

NEPA21

Electro-Kinetic Transfection System

Transfect Everything.

- ▶ adherent, suspension and primary cells
- ▶ *in vitro*
- ▶ *in vivo*
- ▶ *in ovo*
- ▶ *in utero*
- ▶ *ex vivo*



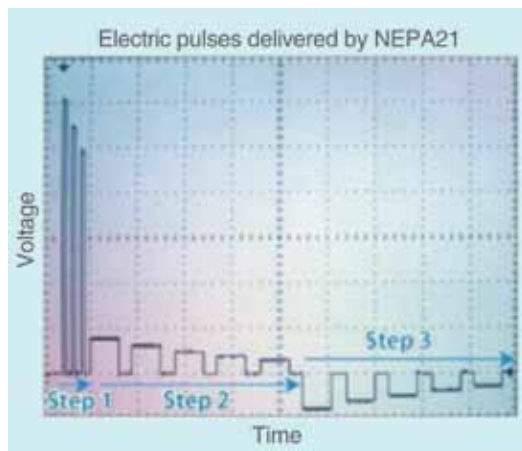
Bulldog
Bio



NEPA21

Electro-Kinetic Transfection System

The most popular transfection procedures all require specialized chemicals which are costly — running as much as \$8, \$12 or even \$16 or more per sample. These additives can have unwanted effects on the cell and at the minimum create another parameter which must be considered. Though poking holes in cell membranes has been around for many years, no protocols exist for high efficiency transfections without the use of such reagents. That is, not until the NEPA 21. Nepagene has created THE most sophisticated apparatus for delivering DNA and RNA to cells. And all that is required are the electrodes. With a combination of low voltage short-and-long pulses, and with optional polarity reversal, a huge variety of cells, tissues and even organisms can be transfected with amazingly high efficiencies. This patented pulsing technology has been shown to be both superior and far more flexible than other techniques. And because everything works at low voltages, cytotoxic effects are nearly eliminated.



Typical 3-Step Electro-kinetic Protocol

Novel 1-, 2-, 3- or 4-step Pulsing Technology

By creating complex patterns of square wave pulses, the NEPA21 can open pores in cellular tissues and then carry charged particles into these cells. The high amplitude, short duration Poring Pulse uses voltage decay to inflict minimal damage to nuclear and cellular membranes. The lower-voltage longer-duration Transfer Pulses deliver DNA and RNA into the cells while continuing to ameliorate the cytotoxic effects. Significant improvements in transfer efficiency can also be generated by cleverly reversing polarity of the pulses. (only the Transfer Pulse reverse polarity is shown on the oscilloscope reading to the right)



In vitro transfection of suspension, adherent and primary cells

The NEPA 21 utilizes one of two electrode types to deliver nucleic acids to live cells in culture. The first type, for standard electroporation cuvettes, is used for suspension cells without the need for expensive buffering conditions with unknown additives. Simply add cells and pulse — then save money and time. For adherent cells, we offer a unique cell-culture-plate electrode for 2-dimensional electro-kinetic transfer of RNA and DNA. Defying conventional wisdom, the patented electric pulsing not only pricks channels in the plasma membrane, but also the nuclear envelope, allowing DNA to be transported into the cell nucleus for efficacious transfection of primary cells.

In vivo transfection in mice and rats

The NEPA21 is offered with more than 100 electrodes. These specialized tools can be used to gently pulse organs and tissues in live animals. The electric fields carry DNA and RNA molecules directly into the cells that make up these tissues. This system allows previously difficult, or impossible, transfection experiments to be executed — opening new avenues of scientific inquiry. Transfections have been successfully performed on muscle, skin, liver, kidney, testis, ovary, brain, retina, cornea and other organs. And if you need to study tissue outside of the organism, the NEPA 21 offers specialized electrodes for the ex vivo transfer of nucleic acids to a variety of tissue types including brain.

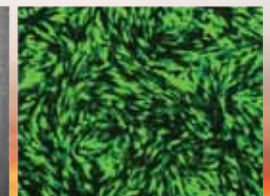
In utero, *ex utero* and *in ovo* transfections for developmental studies

Nepagene has developed tools and techniques for transfecting embryonic tissues, or even whole embryos, in mice, rats and chickens. Whether it is specific regions in a mouse embryonic brain, or chicken cortex, or gastro regions, we can provide a protocol and an electrode set. Flexibility is almost limitless, as these electrodes have been adopted for use with a variety of other animals and plants including honey bee, xenopus and even plant seeds.

Primary Human Endometrial Stromal cells



Viability: 95%



Transfection Efficiency: 90%

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SPECIFICATIONS

Size	346(W) x 330(D) x113(H) mm
Weight	7.5 kg
Warranty	2 Year
Types of pulses	Poring & Transfer
# pulsing steps	Up to 4
# of poring pulses	0-9
# of transfer pulses	0-99
Decaying pulses	Yes
Reverse polarity	Yes
Impedance readout	Yes
Total energy readout	Yes, in Joules

ITEM #	SIZE	DESCRIPTION	PRICE
NEPA21	1	NEPA 21 Electro-Kinetic Transfection System	Inquire
C200	1	Foot switch for NEPA21	Inquire
<i>in vitro</i> CU500	1	Cuvette adaptor for suspension cells	Inquire
<i>in vitro</i> CUY900-13-3-5	1	Electro-kinetic adaptor for adherent cells – 24-well culture plate	Inquire
<i>in vivo</i> CUY650P5	1	Electro-kinetic tweezers w/5mm ϕ platinum disk electrodes for mouse embryos	Inquire
<i>in vivo</i> CUY611P7-2	1	Electro-kinetic platinum chopstick electrodes, 7mm bend, 2mm tip length, 2/pkg	Inquire
<i>ex vivo</i> CUY701P7E	1	Electro-kinetic 7mm x 7mm platinum square electrode on petridish w/1mm frame	Inquire

100 other *in vivo*, *in utero*, *in ovo* and *ex vivo* electrodes available at www.bulldog.com

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