GENE TRANSFER

Gene Pulser® Electroporation Buffer

Optimization Quick Guide

Determining optimum electroporation conditions is essential for maximizing transfection efficiency of plasmid DNA and siRNAs and for minimizing cellular toxicity.

Use your current protocol as a starting point. If starting a new cell line for the first time, refer to a published protocol for your particular cell line. Protocols for many cell lines can be found at **www.bio-rad.com** (search keyword: electroprotocols).

For best results, use the guide below to alter your protocol depending upon the specific waveform. Waveform protocols may be interchanged. The waveform parameters in the guide can be optimized for every cell line. It is suggested to change only one parameter at a time for optimization; however, multiple parameters may be optimized simultaneously, for example:

- Decreasing capacitance and increasing volume
- Decreasing resistance and increasing volume

For additional assistance, contact Technical Support at **1-800-4BIORAD** (1-800-424-6723); outside the U.S., contact your local sales office.

General Recommendations	
siRNA concentration	10–100 nM
Plasmid concentration	5–20 µg/ml
Cell density	
Adherent	1–5 x 10^6 cells/ml
Suspension	2–10 x 10^6 cells/ml

Square Waveform Parameter	Protocol
Voltage	Adjust in 50 V increments; voltage between 100-400*
Capacitance	Increase to 1000–2000 µF
Resistance	Maintain at 1000 Ω
Pulse length	Adjust pulse to 10–25 ms
Pulse interval	Set pulse length to 50% (PL/2) of original setting, then pulse twice
Sample volume	Increase volume to maximum amount for specific cuvette** or well size

Exponential Waveform Parameter	Protocol
Capacitance	Set to 30–50% (C/2 or C/3) of original setting
Resistance* **	Set to 50–80% (R/2–R/5) of original setting
Sample volume	Increase volume to maximum amount for specific cuvette** or well size
Voltage	Keep constant (Normally 200–400 V)

* If using a 0.2 cm cuvette, reduce the voltage by 50%.
** Maximum volume is 800 µl and 200 µl for 0.4 cm and 0.2 cm Bio-Rad electroporation cuvettes, respectively.
*** Requires PC module.

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