

Transfection into Mouse-Rat: TESTIS, OVARY, PROSTATE, GONAD, and UTERUS by Electroporation

The NEPA21 is the only device on the market to approach Electroporation from the perspective of optimising delivered energy.

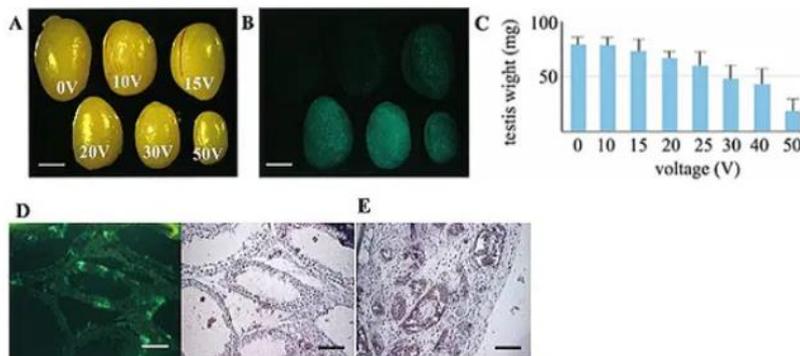
- Compared to devices from other suppliers, the NEPA21 system offers the researcher a level of previously unavailable control over energy delivery to the electroporation target. This control is generated via unique electroporation pulse-output configurations, client-confirmed protocols and application-customised electrodes.
- With this market-leading control and (user-independent) reproducibility of the technique, it is now possible to apply electroporation techniques to applications previously considered too sensitive for electroporation methodologies.
- The finer control over the delivered energy offers specific and important advantages for MUSCLE / SKIN / JOINT / CARTILAGR / TUMOR electroporation. As the thrust of NEPA21 protocols is to minimise delivered energy, this means that the targets are electroporated with less current (than competing device protocols).
- Only delivering the required energy (and no more) to porate the membrane is of utmost importance for viability post electroporation.
- The success of the NEPA21 for retina electroporation is evident by the Application and Publication information following.
- The NEPA21 system is supported by a suite of over 250 different electrode configurations, which further enhance the applicability of the system and empower researchers with further experimental options and opportunities.

Mouse-Rat Transfection: TESTIS / OVARY / PROSTATE / GONAD AND UTERUS

APPLICATIONS

Transfection into Mouse-Rat: TESTIS, OVARY, PROSTATE, GONAD, and UTERUS by Electroporation

Electroporated Transgene-Rescued Spermatogenesis in Infertile Mutant Mice with a Sertoli Cell Defect



Stereomicroscopic views of transfected testes charged with various voltages and observed under visible (A) or excitation (B) light after 5 wk.

Voltage is indicated on each testis (A).

Loss of testicular weight 5 wk after electric charge in 12-day-old testes (C).

All values are means \pm SD (measured number of testes charged with 0, 10, 15, 20, 25, 30, 40, and 50 V are 4, 4, 4, 12, 12, 15, 10, and 12, respectively).

Cross-sections of a testis at 5 wk after being charged with 50 V, observed with fluorescence microscope under excitation light (D, left), followed by counterstaining of the same section with hematoxylin (D, right) or another section just stained with hematoxylin (E).

In higher voltage charged testes, luminal enlargement of seminiferous tubules (D) or complete degeneration of seminiferous tubules under the capsule (D, left) was observed. In these testes, many fluorescence-positive Sertoli cells were identified easily (E, right), like in 20V charged testes (Day 35).

Bars = 2mm (A, B) or 100 μ m (D, E).

PUBLICATIONS**Transfection into Mouse-Rat: TESTIS, OVARY, PROSTATE, GONAD, and UTERUS by Electroporation****Ovary****High-grade serous ovarian cancer development and anti-PD-1 resistance is driven by IRE1 α activity in neutrophils**

Emmanuelli A, Salvagno C, Hwang SM, Awasthi D, Sandoval TA, Chae CS, Cheong JG, Tan C, Iwawaki T, Cubillos-Ruiz JR.

Oncoimmunology. 2024 Oct 2;13(1):2411070.

Testis**Seeding the meiotic DNA break machinery and initiating recombination on chromosome axes**

Dereli I, Telychko V, Papanikos F, Raveendran K, Xu J, Boekhout M, Stanzione M, Neuditschko B, Imjeti NS, Selezneva E, Tuncay H, Demir S, Giannattasio T, Gentzel M, Bondarieva A, Stevense M, Barchi M, Schnittger A, Weir JR, Herzog F, Keeney S, Tóth A.

Nat Commun. 2024 Apr 5;15(1):2941.

