

## Editorial

The XVIIth Symposium on Bioelectrochemistry and Bioenergetics was held in Florence, Italy, from June 19 to 24, 2003. It featured all aspects of the highly interdisciplinary areas of bioelectrochemistry and bioenergetics, with contributions from the disciplines of biochemistry, biophysics, biotechnology, and medical biophysics. It was attended by 215 researchers coming from all over the world; among these, 57 were PhD students and postdocs, thus demonstrating the vitality of this important interdisciplinary science.

The scientific program consisted of oral and poster sessions. Both oral presentations and posters were grouped into sections, which differed from the traditional subjects of bioelectrochemistry only by the fact that the subject “Electrified interfaces” was split into three distinct sections, namely, “Electrified interfaces,” “Electron transport in biosystems” and “Biosensors and bioelectronics.”

The contributions to the section “Electrified interfaces” addressed the functionalization of electrode surfaces for the immobilization of biomolecules and the investigation of these surfaces by different surface-sensitive techniques, such as scanning electrochemical microscopy, atomic force microscopy, and surface plasmon resonance. The section “Electron transport in biosystems” dealt primarily with water-soluble redox proteins, often immobilized on electrodes, but also with membrane proteins of photosynthetic systems. The contributions to the section “Photobioelectrochemistry” concerned electron and proton transfer in photosynthetic systems, light-driven proton pumps, photoeffects on membrane properties, and light-induced action potentials in green plants. Metal-supported lipid monolayers and bilayers incorporating proteins or peptides, lipid monolayers at water/air or liquid/liquid interfaces, bilayer lipid membranes, proteoliposomes adsorbed on functionalized electrodes or investigated in solution with fluorescent probes were presented in the section “Biomembranes and model membranes.” Polymer-based biosensors, DNA- and aptamer-

based sensors, multilayer-based biosensors, hybrid-enzyme biosensors, affinity and bacterial biosensors were described in the numerous contributions to the section “Biosensors and bioelectronics.” Coupling between electron transfer and protein dynamics in photosynthetic reaction centers, between electron transfer and proton translocation in the respiratory chain, between proton translocation and rotation in molecular motors, and between proton translocation and ATP synthesis, were discussed in the section “Bioenergetics and signal transduction.” The section “Electrochemical and magnetic field processes” dealt with different strategies for electroporation, with a particular emphasis on recent observations indicating that ultrashort and very large electrical pulses involve interactions with intracellular structures, while leaving the plasma membrane substantially unaltered. Finally, the numerous presentations in the section “Biomedical and biotechnological applications” were mainly focused on electroporation for drug and gene delivery in mammalian cells, but they also considered the effect of electromagnetic fields on membrane proteins and on living cells.

This volume includes a number of short communications and regular papers dealing with the contributions presented at the symposium, which will hopefully give the flavor of the topics discussed therein to those who could not attend the meeting. All papers were peer reviewed, and I wish to thank all colleagues who helped me with the reviewing process.

Rolando Guidelli  
*Dipartimento di Chimica,  
Università di Firenze,  
Sesto Fiorentino,  
Florence, Italy*