



Newsletter No. 68

15th International Scientific Workshop and Postgraduate Course
Electroporation-Based Technologies and Treatments 2021

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This year we organised the 15th edition of the International scientific workshop and postgraduate course Electroporation-Based Technologies and Treatments. Due to uncertainties related to COVID-19, both in terms of traveling and based on our experience from last year, when the school went entirely online, we decided on the hybrid form for 2021. In fact, due to COVID cases on the rise, particularly in Slovenia, we have implemented additional safety measures to minimize the health risks and reduce the uncertainty of our participants from abroad. We are happy to confirm that all participants attending the school came, stayed, and left negative – apparently this is good nowadays!

The School was held November 14 – 20, 2021 at University of Ljubljana, Slovenia, and online. This year we had 29 students/participants (of which 26 on-site, 3 online) and 15 lecturers (including faculty members), of which 12 were present on-site and 3 lectured online. The organisation allowed for listening and questions live to both online and on-site participants, with several screens mounted on the walls, and with the excellent support of our LMMFE team from the Laboratory for Multimedia. As it turned out the experience from last year – even though rather painful from time to time – paid well.

The topics covered in the mornings by the faculty members and *permanent/resident* invited lecturers Tadej Kotnik, Lea Rems, and Maja Čemažar, included: cell in the electric field, electroporation, electrical properties of cells and tissues and their behaviour in the electric field, physical chemistry of membrane electroporation, electroporation *in vitro* & *in vivo*, development of devices & electrodes, electrochemotherapy of tumours, and applications of electroporation in gene transfection.

These were complemented by invited lecturers presenting state-of-the-art in the field of microalgae, cardiac ablation, cell and tissue cryopreservation, and gene therapies. Iris Haberkorn from ETH Zurich, Switzerland, started Monday afternoon with: “PEF in food treatment and microalgae”; followed on Tuesday by Oleksandr Gryshkov from Leibniz University Hannover, Germany by: “Tissue Cryopreservation: Methods, Novel Trends and Research Highlights”. Wednesday was devoted to excitable cells: Rodney P. O'Connor from Ecole des Mines de Saint-Etienne, France, with “Pulsed electric field effects in excitable neural cells - *in vitro* to *in vivo* studies using flexible electronics”; and Christian Zemlin from Washington University in St. Louis, USA with “Cardiac ablation and defibrillation with pulsed electric fields.”



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Thursday was the day for gene transfer and was complemented by Richard Heller from University of South Florida, USA, with online lecturing on “Prophylactic and Therapeutic Applications of Gene Electrotransfer”; and Friday being traditionally devoted to electrochemotherapy with Erika Kis from Medical University of Szeged, Hungary, presenting “Calcium electroporation as a possible novel anticancer treatment”.

The lectures by faculty members and invited lecturers were complemented by short presentations by all participants seeking ECTS credits and poster presentations/discussions that were well attended during the coffee breaks. All submitted abstracts along with invited lecturers’ abstracts are gathered in the EBTT Proceedings (online at 2021.ebtt.org/proceedings). Do not forget that Electroporation Based Technologies and Treatments book is available free of charge for download (from 2021.ebtt.org/index.php?id=13) in English and Spanish (and hopefully soon in Portuguese).

The laboratory practices sessions are important as they complement and deepen the knowledge gained in the lecture room. Practical work sessions were conducted in the afternoons both on-site and online. Participants could choose between 18 wet labs, computer simulations, e-learning and hardware laboratory practices. Based on selection, 13 were performed in the laboratories for 29 participants, and 4 practical lab works were performed online for three online participants.

This year for the first time we prepared and exposition of electroporators that we have available in our lab: commercial and laboratory prototypes. On Friday during coffee break, commercial and “homemade” electroporators were made available to the participants, who were able to view and test them. In the evenings, get-together dinners or social events were organised to strengthen the relations between researchers on electroporation. The social event was organised on Wednesday afternoon. We have visited the medieval town of Radovljica, its beekeeping museum, and the chocolate house. The trip concluded at the Bled castle with a delicious dinner.

As every year the faculty members, invited lecturers, and participants have been supported by 21 tutors and organisers, totalling 69 participants, making in fifteen editions a sum of 960 participants from 43 countries who have attended the course since 2003 when school was organised for the first time. Our goal remains to provide excellent experience to all participants (on-site and online) and to constantly improve the quality of the school. We are looking forward to reach 1000 participants at the EBTT next year – the school will be organised November 13 – 19, 2022, in hybrid form. For photos of this year’s edition, see 2021.ebtt.org/index.php?id=9.

Forthcoming events

8th School on Pulsed Electric Field Applications in Food and Biotechnology

Compiègne, May 30 – June 3, 2022

<https://pefschool2022.electroporation.net>

4th World Congress on Electroporation and Pulsed Electric Fields in Biology, Medicine, and Food & Environmental Technologies

Copenhagen, October 9 – 13, 2022

<https://wc2021.electroporation.net>

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Participants (on-site) of the EBTT 2021.



Exhibition of a commercial and homemade electroporators at the Friday coffee break.

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