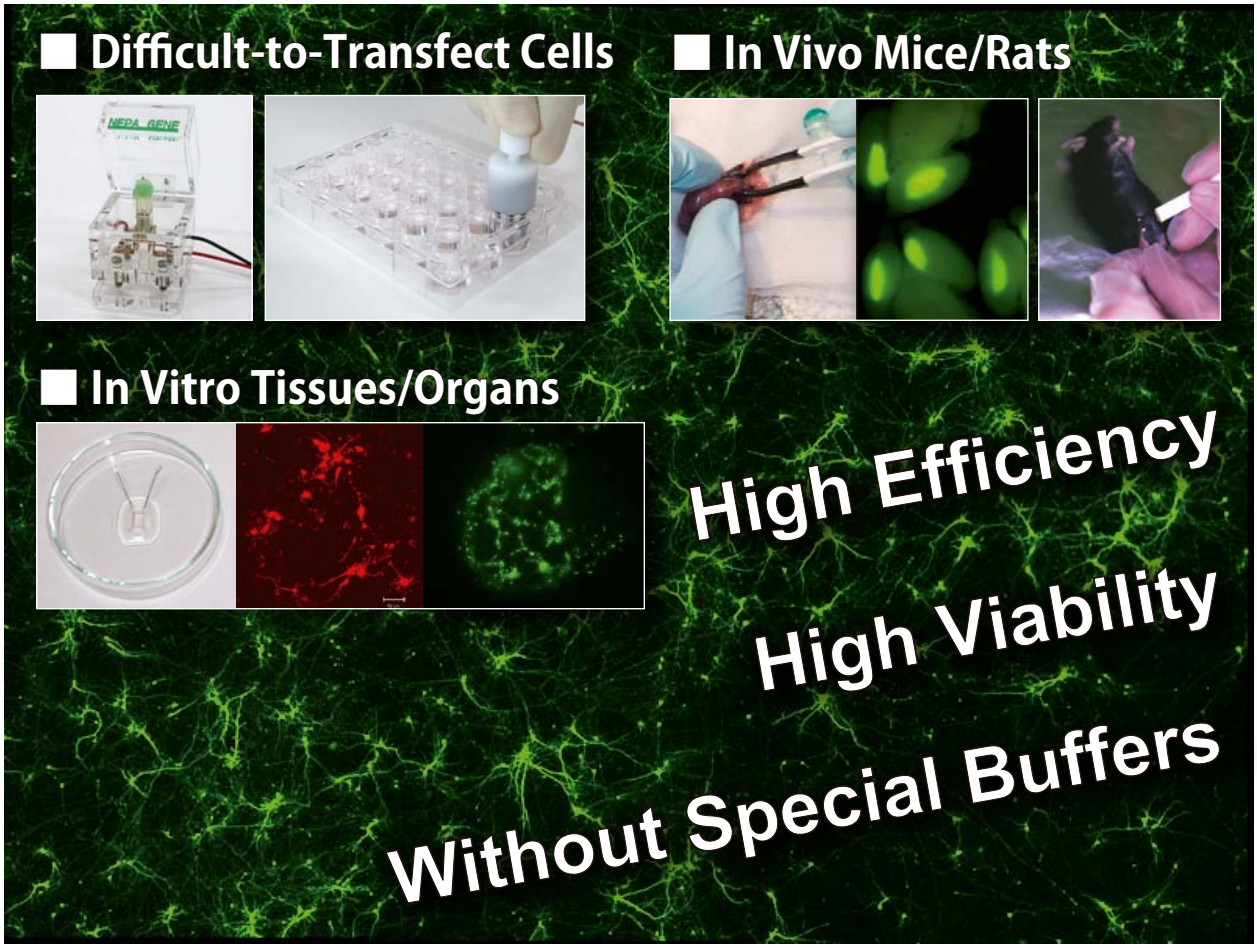
NEPAGENE

NEPA21

Transfection System

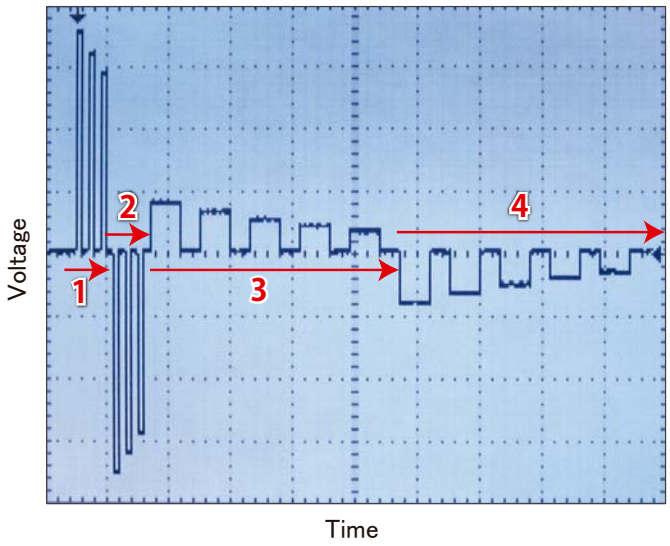
Super Electroporator NEPA21

Versatile Applications



Novel 4-Step Multiple Electroporation Pulse

Electric pulses delivered by NEPA21



The 4-step pulse with voltage decay results in **higher transfection efficiency and higher viability WITHOUT special buffers.**

Step 1 : Poring Pulse Mode

High Voltage, Short Duration, Multiple Pulses, Voltage Decay

This poring pulse is for forming pores (small holes) in cell membrane with minimum damage.

Step 2: Polarity Exchanged Poring Pulse

This can be applied to adherent-cell/tissue transfection.

Step 3: Transfer Pulse Mode

Low Voltage, Long Duration, Multiple Pulses, Voltage Decay

