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International Society for Electroporation-Based Technologies and Treatments

ISSN: 2463-9850

March 2024

read online at goo.gl/k2q9A0

Newsletter No. 94

20 years of the EBTT International Scientific Workshop and Postgraduate Course

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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 every two years, since then it has been held every year. 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 17th edition of the International scientific workshop and postgraduate course Electroporation-based Technologies and Treatments. The event took place from November 13–18, 2023 at the University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, Slovenia, and was held also online in a hybrid form. This year, 50 participants (37 on-site, 13 online) and 16 speakers (15 on-site, 1 online) from 19 countries attended the EBTT school, which is the highest number of participants since the first event.

This year was a special year because it was 20 years ago that the first EBTT school was held in 2003. In reflecting on 20 years of EBTT we have numbers and statistics that demonstrate the incredible success of this year's event, bringing together a diverse and talented group of individuals from around the globe. The highlight of this year's EBTT School was a roundtable discussion on Pulsed Field Ablation for Atrial Fibrillation: Safety, Efficiency, and Regulatory Knowledge Gaps, which was attended by 12 panellist, each followed by discussion and more than 200 participants from all over the world (on-site and online). Different topics and views were presented – the complete edited recording is available at https://2023.ebtt.org/round-table-recording/ (already viewed more than 550 times).

On Tuesday evening, the University of Ljubljana organised a ceremony to mark the 20th anniversary of the EBTT. Professor Marko Topič, dean of the Faculty of Electrical Engineering and professor Boštjan Markoli, vice-rector of the University of Ljubljana handed in recognition awards for outstanding commitment to the EBTT school over the past twenty years. Professor Richard Heller from the University of South Florida gave a captivating lecture entitled "Electroporation: Transformation from a Laboratory Technique to a Comprehensive Platform Technology." The lecture shed light on the incredible journey of Electroporation, a technique that has evolved from its humble beginnings in the laboratory to become a comprehensive platform technology with wide-ranging applications. A short movie recapitulating two decades of Electroporation-Based Technologies and Treatments was produced by the multimedia team of the Faculty of Electrical Engineering and can be viewed at the following address: https://youtu.be/sLDTc_azkHk.

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The topics of this year's EBTT: 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. The lectures were given by faculty members and invited lecturers covering the core topics. In addition, speakers presented the state of the art in their fields of expertise. Ksenia Blinova and Maura Casciola from the Food and Drug Administration (USA) presented regulatory research that introduces a standardised preclinical test to facilitate the non-clinical advancement of PEF-based cardiac ablation devices. James Lyng (Ireland) gave a presentation on *The use of moderate and high voltage electric fields in food processing and the circular bioeconomy*. Rafael Davalos (USA) showed *The advances in irreversible electroporation technology and novel clinical applications*. Antoni Ivorra (Spain) gave a lecture on *Collateral effects of electroporation: heating, electrical stimulation and electrochemical reactions*, and Atul Verma (Canada) gave a presentation entitled *Will pulsed field ablation change the treatment of arrhythmias*.

The morning lectures were important to acquire all the theoretical knowledge, while in the afternoon participants were invited to the laboratories to also gain 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 21 different lab exercises. Of these, 18 different lab exercises were conducted for 31 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. During the coffee break on Friday, several commercially available and "home-made" 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.

This year, a second edition of the book "Electroporation-based Technologies and Treatments" was prepared, which will also be available free of charge as an electronic book. The book was reviewed by Professor Dr. Aleš Iglič from the Faculty of Electrical Engineering and Professor Dr. Rok Romih from the Faculty of Medicine at the University of Ljubljana. The form you can use to obtain your copy is available at https://book.ebtt.org.

In the 17th edition of the course, 1112 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. We invite you to participate in the next, 18th edition of the EBTT from November 11 to 16, 2024. Information will be published on the website in the following months. Registration opens in spring; reserve your seat, before it is too late!

Forthcoming events

XXVIII International Symposium on Bioelectrochemistry and Bioenergetics of the Bioelectrochemical Society

Madrid, May 19 – 23, 2024

https://congresosalcala.fgua.es/bes2024

9th European Medical and Biological Engineering Conference

Portorož, June 9 – 13, 2024

https://www.embec2024.org/

www.linkedin.com/company/isebtt/

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Lectures were hosted in the recently renovated multimedia lecture hall at the Faculty of Electrical Engineering of University of Ljubljana.

Newsletter is issued in electronic form only by The International Society for Electroporation-Based Technologies and Treatments (ISEBTT).

ISSN: 2463-9850