



Electrochemotherapy Devices
Since 2011



**Supporting you
in your cancer
care offer**





We are **LEROY Biotech**

- LEROY Biotech is a French start-up founded in **2015** by Jean-Baptiste LEROY and Loïck ROYANT with the goal of developing **veterinary electroporators**.
- LEROY Biotech benefited from **15 years of savoir-faire** in the conception of electroporators thanks to the **specialized engineers** that we have recruited.

01

Family-owned Company
100%

02

Dedicated employees
10 persons

Our veterinary Electroporators



More than 20 years of *savoir-faire*.

The engineers who design and develop our veterinary electroporators have been the same for 20 years.

Thanks to this exceptional team, LEROY Biotech benefits from expertise envied by other manufacturers and incomparable know-how in medical high voltage.

● 2023

ELECTROvet EZ V4.0

4rd version of the ELECTROvet EZ model, better efficiency, reduction of necrosis, reduction of muscle contractions.



● 2018

ELECTROcell B15

High voltage bipolar electroporator dedicated to research and vaccination trials against cancer.



● 2016

ELECTROvet EZ V1.0

First compact electroporator dedicated to small animal oncologist veterinarians.



● 2011

ELECTROvet 13

First electroporator entirely dedicated to veterinary use

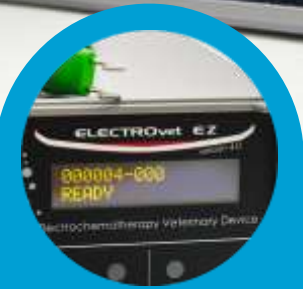


● 2002

BetaTech electroporator

Laboratory generator used for the 1st in-vivo studies on humans and animals.





ELECTROvet EZ V4.0

*57 units sold worldwide since 2023
(409 in total from the first launch since 2016)*



World leader of veterinary electroporators

In 8 years, thanks to the **ELECTROvet**, LEROY Biotech became the global leader in **veterinary electrochemotherapy**.



Best-selling veterinary electroporator in the world.



Our electroporators are used by **360 veterinary clinics** around the world.



