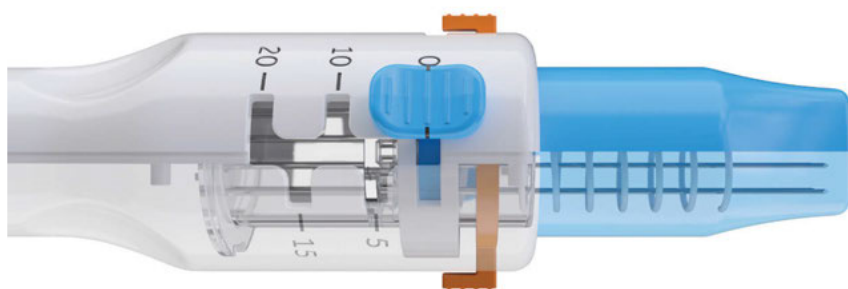
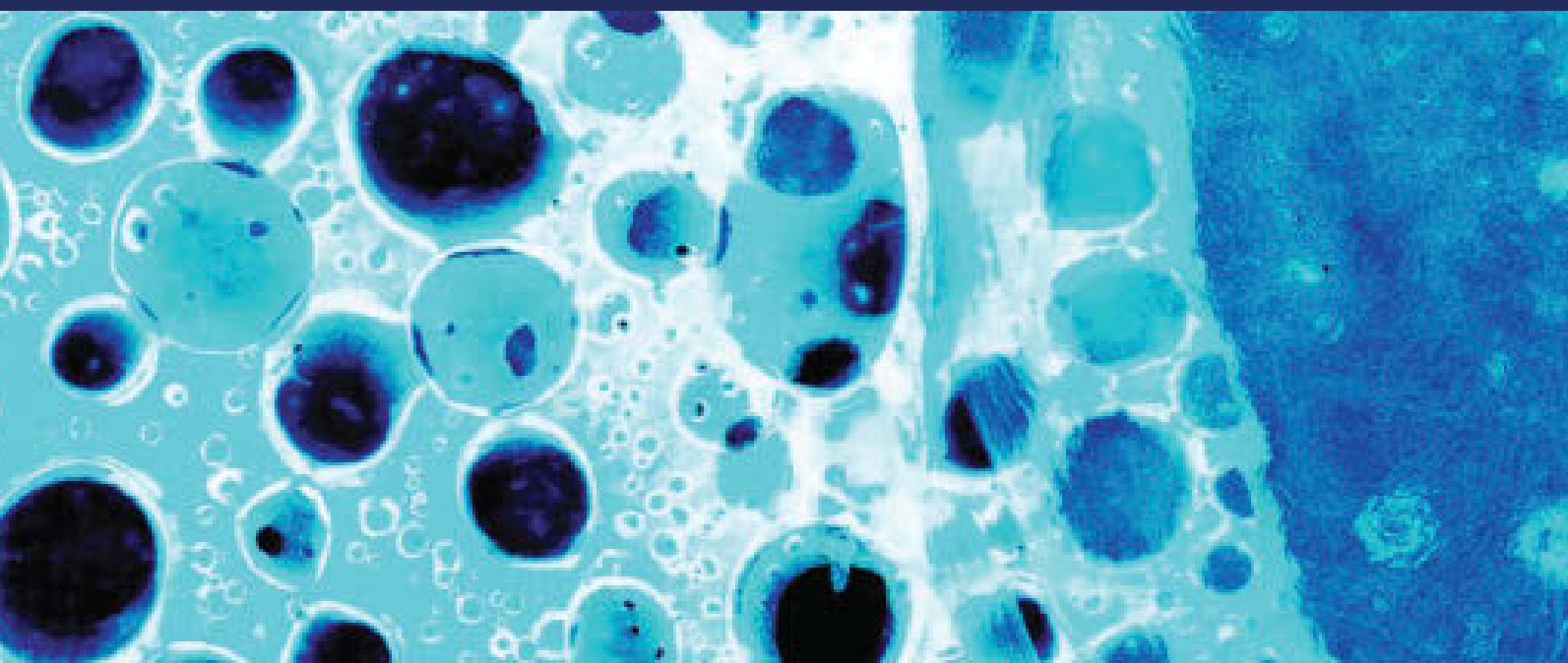


