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### Sommario/riassunto

The biological membranes of cellular organization enfold an important group of membrane proteins called the ATPases, which are not only versatile in maintaining chemical gradient and electrical potential across the membrane but also bring metabolites necessary for cell metabolism and drive out toxins, waste products and solutes that otherwise can curb cell functions. ATPases are distributed virtually in all life forms starting from unicellular to multicellular and also in viruses. There are different types of ATPases, which differ in function and structure and in the type of ions they transport. The three main types of the ion pump ATPase family are: (i) P-type ATPases that transport different ions across membranes and Ca<sup>2+</sup>-ATPases belongs to this category (ii) F-type ATPase in mitochondria, chloroplasts and bacterial plasma membranes produce ATP using the proton gradient; and (iii) V-type ATPase catalyzes ATP hydrolysis to transport solutes and maintains acidic pH in organelles like lysosomes. Genetic defects in either of the ATPases cause several diseases and a number of researches have demonstrated the involvement of the members of ATPases in the cell pathology and diseases, thereby penetrating exciting new areas of our understanding. In this book, the authors summarize recent knowledge about the molecular mechanisms associated with Ca<sup>2+</sup>-ATPase, V-ATPase and F-ATPase in intracellular and extracellular Ca<sup>2+</sup> transport, mitochondrial ATP synthase, vesicular H<sup>+</sup> transport, and lysosomal pH regulation. This book thereby bridges the gap between fundamental research and biomedical and pharmaceutical applications. The book provides an informative resource to improve ATPase research and modern therapeutic approaches toward different life threatening diseases that are associated with dysregulation of the ATPases.

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