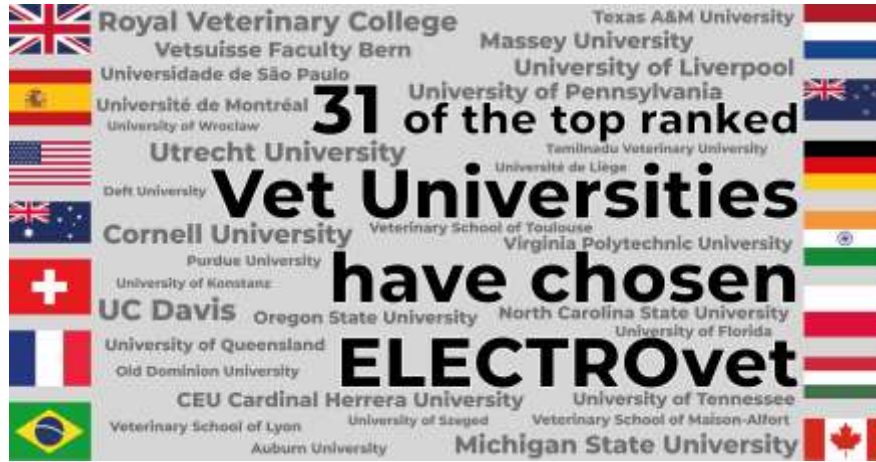
48 countries supplied from France



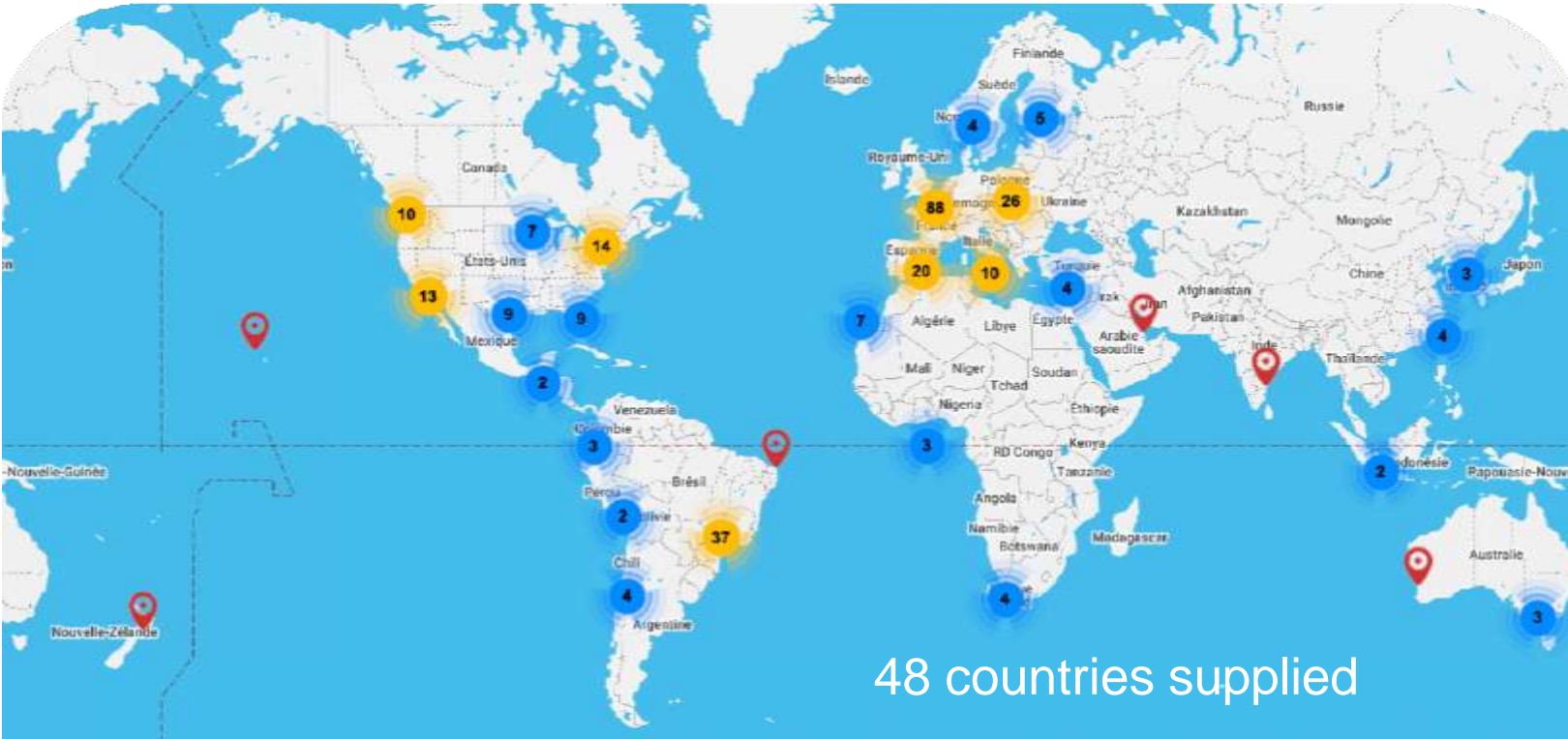
To date approximately 25,000 animals have been treated with our veterinary electroporators.



Our customers



Hundreds of graduate students each year have had the opportunity during their veterinary studies to see and use an ELECTROvet.



