Cytochrome Systems

Molecular Biology and Bioenergetics

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PREFACE

This volume is based on the proceedings of an International Symposium on "Cytochrome Systems: Molecular Biology and Bioenergetics" that was held at Selva di Fasano near Bari, Italy, between April 7 and 11,1987. It contains papers covering the subjects discussed at the Symposium, contributed both by participants of the meeting and by some invited speakers who were not able to attend.

The aim of the Symposium was to bring together experts in various research strategies currently being applied to the study of cytochrome systems, including molecular genetics, protein chemistry, enzymology of electron transfer and protonmotive activity in energy-transducing biological membranes. Because of the high degree of complexity of cytochrome systems and the increasing sophistication in recent years of the different experimental approaches, there has been a growing specialization - sometimes even a tendency to "over-specialization" - among scientists working in this field. This in itself seemed to justify a meeting where representatives of various disciplines could exchange their results and discuss their conclusions. In addition, and perhaps even more importantly, it was felt that meetings of this kind provide an opportunity for a "cross-fertilization" of approaches and ideas among representatives of various fields of science. The present meeting proved to be an ample illustration of the success of such an interaction.

Most cytochrome systems - and especially those involved in bioenergetics, which were the main subjects of this Symposium - are highly complex membrane proteins, consisting of several species of polypeptide subunits. The understanding of their reaction mechanisms in electron transfer and proton translocation is critically dependent on knowledge of their structure and membrane topology. Genetic approaches, including cloning, DNA-sequencing and, in the case of eukaryotic cells, information concerning the coordination between nuclear and organellar gene expression, vectorial processing and assembly, have already made fundamental contributions to the elucidation of these problems. Recent spectacular progress in unraveling the three-dimensional structure of cytochrome-containing membrane proteins have implied a further, most important breakthrough toward the understanding of the mechanism of biological electron transfer and associated proton translocation at the molecular and submolecular levels. Much of this progress, as well as a number of still unanswered and sometimes controversial questions, are highlighted in the papers presented in this volume.

The present Symposium, similar to a Symposium on "H^+-ATPase (ATP Synthase):Structure, Function and Biogenesis" (S.Papa et al. eds., Adriatica Edi-

trice, Bari, 1984) held here 3 years ago, was structured in such a way that each session was introduced by a chairman, who gave a brief survey of the topic concerned and who was in charge of organizing the following presentations and of leading the discussion after each presentation as well as a general discussion at the end of the session. As chairmen of the sessions served R.B.Gennis, G.Attardi, W.Neupert, C.Saccone, E.Margoliash, L. Ernester and S.Papa. The Symposium was concluded by a plenary session devoted to the memory of Albert L. Lehninger, with an introduction by E.Quagliariello, lectures by E.C.Slater, B.Chance, P.Slonimski and A.Tzagoloff and concluding remarks by L. Ernster.

The Symposium was generously supported by UNESCO for which we thank Professor J. Jaz, Head of the Scientific Cooperation Bureau of the European and North American Region of UNESCO, for his personal interest and support.

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S.Papa
B.Chance
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INTRODUCTION*

*Introductory lecture given by E.C.Slater at the Plenary Session devoted to the memory of Albert Lehninger.