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Nota di contenuto	FUNCTIONAL METABOLISM: REGULATION AND ADAPTATION; CONTENTS; Preface; Contributors; Chapter 1 Principles of Metabolic Control; Key Concepts; Metabolic Renaissance In Post Genome Era?; Metabolic Engineering; Metabolic Regulation versus Metabolic Control; Complexity of Metabolism and Concept of Biochemical Unity; Basis of Metabolic Control; Pacemaker Enzymes; Identification of a Pacemaker Enzyme; Enzyme Purification; Cautionary Note about Relating In Vitro Kinetic Studies of a Purified Enzyme to Its In Vivo Function and Control; Compartmentation of Metabolism Formulation of a Theory of Metabolic ControlMetabolic Control

Analysis; Mechanisms of Metabolic Control; Coarse Metabolic Control; Fine Metabolic Control; Concluding Remarks; Chapter 2 Enzymes: The Basis of Catalysis; Introduction; Enzyme Structure; Thermodynamics and Kinetic Theory of Enzyme Function; Thermodynamic Aspects of Kinetic Function: Processes Not Under Enzyme Control; Cellular Equilibria and Enzymes; Reaction Rate Theories; How Enzymes Influence Reaction Rates; How Enzyme-Catalyzed Reactions Occur: Lysozyme as a Model of Transition State Theory
When Enzymes Need Extra Help: Coenzymes and Their FunctionsCoenzymes That Transfer High Energy Phosphate; Coenzymes That Accept and Donate Electrons; Coenzymes That Activate Substrates; Kinetic Mechanisms of Enzyme Action; Development of Rate Equations: Simple Solution Kinetics; The Haldane Relationship; Multisubstrate Reactions; Cooperative Enzyme Mechanism; Allosteric Enzyme Activation and Inhibition; Enzyme Inhibition; Temperature Effects on Enzyme Function; Estimating Kinetic Parameters from Enzyme Velocity Data (the Influence of Error Structure)
Chapter 3 Enzymes in the Cell: What's Really Going On?Introduction; Basic Enzyme Mechanism Under In Vivo Conditions; Effect of Enzyme-Substrate Binding; Effect of Reaction Reversibility; Effect of Substrate and Product Binding Combined with Reaction Reversibility; Time Course of the Complete Enzyme Mechanism; Simple Enzyme Systems; Simple Enzyme Pathways under In Vivo Conditions; Thought Experiment: Regulating Flux In Vivo; Mathematical Modeling of the Linear System; Branch Points and Irreversible Enzymes in Pathways; Simple Enzyme Pathways and Crossover Plots
Basics of Metabolic Control AnalysisMCA Analysis and Metabolic Pathways; Controlling Pathway Flux under In Vivo Conditions: Direct Calculation of Control Coefficients; Controlling Pathway Flux under In Vivo Conditions: Indirect Calculations of Control Coefficients; Relating Flux Control Coefficients to Pathway Regulation; Potential of an Enzyme to Be Regulated; Metabolic Simulation; Supply versus Demand; Feedback Inhibition; Formation of Multienzyme Complexes; Chapter 4 Signal Transduction Pathways and the Control of Cellular Responses to External Stimuli
Function and Structure of Signaling Pathways

Sommario/riassunto

Functional Metabolism of Cells is the first comprehensive survey of metabolism, offering an in-depth examination of metabolism and regulation of carbohydrates, lipids, and amino acids. It provides a basic background on metabolic regulation and adaptation as well as the chemical logic of metabolism, and covers the interrelationship of metabolism to life processes of the whole organism. The book lays out a structured approach to the metabolic basis of disease, including discussion of the normal pathways of metabolism, altered pathways leading to disease, and use of molecular genetics in diagnosi