48 countries supplied

16 Mars Veterinary Health hospitals use an ELECTROvet EZ



BluePearl Pet Hospital Northfield Northfield United States



VCA Katonah Bedford Veterinary Center Bedford Hills United States

VCA Regional Institute for Vet Emergency and Referrals Chattanooga United States

VCA Veterinary Emergency Service & Veterinary Specialty Center Middleton United States



VSH Kowloon Kowloon Hong-Kong

VSH Hong Kong Hong-Kong Hong-Kong



AniCura Dyresykehus Oslo Oslo Norway

AniCura Jeløy Dyrelinikk Moss Norway

AniCura Kleintierzentrum Heilbronn Heilbronn Germany

AniCura Aarhus Dyrehospital Viby J Denmark

AniCura Albea Veterinarios Las Palmas Spain

AniCura Buenavista Hospital veterinario Oviedo Spain

AniCura Uribe Kosta Clínica Veterinaria Sopela Spain

AniCura Estoril Hospital Veterinario Madrid Spain

Ars Veterinaria Barcelone Spain

Clinique Vétérinaire AniCura TRIOVet Rennes France





Presentation of **ELECTROvet EZ** **V4.0**



57 units sold worldwide since 2023

Simple & Sturdy

The ELECTROvet EZ V4.0 remains the easiest machine to perform ECT in your clinic.



Easy
to use

Press the pedal to charge the device, then **press the pedal** again to deliver pulses - that's it!

Sturdy
& strong

The machine is composed of a reinforced **military case** that is resistant to falls. Connectors are **medical grade** and used in human medicine.

smart and
simple to set up

Intelligent system for evaluation of pulses delivery and possibility of modifying all the **electrical parameters**.

EZ like Easy



01 Easy to operate

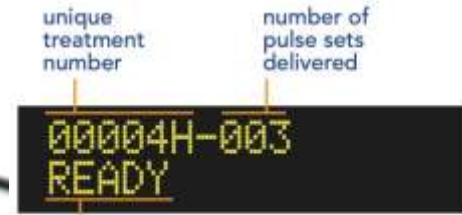
Simple Pedal:

Press the pedal to **CHARGE** the device.
Then press it again to **DELIVER** electrical pulses.

02 Easy to understand

- **CHARGE** Electroporator is charged
+ 1 beep 🎵
- **PASS** Pulse sets have been delivered
+ 2 beeps 🎵 🎵
- **FAIL** Pulse sets were not properly deli
+ 1 long beep 🎵))))))

