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| Nota di contenuto | Chapter 1: Systems Biology of Genome Structure and Dynamics -- Chapter 2: A Systems Perspective of Complex Diseases: from Reductionism to Integration -- Chapter 3: Systems Biology of Bacterial Immune Systems: Regulation of Restriction-Modification and CRISPR-Cas Systems -- Chapter 4: Systems Biology of RNA Binding Proteins in Amyotrophic Lateral Sclerosis -- Chapter 5: Systems Approaches to Map in vivo RNA-Protein Interactions in Arabidopsis thaliana -- Chapter 6: Systems-Level Analysis of Bacterial Regulatory Small RNA Networks -- Chapter 7: Epioncogenes in Cancer—Identification of Transcriptomic and Epigenomic Cooperation Networks by Multi-Omics Integration of RNA-Seq and ChIP-Seqdata -- Chapter 8: Coupling Large Scale –Omics Data for Deciphering Systems Complexity -- Chapter 9: |

Deciphering the Universe of RNA Structures and tTans RNA-RNA Interactions of Transcriptomes in vivo / from Experimental Protocols to Computational Analyses -- Chapter 10: Is Autogenous Post-Transcriptional Gene Regulation Common? -- Chapter 11: The Interplay of Non-Coding RNAs and X Chromosome Inactivation in Human Disease -- Chapter 12: Novel Insights of the Gene Translational Dynamic and Complex Revealed by Ribosome Profiling -- Chapter 13: Biophysical Analysis of MiRNA-Dependent Gene Regulation -- Chapter 14: Modeling and Analyzing the Flow of Molecular Machines in Gene Expression -- Chapter 15: Robust Approaches to Generating Reliable Predictive Models in Systems Biology -- Chapter 16: Hints from Information Theory for Analyzing Dynamic & High Dimensional Biological Data -- Chapter 17: Enhancing Metabolic Models with Genome-Scale Experimental Data -- Chapter 18: An Integrative MuSiCO Algorithm: from the Patient-Specific Transcriptional Profiles to Novel Checkpoints in Disease Pathobiology -- Chapter 19: Nanocellulose: a New Multifunctional Tool for RNA System Biology Research.

Sommario/riassunto

Many breakthroughs in experimental devices, advanced software, as well as analytical methods for systems biology development have helped shape the way we study DNA, RNA and proteins, on the genomic, transcriptional, translational and posttranslational level. This book highlights the comprehensive topics that encompass systems biology with enormous progress in the development of genome sequencing, proteomic and metabolomic methods in designing and understanding biological systems. Topics covered in this book include fundamentals of modelling networks, circuits and pathways, spatial and multi cellular systems, image-driven systems biology, evolution, noise and decision-making in single cells, systems biology of disease and immunology, and personalized medicine. Special attention is paid to epigenomics, in particular environmental conditions that impact genetic background. The breadth of exciting new data towards discovering fundamental principles and direct application of epigenetics in agriculture is also described. The chapter “Deciphering the Universe of RNA Structures and Trans RNA-RNA Interactions of Transcriptomes in vivo - from Experimental Protocols to Computational Analyses” is available open access under a CC BY 4.0 license via link.springer.com.
