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Cover photograph

The background is a rapid-freeze deep-etch image of V-ATPase from toad urinary bladder mitochondria-rich cells. Each cytoplasmic domain of the molecule appears as a ‘stud’ approximately 10 nm in diameter (photographed by Dennis Brown, see Brown et al. pp. 231–243). Upper left: fluorescence micrograph of yeast cells with Lucifer Yellow internalized in vacuoles (see Anraku et al. pp. 67–81). Upper right: fluorescence micrograph of Neurospora crassa mycelia with chloroquine internalized in the vacuoles (see Bowman et al. pp. 57–66). Lower left: medullary collecting duct from rat kidney; 1 μm sections stained with antibodies to V-ATPase (orange) and the band 3 Cl⁻/HCO₃⁻ exchanger (yellow). Intercalated cells show apical localization of V-ATPase, whereas band 3 is restricted to the basolateral plasma membrane. Adjacent principal cells are poorly stained (photographed by Dennis Brown, see Brown et al. pp. 231–243. Lower right: immunofluorescence micrograph of Manduca sexta posterior midgut. The apical membranes are labelled with antibody to V-ATPase (see Klein, pp. 345–354).
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PREFACE

The Telluride symposium on V-ATPases was organized to assemble scientists working on these enzymes and related transport proteins. Recent progress in determining the molecular structure and regulation of V-ATPases was discussed in relation to new understanding on their physiological roles. V-ATPases were considered as electrochemical generators that energize membranes, leading to acidification, alkalization and to other actions such as accumulation of neurotransmitters and biogenic amines.

This volume is organized as a textbook directed to scientists working in this field and related fields, as well as to graduate students and advanced undergraduate students.

We dedicate this volume to the memory of Efraim Racker, who was to have been the keynote speaker at this meeting and whose example has inspired much of the work presented here.
Efraim Racker

28 June 1913 to 9 September 1991

'It doesn't matter if you fall down as long as you pick up something from the floor while you get up.' (Lesson 4)
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