03 Easy to record



unique treatment number

number of pulse sets delivered

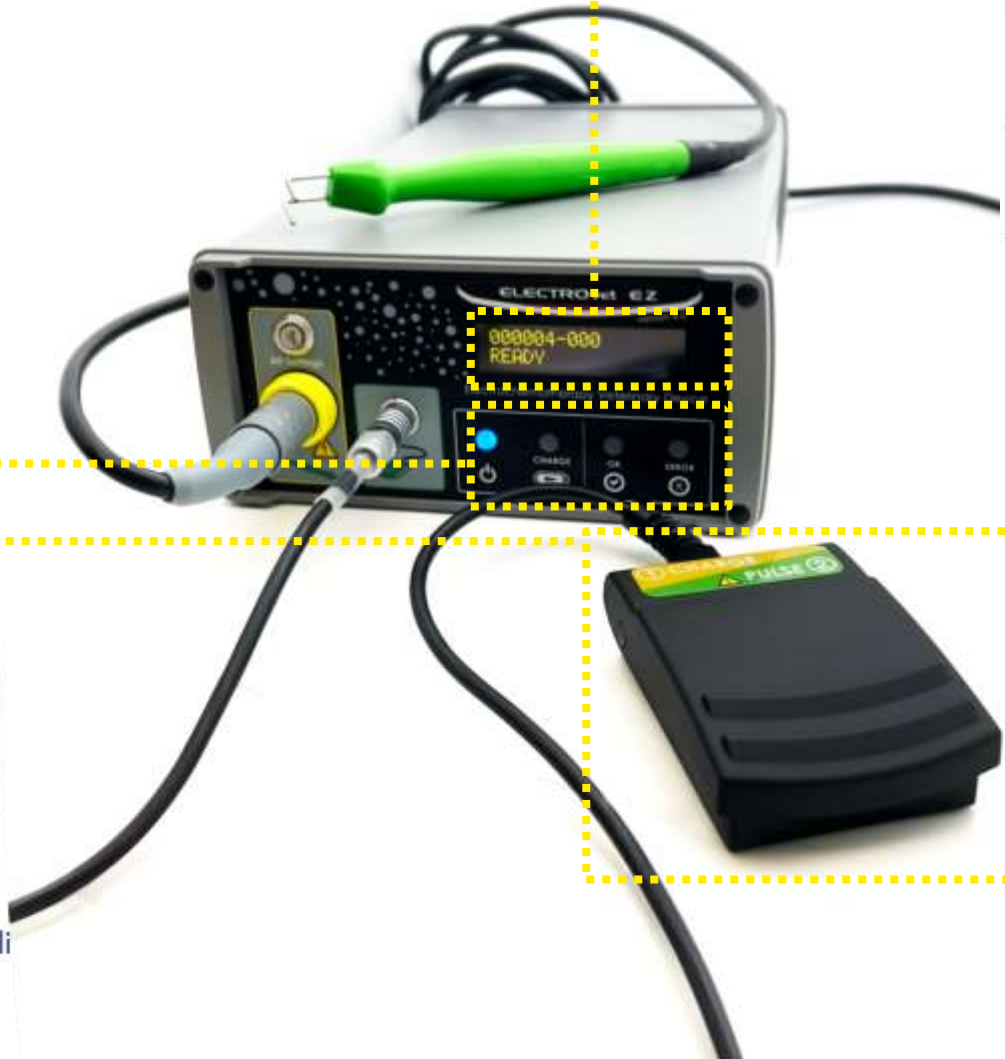
Information about the machine or the delivered pulses

A log file is systematically recorded on the USB key located on the back panel of the machine.






04 Easy to carry

Light, robust and space-saving device
Machine weighs 3kg



a wide range of veterinary electrodes

Our electrodes are:

-  Cleaned in washer disinfectors
-  Autoclavable*
-  Reusable several times



**Except the nasal electrodes*

contact

L-shape electrodes



All types of cutaneous and subcutaneous tumours.

Plates electrodes



All types of cutaneous and subcutaneous tumours.

invasive

8 needles electrodes



Cutaneous and subcutaneous soft tissue tumours.

4 needles electrodes



Tumours located in cavities.

Nasal electrodes



Nasal tumours or urethral tumours

a wide range of veterinary electrodes

Our electrodes are:

- Cleaned in washer desinfectors
- Autoclavable*
- Reusable several times

**Except the nasal electrodes*

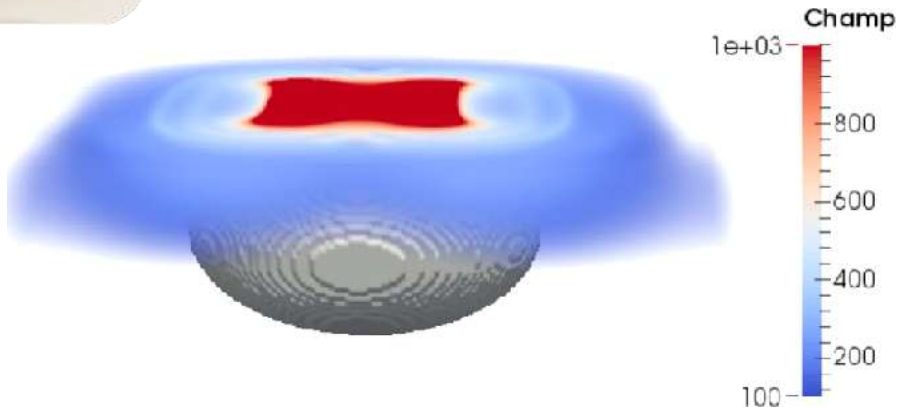


contact

L-shape electrodes



Distance between electrodes : **1cm**
Electric Field Strength : **1,300 V.cm⁻¹**
Average permeabilized volume : **1cm³**

