Rohde, Kenneth N. Timmis, Dieter Jahn, and Martina Jahn	
Lipidomic Analysis of Bacteria by Thin-Layer Chromatography and	
Liquid Chromatography/Mass Spectrometry	125
Howard Goldfine and Ziqiang Guan	
Accurate Microbial Genome Annotation Using an Integrated	
and User-Friendly Environment for Community Expertise	
of Gene Functions: The MicroScope Platform	141
Eugeni Belda, David Vallenet, and Claudine Médigue	

Approaches for Displaying Complete Transcriptomes of Environmental Bacteria	171
Juan Carlos Oliveros	
A Practical Protocol for Genome-Scale Metabolic Reconstructions	197
Juan Nogales	
GC-MS-Based Determination of Mass Isotopomer Distributions for ¹³C-Based Metabolic Flux Analysis	223
Andreas Schmitz, Birgitta E. Ebert, and Lars M. Blank	
Analysis of the Hierarchical and Metabolic Regulation of Flux Through Metabolic Pathways	245
Wilfred F.M. Röling, Lucas Fillinger, and Ulisses Nunes da Rocha	