This transfer pulse is for delivering the target molecules (DNA, RNA, etc.) into cells with minimum damage.

Step 4: Polarity Exchanged Transfer Pulse

This can increase the transfection efficiency.

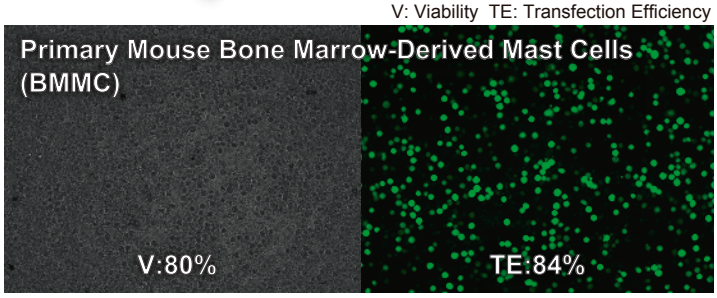
Applications with Electroporation Cuvettes

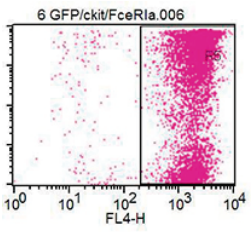
*NEPA21 electroporator can cover all application range of the old-type CUY21 electroporators including in-vivo transfection.

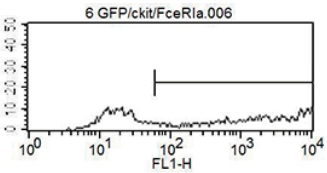
The NEPA21 Electroporator makes it possible to achieve high transfection efficiency and viability without resourse to special buffers for **difficult-to-transfect cells such as PRIMARY CELLS, STEM CELLS, IMMUNE CELLS, BLOOD CELLS, etc**.

Primary Cells Difficult-to-Transfect Cells

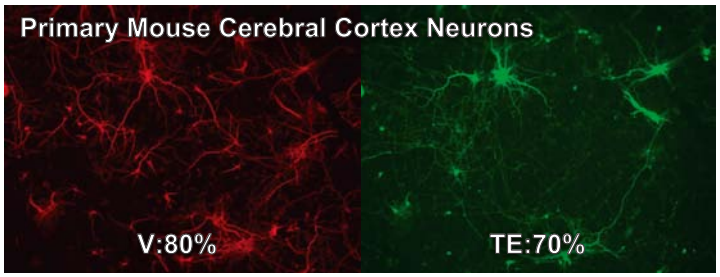
V: Viability TE: Transfection Efficiency