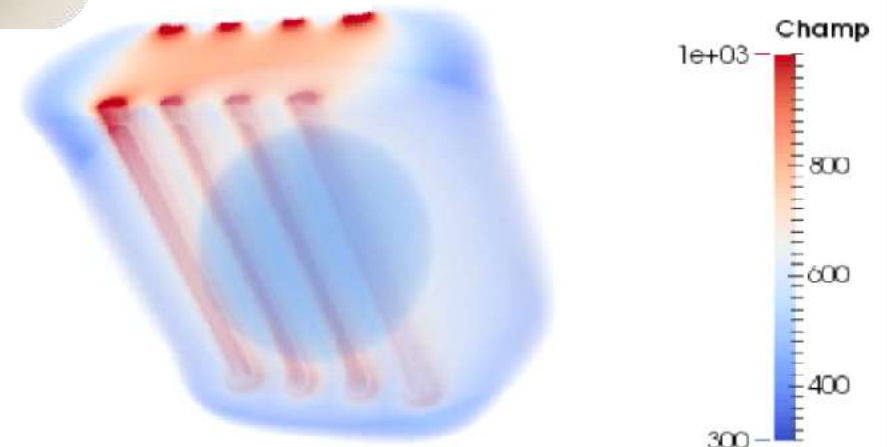


invasive

8 needles electrodes



Distance between electrodes : **0.4 cm**
Electric Field Strength : **1,000 V.cm⁻¹**
Average permeabilized volume : **0.9 cm³**