Endometrium**Multiplexed genome editing by in vivo electroporation of Cas9 ribonucleoproteins effectively induces endometrial carcinoma in mice**

Kobayashi R, Kawabata-Iwakawa R, Sugiyama M, Oyama T, Ohtsuka M, Horii T, Morita S, Nishiyama M, Hatada I.

Int J Cancer. 2023 Jun 1;152(11):2331-2337.

Ovary**Senescence induction dictates response to chemo- and immunotherapy in preclinical models of ovarian cancer**

Paffenholz SV, Salvagno C, Ho YJ, Limjoco M, Baslan T, Tian S, Kulick A, de Stanchina E, Wilkinson JE, Barriga FM, Zamarin D, Cubillos-Ruiz JR, Leibold J, Lowe SW.

Proc Natl Acad Sci U S A. 2022 Feb 1;119(5):e2117754119.

Gonads / Ex_Vivo**Divergent Roles of CYP26B1 and Endogenous Retinoic Acid in Mouse Fetal Gonads**

Bellutti L, Abby E, Tourpin S, Messiaen S, Moison D, Trautmann E, Guerquin MJ, Rouiller-Fabre V, Habert R, Livera G.

Biomolecules. 2019 Sep 26;9(10):536.

Prostate**Somatic Tissue Engineering in Mouse Models Reveals an Actionable Role for WNT Pathway Alterations in Prostate Cancer Metastasis**

Leibold J, Ruscetti M, Cao Z, Ho YJ, Baslan T, Zou M, Abida W, Feucht J, Han T, Barriga FM, Tsanov KM, Zamechek L, Kulick A, Amor C, Tian S, Rybczyk K, Salgado NR, Sánchez-Rivera FJ, Watson PA, de Stanchina E, Wilkinson JE, Dow LE, Abate-Shen C, Sawyers CL, Lowe SW.

Cancer Discov. 2020 Jul;10(7):1038-1057.

Endometrium**A novel method of gene transduction to the murine endometrium using in vivo electroporation.**

Kobayashi R, Endo K, Ohmori Y, Hondo E.

J Vet Med Sci . 2017 Sep 29;79(9):1573-1577.

Testis**The Enigmatic Meiotic Dense Body and Its Newly Discovered Component, SCML1, Are Dispensable for Fertility and Gametogenesis in Mice**

Frantzeskos Papanikos, Katrin Daniel, Angelique Goercharn-Ramlal, Ji-Feng Fei, Thomas Kurth, Lukasz Wojtasz, Ihsan Derehli, Jun Fu, Josef Penninger, Bianca Habermann, Azim Surani, A Francis Stewart, Attila Toth
Chromosoma, 126 (3), 399-415 Jun 2017

Testis**In Vivo Microinjection and Electroporation of Mouse Testis.**

Michaelis M, Sobczak A, Weitzel JM.
J Vis Exp. 2014 Aug 23;(90).

Testis**cAMP-responsive element in TATA-less core promoter is essential for haploid-specific gene expression in mouse testis**

Somboonthum P, Ohta H, Yamada S, Onishi M, Ike A, Nishimune Y, Nozaki M.
Nucleic Acids Res. 2005 Jun 10;33(10):3401-11.

Testis**Transient expression analysis of the mouse ornithine decarboxylase antizyme haploid-specific promoter using in vivo electroporation**

Ike A, Ohta H, Onishi M, Iguchi N, Nishimune Y, Nozaki M.
FEBS Lett. 2004 Feb 13;559(1-3):159-64.

Testis**Methylation of CpG dinucleotides in the open reading frame of a testicular germ cell-specific intronless gene, Tact1/Actl7b, represses its expression in somatic cells**

Hisano M, Ohta H, Nishimune Y, Nozaki M.
Nucleic Acids Res. 2003 Aug 15;31(16):4797-804.

Testis**Dramatic Expansion of Germinal Stem Cells by Ectopically Expressed Human Glial Cell Line-Derived Neurotrophic Factor in Mouse Sertoli Cells**

Yomogida K, Yagura Y, Tadokoro Y, Nishimune Y.
Biol Reprod. 2003 Oct;69(4):1303-7.

Ovary**Effect of CaCl₂ concentration on the rate of foreign gene transfer and expression by in vivo electroporation in the mouse ovary**

Suzuki T, Tsunekawa J, Murai A, Muramatsu T.
Int J Mol Med. 2003 Sep;12(3):365-8.

Testis**Electroporated Transgene-Rescued Spermatogenesis in Infertile Mutant Mice with a Sertoli Cell Defect**

Yomogida K, Yagura Y, Nishimune Y.
Biol Reprod. 2002 Sep;67(3):712-7.



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