



## CONTENTS

Preface	v
List of Contributors	xiii
Acknowledgments	xix
1. General Characteristics of Prokaryotic Genomes	1
<i>Jan Mrázek and Anne O. Summers</i>	
2. Genes in Prokaryotic Genomes and Their Computational Prediction	39
<i>Rajeev K. Azad</i>	
3. Evolution of the Genetic Code: Computational Methods and Inferences	75
<i>Greg Fournier</i>	
4. Dynamics of Prokaryotic Genome Evolution	99
<i>Pascal Lapierre</i>	
5. Mobile Genetic Elements and Their Prediction	113
<i>Morgan G.I. Langille, Fengfeng Zhou, Amber Fedynak, William W.L. Hsiao, Ying Xu and Fiona S.L. Brinkman</i>	
6. Horizontal Gene Transfer: Its Detection and Role in Microbial Evolution	137
<i>J. Peter Gogarten and Olga Zhaxybayeva</i>	
7. Genome Reduction During Prokaryotic Evolution	153
<i>Francisco J. Silva and Amparo Latorre</i>	
8. Comparative Mechanisms for Transcription and Regulatory Signals in Archaea and Bacteria	185
<i>Agustino Martínez-Antonio and Julio Collado-Vides</i>	

9. Computational Techniques for Orthologous Gene Prediction in Prokaryotes	209
<i>Maria Poptsova</i>	
10. Computational Elucidation of Operons and Uber-operons	233
<i>Phuongan Dam, Fenglou Mao, Dongsheng Che, Ping Wan, Thao Tran, Guojun Li and Ying Xu</i>	
11. Prediction of Regulons Through Comparative Genome Analyses	259
<i>Zhengchang Su, Guojun Li and Ying Xu</i>	
12. Prediction of Biological Pathways Through Data Mining and Information Fusion	281
<i>Fenglou Mao, Phuongan Dam, Hongwei Wu, I-Chun Chou, Eberhard Voit and Ying Xu</i>	
13. Microbial Pathway Models	315
<i>Siren R. Veflingstad, Phuongan Dam, Ying Xu and Eberhard O. Voit</i>	
14. Metagenomics	345
<i>Kayo Arima and John Wooley</i>	
References	397
Index	467