ePORE & CUTIS

Precision, Electroporation for Cancers of the Skin

THE FUTURE OF ELECTROPORATION



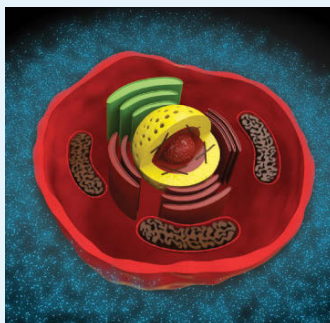
MIRAI MEDICAL
Innovative Cancer Solutions

CE
0051

MIRAI MEDICAL has developed the **CUTIS electrode** to target cutaneous and subcutaneous cancers. The adjustable length electrodes can deliver electroporation pulses to tissue up to 2cm deep.

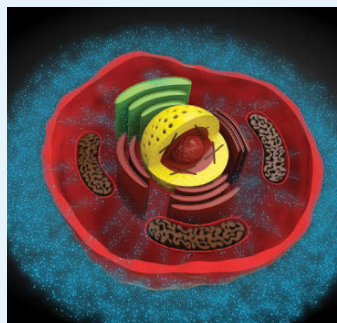
Our **ePORE** generator is unique in being capable of delivering electroporation pulses at a frequency of 250KHz which eliminates muscular contractions⁴ and allows the procedure to be performed under local anaesthetic (LA). This advancement means that many patients will be treated under local anaesthetic in an outpatient setting, reducing the time and financial burden on healthcare resources, the treatment of patients earlier in their disease state, and the ability to offer treatment to patients that are unable to tolerate general anaesthesia.

HOW ELECTROPORATION WORKS



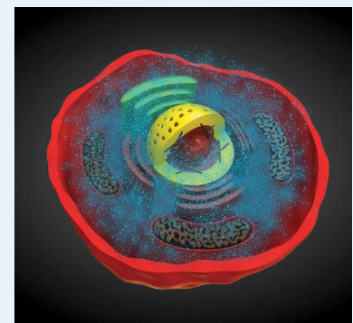
Cell membrane before pulse

Pulse
(< 1 Sec)



Cell membrane during pulse

Recovery
(5-30 mins)



Cell membrane after pulse
(cell returned to original state)

Electroporation with chemotherapy has been in clinical use for more than 15 years and in 2006 the European Standard Operating Procedure (ESOP) ^{1,2} which described the standard delivery of the procedure including chemotherapy dose. In the last 5 years calcium has been identified as an alternative to chemotherapy.

The effectiveness of electroporation in tumour ablation clinically has been reported by a growing number of clinicians in the US and Europe with excellent quality of life and tumour reduction reported for both cutaneous and intraluminal applications.

Electroporation pulses were typically delivered previously at 1Hz or 5KHz. The **ePORE** can now deliver these pulses at 250KHz greatly simplifying the delivery and minimizing patient discomfort.

ePORE ELECTROPORATION GENERATOR

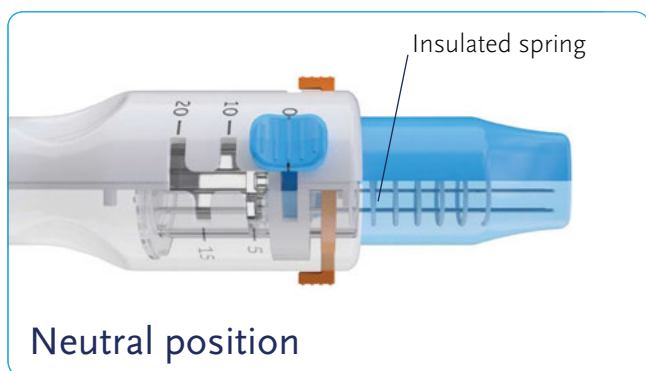
This significant innovation in electroporation delivery has stemmed from multiple years of R&D and a team that has been jointly involved in the electroporation field for more than 20 years.

