

PREFACE

What has happened before the 8th ICMRS?

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Twenty years ago, in 1986 there was a scientific cooperation meeting between the National Science Foundation of the USA and the Spanish Consejo Superior De Investigaciones Cientificas (12-14 May 1986, Madrid, Spain). In those days one of the most exciting topics in biology was the possible existence of membrane energizing system(s) other than H⁺-transporting and ATP-utilizing trans-membrane proteins (the ATPases) in membranes different from the mitochondrial and chloroplasts membranes. Some of the participants decided to initiate the organization of an international conference on a newly-emerging and quickly-spreading scientific question: What is the physiological significance of the plasma membrane redox system(s), and what is its (their) biochemical nature? The first meeting – entitled “Plasmalemma redox functions in plants” – was organized as a Special Interest Group Meeting (SIGM-08) in the frame of the XIV International Botanical Congress (24 July – 1 August 1987, Berlin-West). The meeting was very successful but had one drawback; only scientists working with plants were participating. Thus participants in Berlin-West decided that an international conference should be organized where scientists dealing with plasma membrane (or cell membrane) redox proteins from any kind of biological objects could meet and discuss the problems common in this research field. The second meeting – entitled “Plasma Membrane Oxidoreductases in Control of Animal and Plant Growth” – was organized as a NATO Advanced Research Workshop (21-25 March 1988, Cordoba, Spain). This was really the very first meeting in which plasma membrane redox systems from very different biological organisms were presented and discussed. Although the next (third) Plasma Membrane Redox Meeting – entitled “Molecular Biology and Function of Plasma Membrane Redox” – was organized only 6 years later (22-25 March 1994, Cordoba, Spain), one had to wait for 10 years after the first Cordoba meeting until the Plasma Membrane Redox Meetings became a regular event. Ever since the 1998 meeting in Antwerp (Belgium) the Plasma Membrane Redox Meetings have maintained the title: “International Conference on Plasma Membrane Redox Systems and Their Role in Biological Stress and Disease”. However, the last (the 8th) meeting organized in the Biological Research Center of the Hungarian Academy of Sciences in Szeged, Hungary, on 4-8 April 2006 changed a little the title

again for the “8th International Conference on Membrane Redox Systems and Their Role in Biological Stress and Disease” (8th ICMRS-2006: <http://www.membraneredox2006.hu/>).

It is clear from the above introduction that both the title and the scope of the conferences have previously changed from time to time. These changes reflected the shift of interests in the field of research in membrane redox systems. The identification of membrane-associated redox systems in membranes other than the ‘energetic’ membranes (mitochondria and chloroplasts), started with the observation that perfused liver was capable of reducing the non-permeable electron acceptor ferricyanide (FeCN). These experiments suggested that the cell membrane should also have a redox system. Demonstration of the FeCN-reducing capability of plasma membranes from various plants and animals proved in a very short time that the presence of a redox system in plasma membranes is a ubiquitous event in nature. In the last few years, however, it has become evident that not only the plasma membrane but also other intracellular membranes different from mitochondria and chloroplasts (e.g. the vacuolar membrane, and the membranes of the ER) seem to contain redox system(s) (redox proteins) capable of either cis- or trans-membrane electron transport. The aim of the 8th ICMRS-2006 in Szeged (Hungary) was to provide possibility and a friendly atmosphere for scientist dealing with membrane redox proteins in any cellular membrane preferentially different from the mitochondrial and chloroplast ones. The minor change in the conference title from “Plasma Membrane Redox Systems” to “Membrane Redox Systems” reflects the significant development in the research field of membrane redox systems.

There were two lectures held by ‘honorary fathers’ of the research field of “plasma membrane redox processes” in the Opening Session. Hans Löw (Stockholm, Sweden) and Michael Böttger (Hamburg, Germany) recalled the beginnings and introduced the audience to the problem of presence and possible function(s) of plasma membrane redox system(s) both in animal and plant tissues. During the next 4 days there were 6 sessions organized with 25 oral presentations and 23 posters in well-defined subjects:

- Membrane-bound Two-heme-containing Proteins (e.g. NOX proteins, proteins belonging to the cytochrome b561

protein family)

- Membrane-bound Redox Proteins (e.g. nitrate reductases, quinone reductases, flavoenzymes)
- Plasma Membrane Redox Proteins (e.g. peroxidases, disulfide isomerases, membrane-bound c-type cytochromes)
- Heavy Metals and Membrane-bound Redox Proteins (e.g. Zn-, Cu-, Fe-containing proteins, problems of heavy metal acquisition)
- Quinones in Membrane Redox Processes (e.g. Vitamins K, ubiquinone, Q10)
- Stress and Disease (e.g. membrane redox processes in relation to Alzheimer's disease, Parkinson's disease, cancer, atherosclerosis, phytoremediation, disorders in heavy metal acquisition, etc.)

Each session had one or two plenary lectures with invited speakers and two or three oral presentations. While lectures in the first 5 sessions listed above were connected to basic research, the 'Stress and Disease' session provided possibility for researchers to present their new results in the fields where involvement of membrane redox processes are known to be

important in diseases. Since all posters were on show next to the lecture hall and throughout the conference, there was almost unlimited possibility and time for discussions even beyond the official Poster Session.

In the present issue of *Acta Biologica Szegediensis*, 9 proceedings are published which represent a fair cross-section of scientific subjects dealt by the 57 participants from 4 continents of the Globe. Only correction in English was made at some places, however, special care was taken not to alter the content that remained the author's full responsibility.

I hereby express my thanks to my colleagues for helping in organizing the 8th ICMRS in Szeged, Hungary. Special thanks are to Drs. Balázs Szalontai and Zoltán Kóta for their expertise in preparation of the Abstract Book and the web site of the Conference, and to The Scientific Organizing Committee for helping in organizing the sessions. The Conference was generously sponsored by a grant from the Agency for Research Fund Management and Research Exploitation (KPI) in Hungary (OMFB-00622/2006).