

*Electron Transfer Chains and Oxidative Phosphorylation*

Edited by E. Quagliariello, S. Papa, F. Palmieri, E. C. Slater and N. Siliprandi  
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Each year during the past decade, the University of Bari has organized a symposium dealing with the structure, the function and the biogenesis of mitochondria and similar energy-transducing organelles. These meetings have been among the best in the field; they are always superbly organized and the selection of participants is made without favoring any of the various 'camps' whose bickering has until recently seriously hampered research in bioenergetics. This volume represents the proceedings of the ninth 'Bari conference' which was held in Selva di Fasano from September 15–18, 1975. The 56 papers impressively underscore the fact that the problem of mitochondrial energy coupling is now under joint attack by a wide spectrum of scientists which includes physical chemists, enzymologists and even geneticists. The contributions have been subdivided under the following headings: (1) Components of the electron transfer chains. (2) Components of the ATPase complex. (3) Mutants in electron transfer components or components of the oxidative phosphorylation machinery. (4) Pathway of electrons and mechanism of electron transfer (including location of electron carriers in membranes). (5) Reactions linked to electron flow. (6) Mechanism of ATP synthesis.

While it is obviously impossible here to provide a balanced review, some of the most notable achievements have been scored in defining the molecular composition of mitochondrial components. We now know much more about the structure of mitochondrial ATPase, cytochrome oxidase, cytochrome *b* and the

adenine nucleotide carrier than just a few years ago and we can therefore devise much more decisive experiments on how these components function. In particular, the oligomycin-sensitive ATPase complex is moving into the center of the stage as the role of bound nucleotides or of the individual subunits can be tested fairly directly. It is perhaps a pity that the recent exciting work on uncoupled *Escherichia coli* mutants was only covered by a single contribution. On the more physical level, the list of non-heme iron components functioning in electron transport is steadily increasing and Mitchell's view that only two protons are ejected at each of the three 'coupling sites' (or their equivalent) has been challenged. The debate on the existence of various spectroscopically distinct cytochrome *b* species in mitochondria continues unabated, but the detection of two quite similar cytochrome *b* polypeptide chains in *Neurospora* offers some hope of injecting a new approach into this long-standing controversy.

The overall quality of the contributions is high although there is the inevitable sprinkling of mediocre or sloppily written articles. The editing is excellent, even though the book appeared only a few months after the conference. This book is obviously not for a general audience but is a 'must' for everyone who wants to know the current views of how energy is generated and utilized in living cells.

Gottfried Schatz