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Nota di contenuto	Front Cover; Channels, Carriers, and Pumps; Copyright Page; Dedications; Contents; Preface to the First Edition; Preface to the Second Edition; List of Symbols; 1 Structural Basis of Movement Across Cell Membranes; 1.1 Membrane Structure: Electron Microscopy of Biological Membranes; 1.2 Chemical Composition of Biological Membranes; 1.2.1 Membrane Lipids; 1.2.2 Membrane Proteins; 1.2.3 Membrane Carbohydrates; 1.3 Membrane Phospholipid Structures and Their Self-Assembly; 1.4 Phase Transitions in Biological Membranes; 1.5 Membrane Proteins: Their Structure and Arrangement 1.5.1 Proteins That Span the Membrane Only Once1.5.2 Proteins That Span the Membrane More Than Once; 1.6 Synthesis of Membrane Proteins; 1.7 Quantitation of Membrane Dynamics; 1.8 Traffic Across the Plasma Membrane; 1.9 The Cell Membrane as a Barrier and as a Passage; Suggested Readings; General; Membrane Structure; Membrane Lipids; Liposomes; Membrane Proteins; Membrane Dynamics; Glycophorin; Lactose Permease; Hydropathy Plots; Membrane Protein Structure; Synthesis of Membrane Proteins; Endocytosis, Membrane Turnover; Clathrin-Coated Pits and Caveolae; Lipid Rafts; Cytoskeleton 2 Simple Diffusion of Nonelectrolytes and Ions2.1 Diffusion as a Random Walk; 2.2 The Electrical Force Acting on an Ion; 2.3 Permeability Coefficients and Partition Coefficients; 2.4 Measurement of

Permeability Coefficients; 2.5 Analysis of Permeability Data; 2.6 The Membrane as a Hydrophobic Sieve; 2.7 Osmosis and the Diffusion of Water; 2.8 Comparison of Osmotic and Diffusive Flow of Water; Suggested Readings; General; Diffusion as a Random Walk; Chemical Potential; Electrical Potential; Flux Ratio Test; Permeability and Partition Coefficients; Measurement of Permeability Coefficients
NMR and ESRUnstirred Layers; Plant Cell Permeabilities; Membrane as a Hydrophobic Sieve; Osmosis and the Diffusion of Water; Water Channels - The Aquaporins; Electroosmosis and Streaming Potential; 3 Ion Channels Across Cell Membranes; 3.1 The Gramicidin Channel; 3.2 The Acetylcholine Receptor Channel; 3.3 Conductances and Cross-Sectional Areas of Single Channels; 3.4 An Experimental Interlude; 3.4.1 Identification of Channels by Patch-Clamping; 3.4.2 Measurements of Membrane Potential by Using Intracellular Microelectrodes or by Following Dye Distribution
3.5 Diffusion Potentials: Goldman-Hodgkin-Katz Equation3.6 Regulation and Modulation of Channel Opening; 3.6.1 The Potassium Channel of Sarcoplasmic Reticulum; 3.6.2 Sodium and Potassium Channels of Excitable Tissue; 3.6.3 The Cell-to-Cell Channel or Gap Junction; 3.6.4 Regulation and Modulation of Some Other Channels; Suggested Readings; Internet Resources; General; Electrostatic (Born) Free Energy; Gramicidin Channel; Enzyme Kinetics; Acetylcholine Receptor; Cloning and Molecular Biology; Acetylcholine Receptor Structure; Ionic Diffusion; Ligand-gated Ion Channels
Charge Effects on Channel Conductance

Sommario/riassunto

An introduction to the principles of membrane transport: How molecules and ions move across the cell membrane by simple diffusion and by making use of specialized membrane components (channels, carriers, and pumps). The text emphasizes the quantitative aspects of such movement and its interpretation in terms of transport kinetics. Molecular studies of channels, carriers, and pumps are described in detail as well as structural principles and the fundamental similarities between the various transporters and their evolutionary interrelationships. The regulation of transporters and their role in