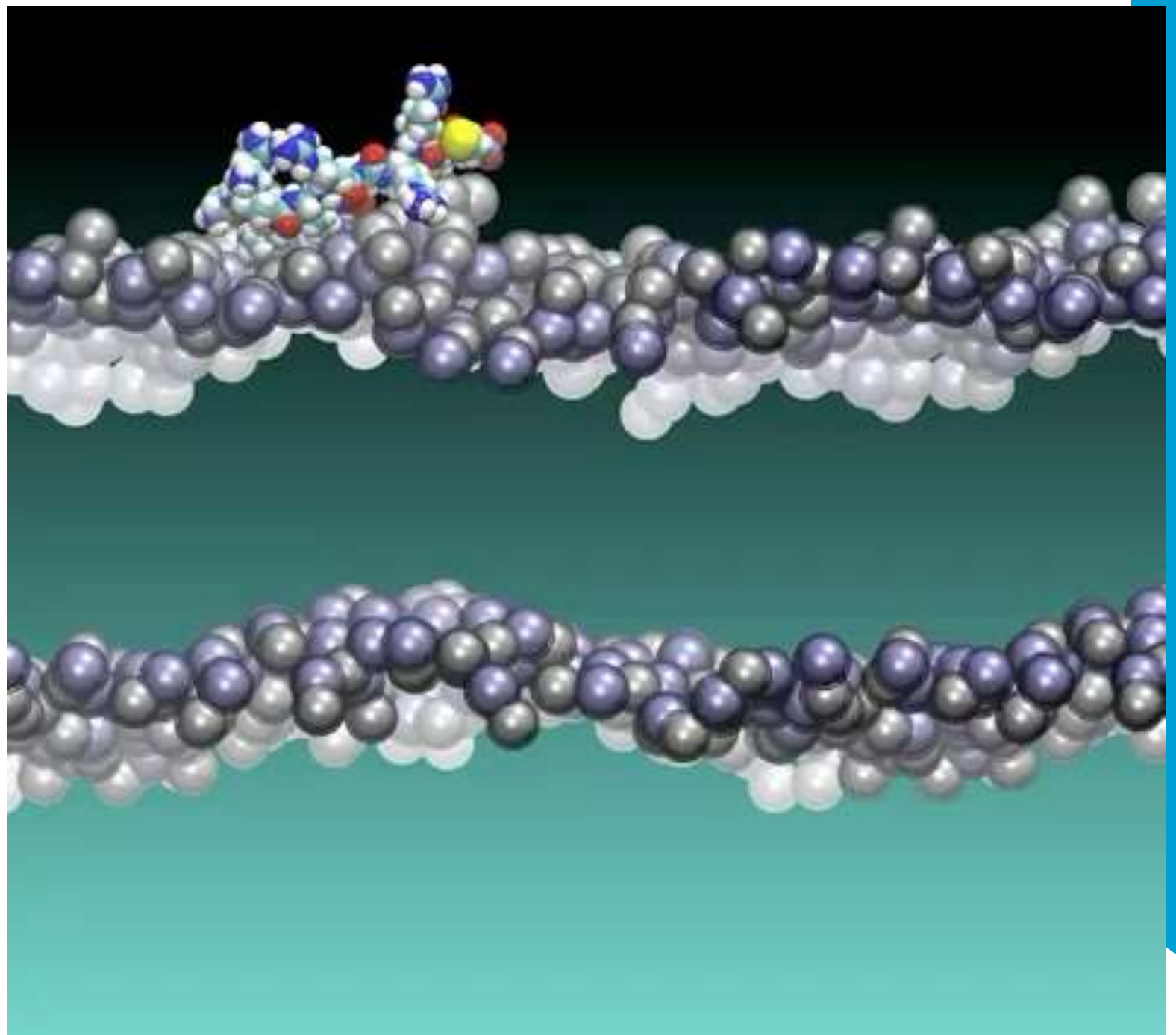


Presentation of **electrochemotherapy**



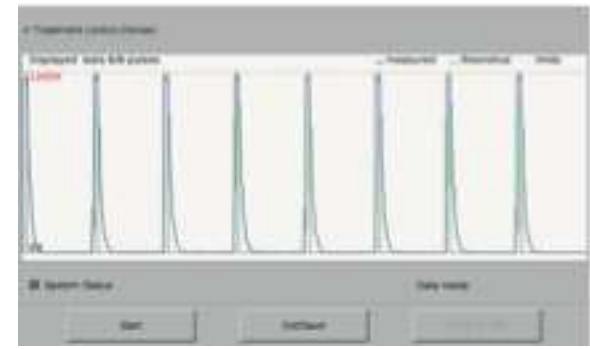
About electroporation

Membrane permeabilization
or « electroporation »
occurs in the presence of
an electric field between
 $1000V.cm^{-1}$ and $1300.cm^{-1}$



Different gaps

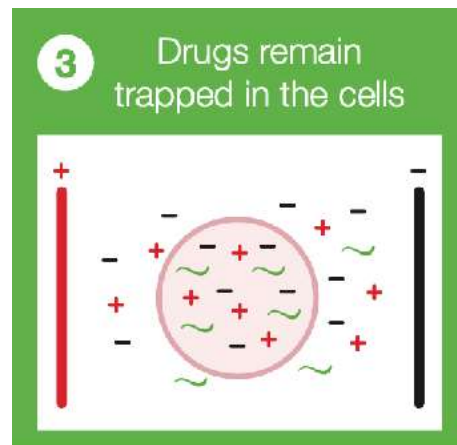
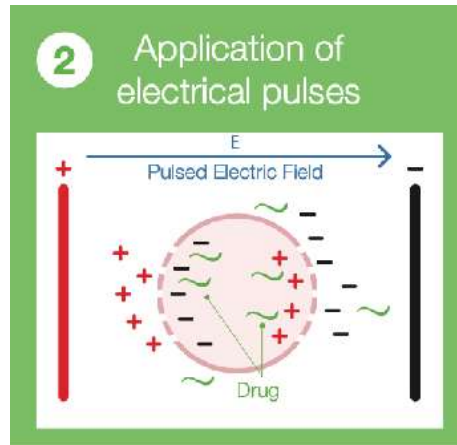
Same electric field $1300V.cm^{-1}$



