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Nota di contenuto	Front Cover; Plant Biochemistry; Copyright Page; Contents; Chapter 1. A leaf cell consists of several metabolic compartments; 1.1 The cell wall gives the plant cell mechanical stability; 1.2 Vacuoles have multiple functions; 1.3 Plastids have evolved from cyanobacteria; 1.4 Mitochondria also result from endosymbionts; 1.5 Peroxisomes are the site of reactions in which toxic intermediates are formed; 1.6 The endoplasmic reticulum and Golgi apparatus form a network for the distribution of biosynthesis products; 1.7 Functionally intact cell organelles can be isolated from plant cells 1.8 Various transport processes facilitate the exchange of metabolites between different compartments1.9 Translocators catalyze the specific transport of substrates and products of metabolism; 1.10 Ion channels have a very high transport capacity; 1.11 Porins consist of ß-sheet structures; Further reading; Chapter 2. The use of energy from sunlight by photosynthesis is the basis of life on earth; 2.1 How did photosynthesis start?; 2.2 Pigments capture energy from sunlight; 2.3 Light absorption excites the chlorophyll molecule; 2.4 An antenna is required to capture light; Further reading Chapter 3. Photosynthesis is an electron transport process3.1 The photosynthetic machinery is constructed from modules; 3.2 A reductant and an oxidant are formed during photosynthesis; 3.3 The

basic structure of a photosynthetic reaction center has been resolved by X-ray structure analysis; 3.4 How does a reaction center function?; 3.5 Two photosynthetic reaction centers are arranged in tandem in photosynthesis of algae and plants; 3.6 Water is split by photosystem II; 3.7 The cytochrome-b6/f complex mediates electron transport between photosystem II and photosystem I
3.8 Photosystem I reduces NADP3.9 In the absence of other acceptors electrons can be transferred from photosystem I to oxygen; 3.10 Regulatory processes control the distribution of the captured photons between the two photosystems; Further reading; Chapter 4. ATP is generated by photosynthesis; 4.1 A proton gradient serves as an energy-rich intermediate state during ATP synthesis; 4.2 The electron chemical proton gradient can be dissipated by uncouplers to heat; 4.3 H+-ATP synthases from bacteria, chloroplasts, and mitochondria have a common basic structure
4.4 The synthesis of ATP is effected by a conformation change of the proteinFurther reading; Chapter 5. Mitochondria are the power station of the cell; 5.1 Biological oxidation is preceded by a degradation of substrates to form bound hydrogen and CO2; 5.2 Mitochondria are the sites of cell respiration; 5.3 Degradation of substrates for biological oxidation takes place in the matrix compartment; 5.4 How much energy can be gained by the oxidation of NADH?; 5.5 The mitochondrial respiratory chain shares common features with the photosynthetic electron transport chain
5.6 Electron transport of the respiratory chain is coupled to the synthesis of ATP via proton transport

Sommario/riassunto

This fully revised translation of the world-renowned German edition covers the complete and modern knowledge of plant biochemistry. The book presents the topic in a concise and simplified manner so that students can digest the message and gain a basic knowledge of the entire field of plant biochemistry, from photosynthesis (the synthesis of natural plant products) to all kinds of genetic engineering with its many commercial applications. Topics include cell structure and function, lipid and polysaccharide metabolism, nitrogen fixation, phloem transport, synthesis and function of isoprenoid