BTX®
HARVARD APPARATUS

AgilePulse MAX™

LARGE VOLUME TRANSFECTION SYSTEM TECHNICAL SPECIFICATIONS

EFFICIENT TRANSFECTION FOR UP TO 20 ML VOLUMES

The AgilePulse MAX™ System is an advanced electroporation solution for fast, efficient transfection of 2 to 20 mL of cell suspension. Specifically engineered for large-volume applications, our system maximizes cellular uptake with minimal heating and short cycle-time to ensure high cell viability in further cell processing.

Simple-to-use, cells and polynucleotide are suspended in our proprietary BTXpress Cytoporation® Medium T and transferred via sterile syringe to the large-volume electroporation chamber where a programmed sequence of electric pulses is applied. First, a sequence of short, high-intensity pulses opens pores in the cell membranes, followed by long, low-intensity pulses that drive the material into cells via electrophoresis. The patented Pulse Agile® technology optimizes these pulse parameters to maximize efficiency and cell viability.

The system includes a user-friendly, programmable waveform generator with patented Pulse Agile® technology, the patent-pending large-volume electroporation chamber, and proprietary BTXpress Cytoporation® Medium T; optimized for large-volume electroporation. The system is engineered to provide uniform electric fields in a stable temperature environment, for excellent cell viability.

FEATURES & BENEFITS

Direct Scale-up – Transfection protocols readily scale-up from standard laboratory cuvettes to large-volume transfection in the AgilePulse MAX™ system. No new complicated processes need to be learned.

Maximal Efficiency with Cytoporation® Medium – BTXpress Cytoporation® Medium T used with the AgilePulse MAX™ system has been optimized for maximal efficiency with a number of cell lines, including K562, A20, HEK293 and CHO-KI. It is compatible with a large range of transfectants including DNA, RNA, siRNA, and oligonucleotides. It can be directly diluted in complete growth medium for post-electroporation cell culture.

Simple User Interface – All controls are operated with the simple touch screen on the front panel. Data is quickly retrieved by USB key and can be analyzed for detailed pulse characteristics including pulse voltage and pulse current.

Pulse Agile® Advantage – Transfection efficiency and cell viability are enhanced by specialized, programmable electrical pulse waveforms, particularly important for larger polynucleotide delivery such as DNA plasmids. The patented Pulse Agile® technology combines a unique sequence of short high-intensity pulses to porate cell membranes, followed by long low-intensity pulses to further drive transfectants into cells via electrophoresis, while maintaining cell viability.

AgilePulse MAX™ TECHNICAL SPECIFICATIONS

LARGE-VOLUME ELECTROPORATION APPLICATIONS

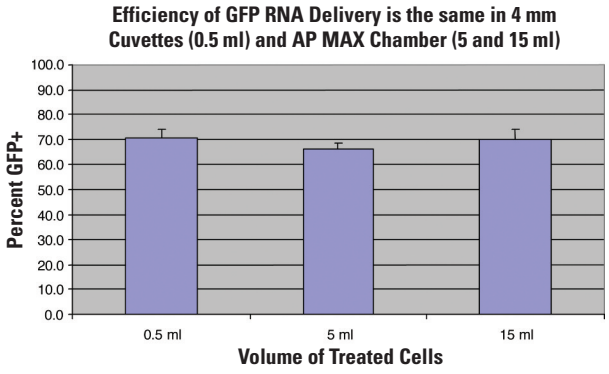
- Transfect cells such as bone marrow cells to produce or replace a missing protein
- Deliver siRNA to suppress gene expression
- Deliver genes for permanent gene correction
- Load cells with a drug for drug delivery
- Cancer immunotherapy
- Transfect eukaryotic cells for protein production in bioreactors
- Large-scale production of replication-deficient viruses

AT A GLANCE SCALE-UP OF K562 CELL mRNA TRANSFECTION

The figure below demonstrates the simple direct scale-up of transfection using the AgilePulse MAX™ System. K562 cells (myelomonocytic cells commonly used for natural killer target cell assays) were transfected with GFP+ mRNA in both laboratory cuvettes (0.5 mL) and the large-volume AgilePulse MAX™ System (5- and 15-mL). The efficiency of transfection was comparable for all three volumes.

Methods: Cells were suspended to a cell density of 20 million cells/mL in Cytoporation® Medium. GFP mRNA was added to the cell suspension to a final concentration of 40 µg/mL. The small 0.5 mL volume transfections were carried out using standard 4 mm gap electroporation cuvettes. The large volume transfections were performed with the AgilePulse MAX™ using a 4 mm gap large volume chamber. Identical pulse parameters were applied to all three volumes.

At 24 hours post-electroporation, the percent transfection was determined by flow cytometry.



THE AgilePulse MAX™ ELECTROPORATION SYSTEM INCLUDES

- AgilePulse MAX Complete System (47-0200N)
- AgilePulse MAX™ Waveform Generator (47-0201N)
- Large Volume Chamber (6 mm gap, 5 ml max volume) (47-0204N)
- Cytoporation® Low Conductivity Medium T (47-0002)
- Safety Stand for Cuvettes (47-0203)
- Large Volume Chamber Stand (47-0202N)
- User Manual

SYSTEM SPECIFICATIONS

User Interface	Touch Screen Display
Chamber Electrode Gap	6-mm
Chamber Volume	2 to 5 mL
Chamber Connector	Female Luer Lock connector for loading cells and a separate luer lock with vent attached with Vent Filter
Pulse Amplitude	50 to 1200 volts
Pulse Width	0.050 to 10 ms
Pulse Interval	0.200 to 1000 ms (5 kHz to 1 Hz)
Data Access	USB Flash Key

TECHNICAL & CUSTOMER SERVICE

For further references regarding specific applications and optimization, please contact BTX Technical Support:

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The Electroporation Experts

level Discovering new boundaries

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