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Nota di contenuto	Introduction -- Part I: Information -- The Nature of Information -- The Transmission of Information -- Sets and Combinatorics -- Probability and Likelihood -- Randomness and Complexity -- Systems, Networks and Circuits -- Algorithms -- Part II: Biology -- Introduction to Part II -- The Nature of Living Things -- The Molecules of Life -- Part III: Applications -- Introduction to Part III -- Genomics -- Proteomics -- The Glycome, Lipidome and Microbiome -- Interactomics -- The Nervous System -- Metabolomics and Metabonomics -- Phenomics -- Medical Applications -- Ecosystems Management -- The Organization of Knowledge.
Sommario/riassunto	This comprehensive textbook/reference presents a self-contained guide to bioinformatics, defined in its broadest sense as the application of information science to biology. Thoroughly updated and considerably expanded, this third edition now includes material on the

growing array of “-omics”; covering metagenomics, toxicogenomics, glycomics, lipidomics, microbiomics, and phenomics. New chapters have also been added on ecosystems management and the nervous system. Emphasis is placed on providing both a firm grounding in the core concepts, and a clear overview of the complete field of bioinformatics. Topics and features: Explains the fundamentals of information science relevant to biology, discussing set theory, combinatorics, probability, likelihood, clustering, pattern recognition, randomness, complexity, systems, and networks Covers both organismal (ontogeny and phylogeny, as well as genome structure) and molecular aspects Critically examines the most important practical applications of bioinformatics, providing detailed descriptions of both the experimental process and the analysis of the data Provides a varied selection of problems throughout the book, to stimulate further thinking Contains an extensive bibliography offering a guide to further reading and to the latest reported research Combining the successful formula of the previous editions with significantly enhanced new content, this textbook serves as a complete study companion for undergraduates and the beginning graduate student. With its invaluable insights into the state-of-the-art of bioinformatics, the book is also ideal for physical scientists seeking a succinct guide to biology, and for biological scientists wishing to better understand the physicochemical and mathematical aspects underpinning the applications.