- Preface (p. v)
- Contributors (p. xi)
- Part I Introduction
- 1 Scientific Challenges in Systems Biology (p. 3)
- 2 Bringing Genomes to Life: The Use of Genome-Scale In Silico Models (p. 14)
- 3 From Gene Expression to Metabolic Fluxes (p. 37)
- 4 Handling and Interpreting Gene Groups (p. 69)
- 6 Dissecting Transcriptional Control Networks (p. 106)
- 7 Reconstruction and Structural Analysis of Metabolic and Regulatory Networks (p. 124)
- 8 Cross-Species Comparison Using Expression Data (p. 147)
- 9 Methods for Protein-Protein Interaction Analysis (p. 160)
- 11 Location Proteomics (p. 196)
- 14 Kinetics of Dimension-Restricted Conditions (p. 261)
- 16 Employing Systems Biology to Quantify Receptor Tyrosine Kinase Signaling in Time and Space (p. 300)
- 17 Dynamic Instabilities Within Living Neutrophils (p. 319)
- Part II Experimental Techniques for Systems Biology
- 13 Modeling Spatiotemporal Dynamics of Multicellular Signaling (p. 242)
- 5 The Dynamic Transcriptome of Mice (p. 85)
- 10 Genome-Scale Assessment of Phenotypic Changes During Adaptive Evolution (p. 183)
- Part III Theoretical and Modeling Techniques
- 12 Reconstructing Transcriptional Networks Using Gene Expression Profiling and Bayesian State-Space Models (p. 217)
- 15 Mechanisms Generating Ultrasensitivity, Bistability, and Oscillations in Signal Transduction (p. 282)
- 18 Efficiency, Robustness and Stochasticity of Gene Regulatory Networks in Systems Biology: 1 Switch as a Working Example (p. 336)
- 19 Applications, Representation, and Management of Signaling Pathway Information: Introduction to the SigPath Project (p. 372)
- Part IV Methods and Software Platforms for Systems Biology
- **20 SBML Models and MathSBML** (p. 395)
- 21 CellDesigner: A Graphical Biological Network Editor and Workbench Interfacing Simulator (p. 422)
- 22 DBRF-MEGN Method: An Algorithm for Inferring Gene Regulatory Networks from Large-Scale Gene Expression Profiles (p. 435)
- 23 Systematic Determination of Biological Network Topology: Nonintegral Connectivity Method (NICM) (p. 449)
- 24 Storing, Searching, and Disseminating Experimental Proteomics Data
- 25 Representing and Analyzing Biochemical Networks Using BioMaze (p. 484)
- Appendices
- I Software, Databases, and Websites for Systems Biology (p. 511)
- **II Glossary** (p. 517)
- **Index** (p. 527)