



## Newsletter No. 36

### 4<sup>th</sup> Veterinary Workshop on Electroporation-based Treatments

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The 4<sup>th</sup> Veterinary workshop on electroporation-based treatments took place 2<sup>nd</sup> and 3<sup>rd</sup> of April 2019 in Ljubljana at the Veterinary Faculty of the University of Ljubljana. It was organized by the Institute of Oncology Ljubljana, University of Ljubljana, and SZVMŽ (Slovene Small Animal Veterinary Association). The workshop was co-financed by the ISEBTT. There were 21 participants of the workshop who came from Italy, Slovenia, Croatia, Germany, Denmark, United Kingdom, Belgium, Brazil, and Romania. During the first day of the Workshop, lecturer Damijan Miklavčič (University of Ljubljana, Faculty of Electrical Engineering) presented the basics of electroporation of cells and tissues. Preclinical electrochemotherapy was presented by Maja Čemažar (Institute of Oncology Ljubljana), and its use in human clinical practice by Gregor Serša (Institute of Oncology Ljubljana) and Aleš Grošelj (University Medical Centre Ljubljana). The use of electrochemotherapy in veterinary oncology was introduced by Nataša Tozon (University of Ljubljana, Veterinary Faculty) with the lecture on experience in electrochemotherapy in dogs and cats and Joško Račnik (University of Ljubljana, Veterinary Faculty) with the lecture on experience in electrochemotherapy in exotic animals. Bor Kos (University of Ljubljana, Faculty of Electrical Engineering) presented numerical modeling for electroporation-based treatment of canine tumors. The lectures were followed by practical work, where the participants were divided into two groups and rotated between two rooms where electrochemotherapy on veterinary patients was performed. In room one, the first patient was a dog with histiocytoma on right ear and the second was a ferret with mast cell tumor on left hind leg. Both of them were treated with electrochemotherapy using cisplatin intratumorally. In room two, first a dog with plasmacytoma on the lower lip was treated by a combination of electrochemotherapy (cisplatin intratumorally) and gene electrotransfer of IL-12, and the second patient was a cat with squamous cell carcinoma that was treated with electrochemotherapy using bleomycin intravenously (see figure verso).

The second day of the workshop started with the lecture of Darja Pavlin (University of Ljubljana, Veterinary Faculty) who presented preclinical and clinical use of gene electrotransfer. Next, Urša Lamprecht Tratar (Institute of Oncology Ljubljana) presented an on-going clinical study on spontaneous tumors in dogs using electrochemotherapy in combination with gene electrotransfer of interleukin-12. Her lecture was followed by presentations of case reports.

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**3<sup>rd</sup> World Congress on Electroporation  
& Pulsed Electric Fields in Biology, Medicine  
& Food and Environmental Technologies**  
Toulouse, France September 3–6, 2019





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The first case report was given by Nina Milevoj from University of Ljubljana, Veterinary Faculty ("Electrochemotherapy, IL-12 Gene Electrotransfer and Cyto-reductive Surgery in the Treatment of Canine Oral Malignant Melanoma"), followed by Filippo Torrigiani from University of Pisa, Department of Veterinary Sciences, Italy ("Soft Tissue Sarcoma in Dogs: A Novel Approach Using Electrochemotherapy") and Mariateresa Camerino from University of Turin, Department of Veterinary Sciences, Italy ("Adjuvant CSPG4-Antigen Electrovaccination in Canine Malignant Melanoma"). Nina Milevoj and Filippo Torrigiani also presented on-going research on bleomycin pharmacokinetics in dogs and cats. The last lecture of the day was presented by Nataša Tozon about the communication between the owner and the veterinarian considering electrochemotherapy and gene electrotransfer. After that, the practical work followed where participants could observe the follow up visits of patients from an ongoing clinical study. There were three patients, two dogs with a mast cell tumor one week after the treatment, and a dog with a mast cell tumor two weeks after the treatment. After the practical work the workshop ended with concluding remarks of Nataša Tozon and a vibrant discussion about the practical use of electrochemotherapy.

The participants showed great interest in electrochemotherapy and the results of this treatment. Moreover, according to the survey which was organized after the workshop, participants were satisfied with the lectures and the practical work. The majority of the participant stated that more than 50 % of the information heard in the workshop was new to them. Some of the participants also suggested additional topics to be discussed during the next workshop, such as a lecture about the use of electrochemotherapy in horses, presentation of different devices in use for electrochemotherapy, and the use of calcium electroporation.

Altogether, the 4<sup>th</sup> Veterinary workshop on electroporation-based treatments was a successful event.



Nataša Tozon with Nina Milevoj and Urša Lamprecht Tratar.



Presentation of a case report.

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Treatment of SCC in a cat by electrochemotherapy using bleomycin intravenously.

Forthcoming events

6<sup>th</sup> School on Pulsed Electric Field Applications in Food and Biotechnology

Cesena, June 3 – 7, 2019

<http://pefschool2019.electroporation.net>

Electroporation-Based Technologies and Treatments

Ljubljana, November 10 – 16, 2019

<http://2019.ebtt.org>

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