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Nota di contenuto	Bioenergetics at a Glance -- Preface -- 1: Life, energy and metabolism -- 2: Energy, entropy and the universe -- 3: Energy, entropy and the living cell -- 4: Gibbs free energy-measurement and applications -- 5: Chemical and electrochemical potential -- 6: Oxidation/reduction (redox) potentials -- 7: ATP and ion gradients: 'intermediate' energy stores -- 8: Substrate level phosphorylations -- 9: Free oxygen: its benefits and dangers -- 10: Cofactors in oxidation/reduction reactions -- 11: The mitochondrial respiratory chain: 1 Path of electron flow -- 12: The mitochondrial respiratory chain: 2 Organization of peptides -- 13: Electron transfer mechanisms -- 14: Respiratory chains in bacteria -- 15: Photosynthesis in green plants: 1 Path of electrons -- 16: Photosynthesis in green plants: 2 Structure of the reaction centre -- 17: Photosynthesis in green plants: 3 Organization of membranes -- 18: Photosynthesis in bacteria -- 19: Energy transduction -- 20: Energy transfer via a H+ gradient-testing the model -- 21: Stoichiometries in ATP synthesis -- 22: Measurement of the H+/P ratio: 1 Kinetic approaches -- 23: Measurement of the H+/P ratio: 2 Thermodynamic approaches -- 24: Generation of a proton gradient: 1 Mechanisms involving organic hydrogen carriers -- 25: Generation of a proton gradient: 2 'Direct' proton pumping -- 26: The ATP synthase complex

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37: Alternative uses of the proton gradient: 1 Heat generation -- 38: Alternative uses of the proton gradient: 2 Transport systems -- 39: Alternative uses of the proton gradient: 3 Bacterial motion -- 40: Alternative methods of gradient generation: 1 Bacteriorhodopsin -- 41: Alternative methods of gradient generation: 2 Primary sodium pumps -- 42: ATP-driven ion pumps: an overview -- 43: P-type ATPases: 1 Structural aspects -- 44: P-type ATPases: 2 Energetic aspects -- 45: Evolution of bioenergetic systems -- Reading list -- Index.

Sommario/riassunto

Bioenergetics is the study of the way biological systems, usually at the molecular level, utilize and convert energy in order to drive the biochemical reactions that constitute life. However, because of its often quantitative basis and the amount of technical jargon, the subject tends to alienate and intimidate students. This beautifully illustrated text has a lucid and logical approach to the subject. The text uses the modern perspective throughout so that the student is given an easily assimilable, logical introduction to the important concepts of the subject, particulary the core concept, the 'chemiosmotic theory'. It has been specifically designed to make information easily accessible by devoting each double-page spread to one topic. Within the spread, a variety of carefully constructed diagrams present information in a concise and innovative manner. The text is further enhanced by a comprehensive guide to additional reading. Original, easily understood combination of visual and written information. 43 double-page speads give a clear and concise introduction to this traditionally difficult subject. The most up to date text available, covering all modern molecular genetic techniques. Competitively priced.