

Contents

Systems and Synthetic Biology in Hydrocarbon Microbiology: Tools	1
Víctor de Lorenzo	
Protocol for the Standardisation of Transcriptional Measurements	9
Christopher D. Hirst, Catherine Ainsworth, Geoff Baldwin, Richard I. Kitney, and Paul S. Freemont	
Uracil Excision for Assembly of Complex Pathways	27
Ana Mafalda Cavaleiro, Morten T. Nielsen, Se Hyeuk Kim, Susanna Seppälä, and Morten H.H. Nørholm	
Quantitative Physiology Approaches to Understand and Optimize Reducing Power Availability in Environmental Bacteria	39
Pablo I. Nikel and Max Chavarría	
Design of Orthogonal Pairs for Protein Translation: Selection Systems for Genetically Encoding Noncanonical Amino Acids in <i>E. coli</i>	71
Jelena Jaric and Nediljko Budisa	
Phenome-ing Microbes	83
Klaus Hornischer and Susanne Häussler	
Systems Biology Tools for Methylotrophs	97
Marina G. Kalyuzhnaya, Song Yang, David A.C. Beck, and Ludmila Chistoserdova	
Protocols for Probing Genome Architecture of Regulatory Networks in Hydrocarbon and Lipid Microorganisms	119
Costas Bouyioukos, Mohamed Elati, and François Képès	
A Practical Protocol for Integration of Transcriptomics Data into Genome-Scale Metabolic Reconstructions	135
Juan Nogales and Lucía Agudo	
Computer-Guided Metabolic Engineering	153
M.A. Valderrama-Gomez, S.G. Wagner, and A. Kremling	
Improving Biocontainment with Synthetic Biology: Beyond Physical Containment	185
Markus Schmidt and Lei Pei	