The benefits of ePORE are:

- Simple “plug and play” set up
- Portable (17kg)
- Touch screen interface
- Standard generator for all electrodes



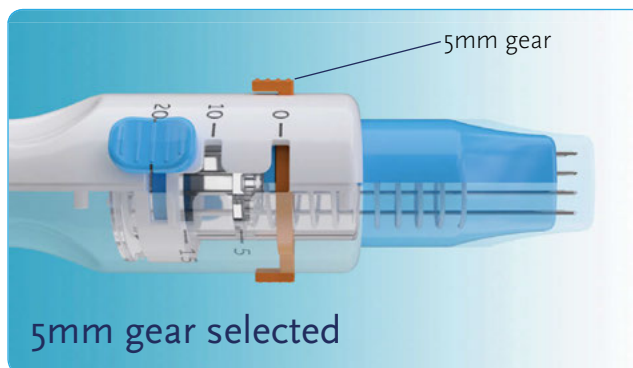
CUTIS ELECTRODE



Taking feedback from experienced clinicians across Europe our CUTIS skin electrode has been designed and engineered with both the clinician and patient in mind.

The retractable head offers unique benefits:

- Needles are fully supported as they enter and penetrate tissue, avoiding needle bending, convergence.
- Patients treated under LA do not see the needles, relieving potential anxiety.
- No need for recapping.



Step 1.

Use blue thumb-slide to select depth of treatment required.

Option to use orange selector which allows you to expose 5mm of needles for precision placement.



Step 2.

Insert the electrode to the predetermined depths. The insulated spring will compress as the electrode is inserted, the blue cap will support needles and maintain alignment.

As the electrode is withdrawn the cap will return to the neutral position and re-sheath the needles, ensuring safety.

CUTIS AND ePORE ADVANTAGES

- High frequency electroporation with no muscular contraction.
- Ability to be delivered under LA in an outpatient setting.
- Precision delivery of non-thermal ablation.¹
- Preservation of healthy tissue.²
- CUTIS and ePORE are repeatable and leave standard treatment options available.
- Significant cost savings.

