



Newsletter No. 103

International Scientific Workshop and Postgraduate Course EBTT 2024

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International Scientific Workshop and Postgraduate Course Electroporation-Based Technologies and Treatments (EBTT) is a course of the PhD programme Biomedicine at the University of Ljubljana since 2003. Until 2011, the course was held biennially, since then it has been held annually. It is aimed at both beginners and experts in the field of electroporation, including doctoral students, researchers and end users. This year we organised the 18th edition of the International scientific workshop and postgraduate course Electroporation-Based Technologies and Treatments. The event took place from November 11th – 16th, 2024 at the University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, Slovenia, and was held also online, i.e. in a hybrid form. This year, we had to stop on-site registrations mid-October when the school was already full. The school was attended by 42 participants (28 on-site, 14 online) and 22 speakers (20 on-site, 2 online), totalling 64 attendees from 15 countries.

One of the highlights of this year's EBTT School was a roundtable discussion on Safety and efficacy of gene transfer by electroporation: localized and controlled delivery can elevate gene therapy, which was attended by 9 panellists, each followed by discussion and more than 100 participants from all over the world (on-site and online). Most of the participants in the roundtable discussion came from academic or research institution (e.g. university, institute) (60 %), followed by participants from companies (25 %), then from governmental institutions (10 %) and some from health-care provider (e.g. hospital, health centre) (4 %). Different topics and views were presented – the complete edited recording is available at <https://2024.ebtt.org/round-table-recording/>.

Topics of this year's EBTT were the electrical properties of cells and tissues and their behaviour in an electric field, the physical chemistry of membrane electroporation, electroporation *in vitro* and *in vivo*, the development of devices and electrodes, electrochemotherapy of tumours, and applications of electroporation in gene transfection. In addition to core lectures given by faculty members, invited lecturers offered insights from their fields of expertise. Leandro Buchmann from the Bühler Group (CH) presented the role of electroporation in food industry. Vitalij Novickij (LT) pointed out that many challenges and limitations must be overcome in building electroporation generators. Loree Heller (US) gave a short presentation on *Nucleic acid sensing* and David Sourdiv from Collectis (FR) presented *Gene editing for cell-based therapies*. Paolo Garcia from BLASTID & Kytopen (US) had a lecture on *Scaling non-viral gene delivery for cell-based therapies*. Andrei Pakhomov (US) gave a presentation on *Real-time imaging and conductance tracking of individual electropores in live cells*, and Quim Castellvi (ES) gave a talk on *Electrophysiological Effects of Electroporation on Myocardium*. Finally, Vivek Reddy (US) presented *Pulsed field ablation treatment of cardiac arrhythmias*.

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The lectures were important to acquire all the theoretical knowledge, while in the afternoon participants were invited to the laboratories to learn also the practical knowledge. In the evening, social events were organised to strengthen the relationships between researchers, lecturers and participants.

The practical laboratory exercises were carried out both on-site and online. Participants could choose from a list of 17 different lab exercises. Of these, 15 different lab exercises were conducted for 28 participants in wet labs, the computer room (simulations, e-learning) and the hardware lab. In addition, three online lab exercises were conducted for 14 participants.

This year we decided to reward young scientists and organised a poster competition for the first time. The posters were judged each day during the coffee break by Lluís M. Mir, Olga Pakhomov, Marie-Pierre Rols, Gregor Serša and Mounir Tarek. The prizes were awarded to: 1st place Jernej Jurič (Slovenia), 2nd place Dominik Martinů (Czech Republic), 3rd place Coralie Cayron (France) and another 3rd place Jaka Vrevc Žlajpah (Slovenia).

During the coffee break on Friday, several commercially available and "in-house" electroporators from the Laboratory of Biocybernetics, Faculty of Electrical Engineering, University of Ljubljana were on display in the auditorium and could also be tried out.

In the 18 editions of the course, 1199 participants from 45 countries have taken part. Our goal remains to provide excellent experiences for all participants (on-site and online) and to constantly improve the quality of the school. This is also made possible by generous support of our numerous sponsors, to whom we are thankful for their support.

We invite you to participate in the next, 19th edition of the EBTT taking place 10th to 15th November 2025. Information will be published on the website in the following months. Registration opens in spring; reserve your seat before it's too late!



One of the hallmarks of EBTT are the lively and animated coffee breaks offering invaluable networking and discussion opportunities to students and faculty.

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A moment from one of the practical work sessions.

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