

## Introduction for the special issue on electroporation

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Following up on the success of the first special electroporation-based technologies and treatments issue of the Journal of Membrane Biology, this special issue brings to readers of the journal recent developments in the field of electroporation that were presented and discussed during the 5th International Workshop and Postgraduate Course on “Electroporation-Based Technologies and Treatments” (EBTT 2011) held in Ljubljana, November 13–19, 2011, gathering faculty members, six other recognized researchers in the field, and 32 students from 12 different countries. A complementary staff of 12 young investigators of the Laboratory of Biocybernetics of the Faculty of Electrical Engineering of the University of Ljubljana conducted practical training exercises during the afternoons. This school is a real platform for learning, extending, consolidating, and developing knowledge of electroporation mechanisms and applications.

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The field of cell and membrane electroporation continues to grow and expand. Electroporation is now performed *in silico* (using molecular dynamics approaches), *in vitro* (using lipid planar bilayers, or lipid vesicles, very often giant unicellular vesicles termed GUVs), on cells in culture (that is *in vivo* for the biochemists but still *in vitro* for the cell biologists) as well as in tissues (termed *in vivo* by the cells biologists, and more precisely *ex vivo* if the tissue is removed and treated outside the organism or *in situ* if the tissue is treated as part of the organism). The importance of electroporation, in research and in technological (biotechnological), medical, and industrial applications, has been recognized in 2012 at the highest political level since 22 countries have signed a Memorandum of Understanding to participate in a COST action at the European level (COST TD 1104 “European network for development of electroporation-based technologies and treatments”). The Electroporation-Based Technologies and Treatments (EBTT) meeting and school is one of the many activities of this EU action.

The peer-reviewed selection of articles presented in this special issue offers a wide-ranging view of the various aspects of present research in the field of cell electroporation. We wish to thank all the contributors for their efforts in presenting their recent results to the journal’s readers who, whether new or old in the field, will find new data and interesting ideas in this special issue of the Journal of Membrane Biology.

Finally, we would like to express our sincere thanks to our scientific colleagues, to the agencies that have been sponsoring our research work for years, and to the Slovenian Research Agency, the Bioelectrochemical Society, and the Centre National de la Recherche Scientifique (CNRS). We also would like to thank BIA Separations (Slovenia), BioRad Laboratories (USA), C3 M (Slovenia), IGEA (Italy),

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