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Nota di contenuto	AN INTRODUCTION TO COMPUTATIONAL BIOCHEMISTRY; CONTENTS; Preface; 1 INTRODUCTION; 1.1. Biochemistry: Studies of Life at the Molecular Level; 1.2. Computer Science and Computational Sciences; 1.3. Computational Biochemistry: Application of Computer Technology to Biochemistry; References; 2 BIOCHEMICAL DATA: ANALYSIS AND MANAGEMENT; 2.1. Statistical Analysis of Biochemical Data; 2.2. Biochemical Data Analysis with Spreadsheet Application; 2.3. Biochemical Data Management with Database Program; 2.4. Workshops; References; 3 BIOCHEMICAL EXPLORATION: INTERNET RESOURCES 3.1. Introduction to Internet3.2. Internet Resources of Biochemical Interest; 3.3. Database Retrieval; 3.4. Workshops; References; 4 MOLECULAR GRAPHICS: VISUALIZATION OF BIOMOLECULES; 4.1. Introduction to Computer Graphics; 4.2. Representation of Molecular Structures; 4.3. Drawing and Display of Molecular Structures; 4.4. Workshops; References; 5 BIOCHEMICAL COMPOUNDS: STRUCTURE

AND ANALYSIS; 5.1. Survey of Biomolecules; 5.2. Characterization of Biomolecular Structures; 5.3. Fitting and Search of Biomolecular Data and Information; 5.4. Workshops; References

6 DYNAMIC BIOCHEMISTRY: BIOMOLECULAR INTERACTIONS 6.1. Biomacromolecule-Ligand Interactions; 6.2. Receptor Biochemistry and Signal Transduction; 6.3. Fitting of Binding Data and Search for Receptor Databases; 6.4. Workshops; References; 7 DYNAMIC BIOCHEMISTRY: ENZYME KINETICS; 7.1. Characterization of Enzymes; 7.2. Kinetics of Enzymatic Reactions; 7.3. Search and Analysis of Enzyme Data; 7.4. Workshops; References; 8 DYNAMIC BIOCHEMISTRY: METABOLIC SIMULATION; 8.1. Introduction to Metabolism; 8.2. Metabolic Control Analysis; 8.3. Metabolic Databases and Simulation; 8.4. Workshops; References

9 GENOMICS: NUCLEOTIDE SEQUENCES AND RECOMBINANT DNA 9.1. Genome, DNA Sequence, and Transmission of Genetic Information; 9.2. Recombinant DNA Technology; 9.3. Nucleotide Sequence Analysis; 9.4. Workshops; References; 10 GENOMICS: GENE IDENTIFICATION; 10.1. Genome Information and Features; 10.2. Approaches to Gene Identification; 10.3. Gene Identification with Internet Resources; 10.4. Workshops; References; 11 PROTEOMICS: PROTEIN SEQUENCE ANALYSIS; 11.1. Protein Sequence: Information and Features; 11.2. Database Search and Sequence Alignment; 11.3. Proteomic Analysis Using Internet Resources: Sequence and Alignment; 11.4. Workshops; References; 12 PROTEOMICS: PREDICTION OF PROTEIN STRUCTURES; 12.1. Prediction of Protein Secondary Structures from Sequences; 12.2. Protein Folding Problems and Functional Sites; 12.3. Proteomic Analysis Using Internet Resources: Structure and Function; 12.4. Workshops; References; 13 PHYLOGENETIC ANALYSIS; 13.1. Elements of Phylogeny; 13.2. Methods of Phylogenetic Analysis; 13.3. Application of Sequence Analyses in Phylogenetic Inference; 13.4. Workshops; References

14 MOLECULAR MODELING: MOLECULAR MECHANICS

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Sommario/riassunto

This comprehensive text offers a solid introduction to the biochemical principles and skills required for any researcher applying computational tools to practical problems in biochemistry. Each chapter includes an introduction to the topic, a review of the biological concepts involved, a discussion of the programming and applications used, key references, and problem sets and answers. Providing detailed coverage of biochemical structures, enzyme reactions, metabolic simulation, genomic and proteomic analyses, and molecular modeling, this is the perfect resource for students and researchers in

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