PREFACE

The meeting on "Molecular Mechanisms of Lipid and Protein Traffic", sponsored by NATO Scientific Affairs Division as an Advanced Study Institute and by the Federation of European Biochemical Societies as a Lecture Course was held in Cargèse, France, in June 1997. The program included introductory lectures, specialized up-to-date contributions, poster sessions, tutorials and workshops. Emphasis was laid on the new developments in the field of membrane dynamics, in particular on the insertion and translocation of proteins; on intracellular protein, lipid and membrane traffic and sorting and on the mutual interactions between the various events occurring during membrane biogenesis. Mitochondrial biogenesis, chloroplast assembly and the insertion of proteins into peroxisomes were highlighted.

Much progress in these research areas has been made in recent years and the ASI provided an excellent opportunity to illustrate this progress in comparison with previous meetings on a similar topic. Not only graduate students and postdocs took advantage from this program but also experienced scientists were given the opportunity to obtain a complete overview of recent progress and the remodeling of ideas and concepts.

The present publication presents most of the important contributions by teachers as well as students in the meeting. Overviews of protein insertion and assembly in mitochondria, chloroplasts and peroxisomes clearly illustrate that our knowledge of membrane biogenesis is increasing rapidly. A similar conclusion can be drawn for the complicated processes of protein translocation and secretion and the accompanying sorting processes. Detailed information on the basic mechanistic characteristics of these events become available and some examples of the new developments are presented. Toxins, acting both from the intracellular as well as from the outside on (plasma)membranes are discussed in detail including the effects of these compounds on membrane pores, channels and conductance.

Lipid structure and function are discussed in relation to the above mentioned processes of protein insertion into and translocation through membranes and finally some insight is presented in the mechanisms underlying intracellular sorting and trafficking of specific phospholipids.

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