



# Introducing Intelligent Electroporation



**CythorLab**

CythorLab™ takes the trial and error out of electroporation, signifying a breakthrough in non-viral drug and gene delivery. By using a patented method, CythorLab will monitor and end the electroporation process consistently at the exact right time. CythorLab is designed for research and laboratory use both in vivo and in vitro.



# Open the Gateway in Intelligent Elect

**Electropermeabilization or Electroporation** is a method using Pulsed Electric Fields (PEF) to create small pathways (pores) in the membranes of the cells. The pores enable larger molecules such as DNA, chemotherapeutic drugs and other substances to transfer into the interior of the cell. If the Electroporation is done correctly, the cell membranes will reseal after a certain time, leaving the added molecules inside the cell.

The method has been used in vitro for a long time but is yet to reach a broader acceptance mainly because of the low success rate offered by the current implementations. Only few attempts have been made to use the technology in vivo due to the difficulty in producing optimal results on a consistent basis.

**Intelligent Electroporation using Impedance Control.** CythorLab introduces *Intelligent Electroporation*, delivering a breakthrough for the users of electroporation. It combines regular electroporation with a unique and patented method to determine the degree of electroporation of the target cells.

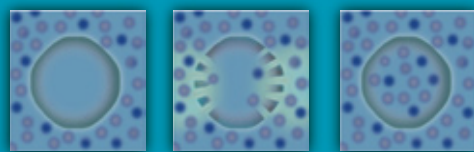
By monitoring the changes in cell impedance and processing the data using proprietary algorithms, CythorLab will end the electroporation process automatically – just at the right time – not too early and not too late. This will result in optimal electroporation, every time, and opens up for controlled electroporation in vivo.

**Create Your Own, Unique Pulse Shapes.** With CythorLab you are no longer bound to the regular, mono polar square- or exponential pulse shapes common in electroporation today. CythorLab has been designed from the ground up using a modern, digital design and can generate any arbitrary pulse shape needed. This means that it's possible to create pulse combinations containing different frequencies to target the electroporation to different size cells during one and the same pulse.

With CythorLab, the necessary charge time between consecutive pulses has virtually been eliminated. As an example – it's possible to generate a combination of 20 different pulses, each 1 ms long, without any delay in between. This increases the efficiency of the electroporation and saves significant time.

An optional library – PulseLib™ – with a large selection of different and tested pulse shapes is available on-line. You can also use the optional PulseEdit™ module which will give you complete freedom when you need to design your own, unique pulse shapes.

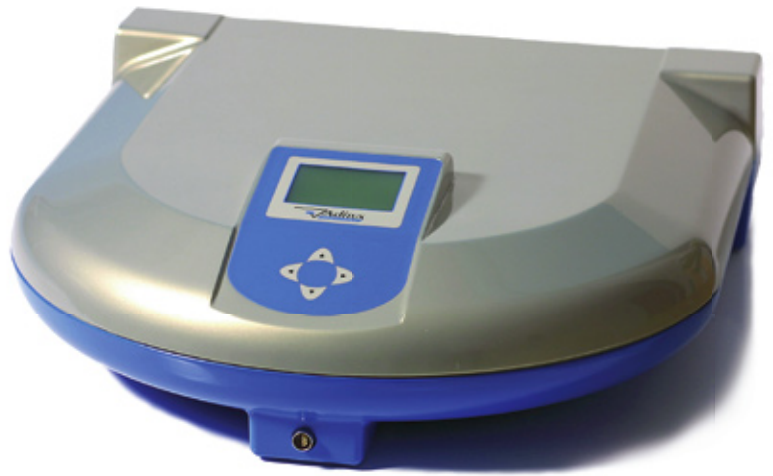
*By monitoring the changes in cell impedance and processing the data using proprietary algorithms, CythorLab will end the electroporation process automatically just at the right time – not too early and not too late.*



**ADITUS™ sets The New Standard with Intelligent Electroporation.** The powerful features of CythorLab will open completely new possibilities and drive your research to a new level. ADITUS Medical is lead-

ing the new revolution in Intelligent Electroporation and we encourage you to Demand Better Performance from your electroporation equipment.