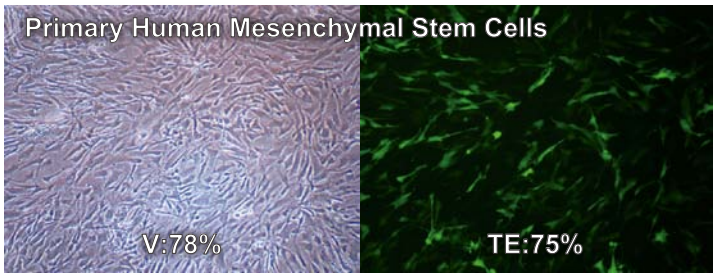


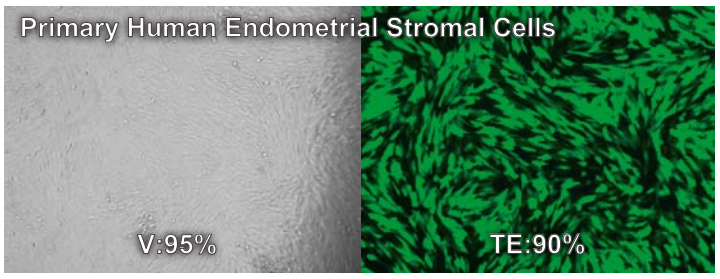


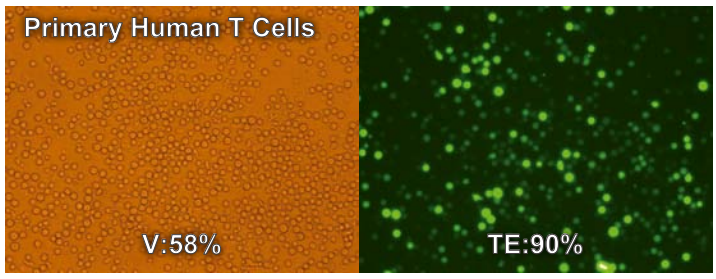


Marker	Events	% Gated	% Total	Mean
All	8137	100.00	22.02	6442.06
M1	6789	83.43	18.37	7717.12









Cell Lines

NEPAGENE

	V: Viability TE: Transfection Efficiency	V	TE
Hela	Human Cervical Carcinoma Cells	95%	95%
293	Human Embryonic Kidney Cells	90%	90%
293T	Human Embryonic Kidney Cells	90%	95%
TIG-7	Human Embryonic Lung Fibroblasts	89%	76%
MRC-5	Human Embryonic Lung Fibroblasts	85%	90%
SUSM-1	Human Fibroblasts	77%	71%
HUVEC	Human Umbilical Vein Endothelial Cells	70%	75%
HT1080	Human Fibrosarcoma Cells	93%	81%
MIA-PaCa-2	Human Pancreatic Carcinoma Cells	80%	77%
HepG2	Human Hepatoma Cells	80%	76%
H69	Human Small-Cell Lung Cancer Cells	90%	85%
H1299	Human Lung Cancer Cells	90%	90%
HSC-2	Human Squamous Carcinoma Cells	93%	98%
HSC-3	Human Squamous Carcinoma Cells	93%	98%
OVCAR-3	Human Ovarian Carcinoma Cells	90%	79%
MCF-7	Human Breast Cancer Cells	90%	93%
T47D	Human Breast Cancer Cells	90%	85%
NUGC-3	Human Gastric Carcinoma Cells	73%	68%
A549	Human Lung Adenocarcinoma Cells	85%	90%
LNCaP	Human Prostate Carcinoma Cells	71%	90%
SK-N-SH	Human Neuroblastoma Cells	95%	95%
SH-SY5Y	Human Neuroblastoma Cells	60%	90%
KG-1-C	Human Oligodendroglial Cells	85%	60%
1321N1	Human Astrocytoma Cells	80%	80%
iHAM-4	Human Amniotic Mesenchymal Cells	59%	95%
HTR-8/Svneo	Human Trophoblast Cells	95%	67%
RPE	Human Retinal Pigment Epithelium Cells	90%	70%
Jurkat	Human T-cell Leukemia Cells	90%	85%
HL-60	Human Promyelocytic Leukemia Cells	80%	80%
K562	Human Leukemia Cells	91%	99%
Mutu I	Human Burkitt Lymphoma cells	87%	91%
THP-1	Human Acute Monocytic Leukemia Cells	76%	63%

