

Contents

<i>Foreword</i>		v
<i>Preface</i>		vii
<i>List of Contributors</i>		xiii
SECTION I	GENES AND GENOMES	1
Chapter 1	Methods for Discovery and Characterization of DNA Sequence Motifs <i>Philipp Bucher</i>	3
Chapter 2	Comparative Genome Analysis <i>Robert M. Waterhouse, Evgenia V. Kriventseva and Evgeny M. Zdobnov</i>	33
Chapter 3	From Modules to Models: Advanced Analysis Methods for Large-Scale Data <i>Sven Bergmann</i>	59
Chapter 4	Integrated Analysis of Gene Expression Profiling Studies — Examples in Breast Cancer <i>Pratyaksha Wirapati, Darlene R. Goldstein and Mauro Delorenzi</i>	85

Chapter 5	Computational Biology of Small Regulatory RNAs	115
	<i>Mihaela Zavolan and Lukasz Jaskiewicz</i>	
SECTION II	PROTEINS AND PROTEOMES	147
Chapter 6	UniProtKB/Swiss-Prot Manual and Automated Annotation of Complete Proteomes: The <i>Dictyostelium</i> <i>discoideum</i> Case Study	149
	<i>Amos Bairoch and Lydie Lane</i>	
Chapter 7	Analytical Bioinformatics for Proteomics	169
	<i>Patricia M. Palagi and Frédérique Lisacek</i>	
Chapter 8	Protein-Protein Interaction Networks: Assembly and Analysis	197
	<i>Christian von Mering</i>	
Chapter 9	Protein Structure Modeling and Docking at the Swiss Institute of Bioinformatics	219
	<i>Torsten Schwede and Manuel C. Peitsch</i>	
Chapter 10	Molecular Modeling of Proteins: From Simulations to Drug Design Applications	247
	<i>Vincent Zoete, Michel Cuendet, Ute F. Röhrig, Aurélien Grosdidier and Olivier Michielin</i>	

SECTION III	PHYLOGENETICS AND EVOLUTIONARY BIOINFORMATICS	283
Chapter 11	An Introduction to Phylogenetics and Its Molecular Aspects <i>Gabriel Jivasattha Bittar and Bernhard Pascal Sonderegger</i>	285
Chapter 12	Phylogenetic Tree Building Methods <i>Manuel Gil and Gaston H. Gonnet</i>	329
Chapter 13	Bioinformatics for Evolutionary Developmental Biology <i>Marc Robinson-Rechavi</i>	355
SECTION IV	MODELING OF BIOLOGICAL SYSTEMS	379
Chapter 14	Spatiotemporal Modeling and Simulation in Biology <i>Ivo F. Sbalzarini</i>	381
<i>Index</i>		433