



## Foreword

# Preface for dynamic and ultrastructure of bioenergetic membranes and their components



Bio-energetic membranes, both respiratory and photosynthetic, exploit electron transport to generate ATP and reducing power. The electron transfer reactions are (mostly) mediated by large membrane integral protein complexes, which in the case of photosynthetic systems are conjugated to light energy capture and transfer processes. The organization of the protein complexes and supercomplexes that drive these reactions and processes, as well as of the specialized membranes wherein they reside, is highly dynamic. This is essential for the function of the respiratory and photosynthetic machineries and for their ability to respond to cellular and environmental cues. Dynamic responses, including fission/fusion events and light-induced movement, are also apparent at the level of the organelles that host these machineries – the mitochondria and chloroplasts.

The purpose of this special issue is to provide an updated view of these dynamics and the ways they are modulated at the molecular level. In addition, the issue provides a contemporary review of the lipid and protein constituents of the corresponding membrane systems, their formation and organization, and the vital processes associated with the degradation of proteins and the breakdown and recycling of the organelles during stress or senescence.

We are grateful to the contributing authors who wrote the excellent reviews that cover these topics and to the reviewers of the manuscripts – for their excellent comments and suggestions. We also wish to thank the BBA team for making the editing of this issue an easy and enjoyable task. Finally, we are very much obliged to Dr. Fabrice Rappaport, who envisaged this special issue, and we sincerely thank him for inviting us as guest editors.



**Giorgio Lenaz** is Professor Emeritus of Biochemistry at the University of Bologna (Italy). He studied Medicine at the University of Bologna and obtained the Medical Degree in 1962. From 1964 to 1967 he was a postdoctoral fellow in the Institute for Enzyme Research in Madison WIS under the supervision of Professor David E. Green. Back to Bologna he has been an Assistant Professor in the Institute of Biochemistry. In 1975 he became full professor of Biochemistry by national competition and obtained the chair of Biochemistry at the University of Ancona. Since 1979 he has been professor of Biochemistry in the Faculty of Biology and then of Medicine at the University of Bologna. In 2012 after his retirement he has been nominated Professor Emeritus.

His main scientific interest has been the bioenergetics of mitochondria in physiology and pathology; his main achievements concern the biochemical and biophysical properties of coenzyme Q and more recently the supramolecular structure of the mitochondrial respiratory chain with characterization of the functional properties of respiratory supercomplexes.



**Dr. Reinat Nevo** received her Ph.D. at the Weizmann Institute of Science (WIS). She conducted her postdoctoral studies at the WIS as well, after which she became a Senior Intern in Ziv Reich's lab. During this period, she worked on photosynthetic membranes, using various structural methods. Subsequently, she became a Staff Scientist at the Department of Biological Chemistry of the WIS where she helps run the department's imaging facility.



**Prof. Ziv Reich** obtained his Ph.D. from the Department of Organic Chemistry at the Weizmann Institute of Science. Following a postdoc at the Howard Hughes Medical Institute at Stanford University he returned to the Weizmann Institute where he joined the Department of Biological Chemistry. His research concentrates on photosynthetic machineries, nucleocytoplasmic transport, and protein folding and binding studied mostly at the single-molecule level.

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