THE FUTURE OF ePORE AND ELECTROPORATION

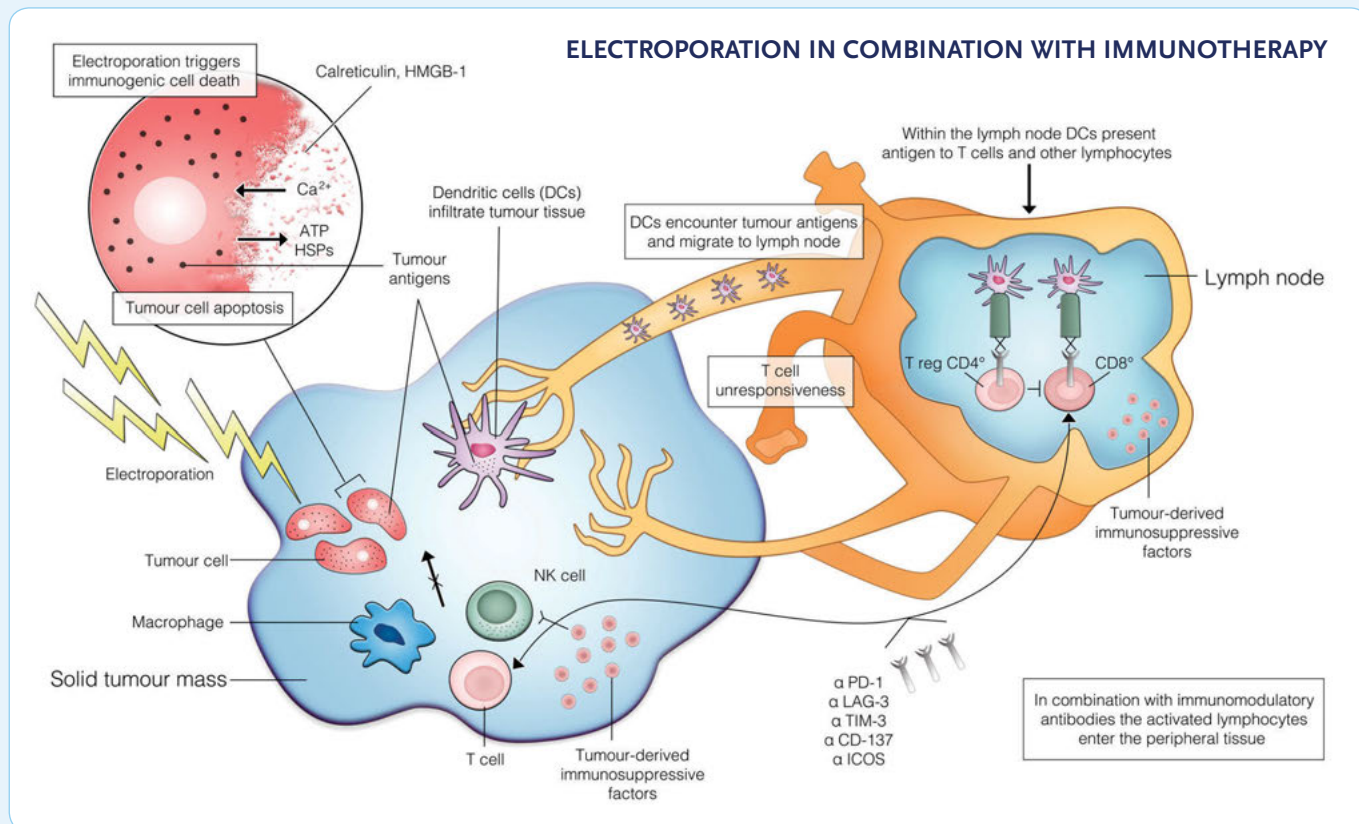
The combination of electroporation and calcium is also an extremely promising area for use with electroporation.

*Falk et al*³ found in a double blinded randomised phase II study in patients with cutaneous metastases that calcium combined with electroporation has a similar response rate to bleomycin.

The combination of high frequency electroporation performed under local anaesthetic in an out patient setting opens the door to the use of electroporation earlier in the patients disease state, including patients with premalignant disease and those with benign lesions e.g. keloid scars and vulva intraepithelial neoplasia (VIN).

THE FUTURE OF ePORE AND ELECTROPORATION

Electroporation in combination with chemotherapy has been delivering an effective treatment to many patients for more than 15 years. As well as the technical advancements **Mirai Medical** have delivered, through further research we feel that alternative combinations could deliver improved outcomes to many patients who are being treated with immunotherapy.



[1] European Journal of Cancer. Mir, L. et al., **Electrochemotherapy – An easy, highly effective treatment of cutaneous and subcutaneous metastases: Results of ESOPE** (European Standard Operating Procedures of Electrochemotherapy) study

[2] Acta Oncologica. Gehl, J., et al., **Updated standard operating procedures for electrochemotherapy of cutaneous tumours and skin metastases.** 2018. 57(7): p. 874-882.

[3] Acta Oncologica. Falk, H., et al., **Calcium electroporation for treatment of cutaneous metastases; a randomized double-blinded phase II study, comparing the effect of calcium electroporation with electrochemotherapy.** 2018. 57(3): p. 311-319.

[4] Kesar T, Binder-Macleod S. **Effect of frequency and pulse duration on human muscle fatigue during repetitive electrical stimulation.** Exp Physiol. 2006 Nov;91(6):967-76. 57(3): p. 311-319.

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