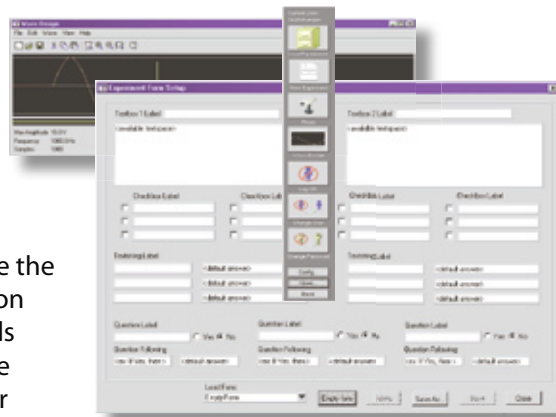
# Into the Cell with Electroporation



**More Effective Pulses using Bipolar Technology.** CythorLab can generate bipolar PEF which have been proven to cause less cell lethality than the regular, mono polar pulses. Bipolar pulses will also minimize the electrolysis process and thereby the amount of toxic gases which are present when a direct current is applied to a set of electrodes.

Bipolar pulses offer the possibility of using much longer pulse lengths at lower voltages. This combination will maximize the effect of the electroporation since it's gentler to the cells and the surrounding tissue than the short, mono polar pulses with very high voltages. The lower voltages, typically 10 - 20% of normal EP devices, is an important feature for future clinical use since it results in much reduced muscle contractions and thereby becomes less painful for the patients.

**Software for Planning and Documentation.** CythorLab comes with powerful software for setup and storage. You can plan and setup your next experiment off-line, on another computer. Accounts with Login and Access control will protect your setup and results.



Optionally, you can add the software module for Planning and Documentation. Using this time-saving simulation module, you can visualize the effect of the electroporation prior to the experiment.

You will be able to see the "Critical Area", where the electroporation effect will be high, as well as the "Affected Area", with a lower effect.

Other project specific data, such as CT or MR images, can easily be imported into the system. You can also attach a digital camera to visually document vital steps of your experiment. All the graphical data can be stored together with your EP results for future, easy reference.

*For more information about ADITUS Medical, our products and technology, please visit us today at [www.aditusmedical.com](http://www.aditusmedical.com) or send us an email at [info@aditusmedical.com](mailto:info@aditusmedical.com).*



**Ease of Use.** Even with all its powerful features, CythorLab can be used by anyone with minimal level of instructions. The user interface has been designed under the familiar MS-Windows with Ease of Use in mind. All the processing is done locally, in the CythorLab unit while

the data is transferred via a standard USB interface to the application for presentation. Version and feature upgrades are easily available via the www, ensuring quick and flexible future upgrades.



## CythorLab Specifications

- Progress Monitor** Patented method for continuous impedance measurement determines the degree of electroporation in vivo or in vitro.
- Modes of Operation** The electroporation is based on the information from the Progress Monitor and stops the process automatically when one or several pre-determined criteria have been met..
- Built-in Safety Features** Separate microprocessor handles the fault management.
- Output Voltage Range** 0 – 600 Vpp  
0 – 3000\* Vpp
- Output Pulse Lengths** 0 – 600 Vpp: up to 400 ms  
0 – 3000\* Vpp: up to 5 ms
- Output Pulse Types** Bipolar (minimizing the risk of electrolysis) or Mono-polar
- Output Wave Forms** Any, not limited to the regular mono-polar square- or exponential decay pulses.
- Cell Types** Any
- Warranty** 12 months limited warranty

\*) Optional voltage range using the High Voltage Module, HVM  
Specification subject to change without notice.



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