		V	TE
3T3-L1	Mouse Preadipocytes	90%	90%
NIH/3T3	Mouse Embryonic Fibroblasts	74%	82%
MEF	Mouse Embryonic Fibroblasts	80%	90%
L	Mouse L Cells	90%	65%
MC3T3-E1	Mouse Osteoblastic Cells	85%	75%
LLc1(LL/2)	Lewis lung cell carcinoma 1 Cells	87%	81%
C2C12	Mouse Myoblast Cells	80%	70%
4T1	Mouse Breast Cancer Cells	90%	95%
Colon-26	Mouse Colon Adenocarcinoma Cells	95%	90%
MS-1	Mouse Pancreatic Endothelial Cells	90%	90%
Neuro-2a	Mouse Neuroblastoma Cells	90%	90%
BV-2	Mouse Microglial Cells	65%	70%
WR19L	Mouse T-cell Lymphoma Cells	92%	60%
RAW264.7	Mouse Macrophage-like Cells	70%	56%
MIN6	Mouse Pancreatic Beta Cells	57%	71%
mDC	Mouse Myeloid Dendritic Cells	79%	72%
MC/9	Mouse Mast Cells	76%	84%
PC12	Rat Adrenal Pheochromocytoma Cells	90%	70%
H9c2	Rat Ventricular Myoblasts	71%	82%
REF	Rat Embryonic Fibroblasts	90%	99%
C6	Rat Glioma Cells	80%	67%
RSC96	Rat Schwann Cells	70%	85%
TtT/GF	Rat Anterior Pituitary Cells	80%	67%
UMR106	Rat Osteoblastic Cells	80%	70%
CHO	Chinese Hamster Ovary Cells	74%	90%
CHO-K1	Chinese Hamster Ovary Cells	95%	95%
MDCK	Madrin-Darby Canine Kidney Cells	90%	95%
BEF	Bovine Fetal Fibroblasts	78%	72%

Disposable Kits No Special Buffers!

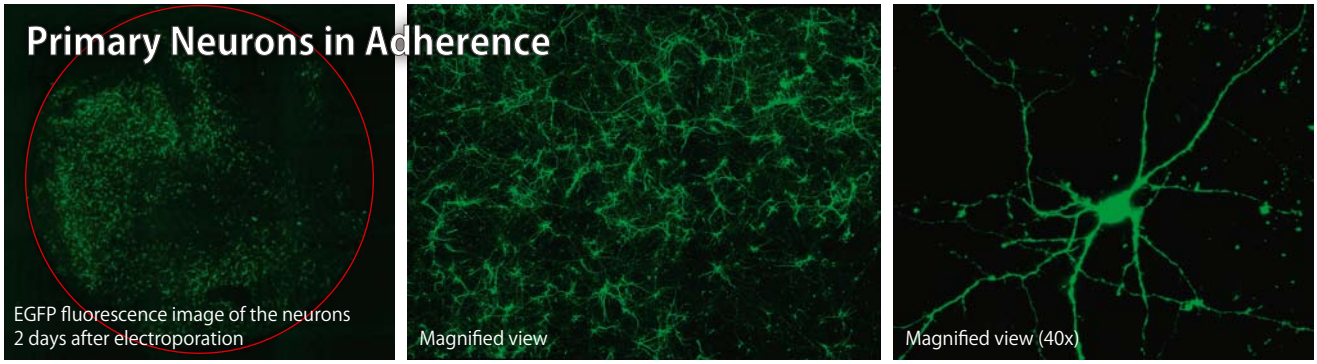
Is your laboratory still using a transfection device that requires expensive disposable kits?

Transfection Device	NEPA21 (Nepa Gene)	N (Company L)	N (Company I)
Disposable Kit	Cuvettes Only Without Special Buffers	Transfection Kits With Special Buffers	Transfection Kits With Special Buffers
Cost per Sample *Japan Price	JPY 210 (JPY 10,500/50 pcs)	JPY 1,920-2,750 (JPY 27,500/10 RCT)	JPY 1,719-2,200 (JPY 55,000/25 RCT)

The running cost of NEPA21 is much lower than other transfection devices!

Applications with Adherent Cell Electrodes

By using the Adherent Cell Electrode CUY900 series, it is now possible to transfer DNA/RNA directly into **CELLS IN ADHERENCE** in a commercially available multi-well plate.