Electrode ID 2 - 10	Picture	Description Min - Max values for selected device	Voltage 50 - 1500 V	Duration 20 - 5000 μs	Frequency 0.1 - 10000 Hz	Period 0.1 - 10000 ms	Repetitions 1 - 200 pulses
2		10mm L shape	1300 V	100 μs	5000 Hz	0.2 ms	2 pulses
3		15mm needle	500 V	100 μs	5000 Hz	0.2 ms	8 pulses
4		8mm plate	1040 V	100 μs	5000 Hz	0.2 ms	8 pulses
5		10mm needle electrode for cavities	400 V	100 μs	5000 Hz	0.2 ms	8 pulses
6		Nasal Electrode (BETA VERSION)	500 V	100 μs	5000 Hz	0.2 ms	8 pulses

About electrochemo therapy

Electrochemotherapy consists of permeabilizing cells using an electric field that will destabilize the membrane, in order to allow cytotoxic drugs to penetrate very effectively.



1°. General anesthesia of the animal is performed.

2°. Bleomycin is injected intravenously, and sometimes intratumorally.

3°. We wait 6 to 8 minutes for the bleomycin to diffuse into the animal's body.

4°. The electric field is applied to the areas to be treated, taking care to treat a margin of one to two centimeters around the lesion.





About Side effects

Electrochemotherapy causes 2 undesirable effects that are now under control, but which can sometimes be impressive.

tissue necrosis

Death of cells due to too intense electric fields.
Appearance after 4 to 7 days

Effect now under control.

edema

Edema caused by an immune reaction in the patient's body.
Duration 24h / 48h

Uncontrolled effect.






Vasoconstriction

Local effect having the effect of sequestering the chemotherapy agent in the tumour.

Uncontrolled effect.

Cases treated by **electrochemotherapy**



-  Dr. Orsolya Juhász
-  Bleomycine
-  Intravenous
-  1 session
-  «L» contact electrodes



Before treatment



3 weeks after ECT



8 weeks after ECT


Adenocarcinoma




 Dr. Claudia de la Riva

 Bleomycine

 Intravenous

 2 sessions

 «L» contact electrodes
4 needles electrodes



Before treatment



3 weeks after 1st ECT



4 weeks after 2nd ECT
(8 weeks after 1st ECT)



Squamous cell carcinomas



Dr. Pascual de Rojas



Bleomycine



Intravenous



1 session



«L» contact electrodes



Before treatment




3 weeks after ECT




8 weeks after ECT


Squamous cell carcinomas sublingual




 Dr. Pascual de Rojas

 Bleomycine

 Intravenous

 1 session

 8 needles electrodes
4 needles electrodes



Before treatment



8 weeks after ECT

Nasal squamous cell carcinomas



Dr. Claudia de la Riva



Bleomycine



Intravenous



2 sessions



Nasal electrodes
4 needles electrodes




Before treatment





9 weeks after 1st ECT



 Dr. Fabien Relave

 Cisplatin

 Intratumoral

 3 sessions

 «L» contact electrodes



Before treatment



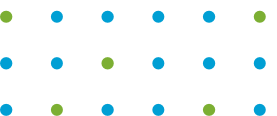
1 week after 2nd session



1 week after 3rd session



6 month after 3rd session



Sarcoid



Dr. Y. Tamzali

Cisplatin

Intratatumoral

4 sessions

«L» contact electrodes



Before treatment

2 weeks after 1st session

2 weeks after 3rd session

6 month after 4th session



Dr. Y. Tamzali

Cisplatin

Intratumoral

4 sessions

«L» contact electrodes



Before treatment



2 weeks after 1st session



2 weeks after 3rd session



6 month after 4th session