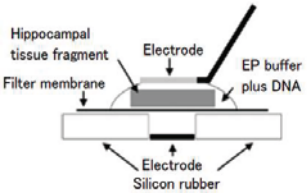


pCAGGS-EGFP plasmid was transferred into primary neurons cultured for 6 days in adherent state.
The neurons were prepared from E15 mouse cerebral cortex.
*The red circle indicates a whole shape of the well-bottom of a 24-well plate.

Department of Neurochemistry, National Institute of Neuroscience, Japan

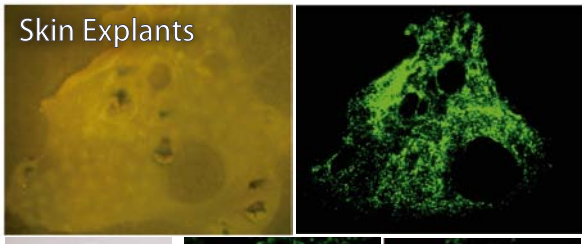
With Ex Vivo Electrodes

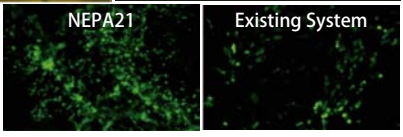
In Vitro Tissues/Organs



A fragment of the mouse embryonic hippocampus was placed on a filter and EP buffer containing plasmid DNA was applied onto the tissue. A cover electrode was attached to the surface of a droplet.

Kawabata I et al. Neuroreport. 2004 Apr 29;15(6):971-5.

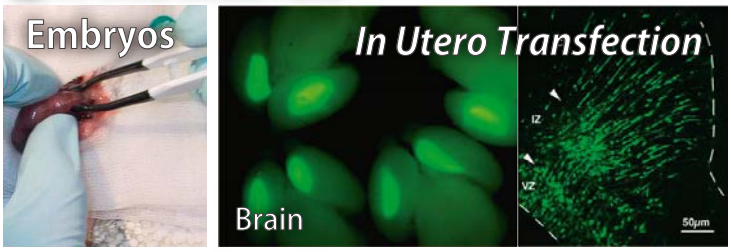




Much more GFP+ cells are shown on Fig. NEPA21.

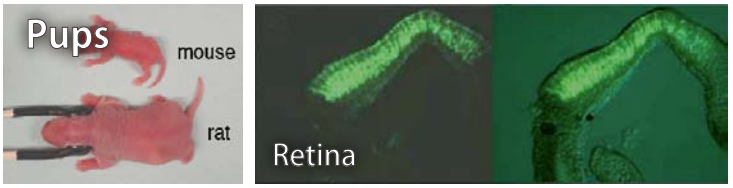
With In Vivo Electrodes

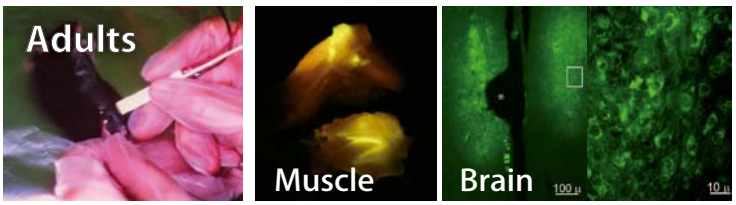
In Vivo Mice/Rats



Plasmid DNA was injected into one or both lateral ventricles through the uterine wall, and electronic pulses were applied to the brain from outside the uterine wall.
After electroporation, the brains were taken out and observed under a fluorescence stereomicroscope. Fluorescence was observed in the lateral region of the hemisphere

Department of Anatomy, Keio University School of Medicine, Japan

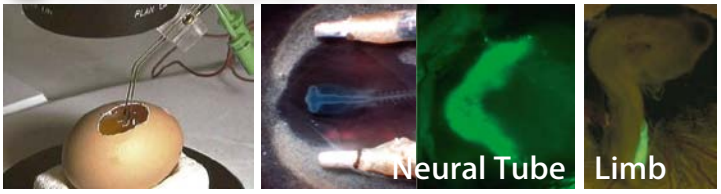




Transfection targets:

Brain, Retina, Muscle, Skin, Liver, Testis, etc.

In Ovo Chick Embryos



Nepa Gene Co., Ltd. 3-1-6 Shioyaki, Ichikawa, Chiba, 272-0114 JAPAN e-mail: info@nepagene.jp web: www.nepagene.jp