Each cell-based therapeutic modality – from viral vectors to immune cell engineering and in situ gene editing – relies on different biologic approaches, however, they all require some type of cell engineering for therapeutic manufacturing. MaxCyte developed a non-viral, electroporation-based cell engineering technology that has the performance, flexibility, safety and scalability for use in cell therapy development through to manufacturing for patient treatment. In this poster, we present capabilities of MaxCyte’s scalable electroporation, a platform of cGMP-compliant, CE-marked systems with an FDA Master File. Data for high performance electroporation of a variety of cell types commonly used in cellular therapies, including adherent and suspension cells as well as cell lines and primary cells, are summarized. Use of MaxCyte electroporation for a breadth of real world applications are highlighted including lentivirus and AAV production, engineering of primary T-cells for the expression of an anti-mesothelin CAR molecule, and CRISPR-mediated gene editing of stem cells. These data will directly illustrate the scalability and consistency of MaxCyte electroporation that enables the use of this single cell engineering technology from early R&D to patient dosing of cell-based biotherapies.

**Viral Vector Production: Lentivirus & AAV**

MaxCyte STX to VLX Instrument Scale-up
4 Plasmid Lentiviral System Production in Suspension Cells

**T-cell engineering: mRNA CAR**

Development of an α-mesothelin CAR
mRNA T-cells for solid Tumors
Expressing CAR Mediate Tumor Regression

**Gene Editing: CRISPR**

Efficient Gene Editing Following MaxCyte Electroporation
Transfection of CD34+ Stem Cells

**Summary**

- MaxCyte electroporation is a universal cell engineering technology that supports the development and manufacturing of viral vectors and T-cell therapies, including gene editing-mediated cell modification.
- Maximyes cell engineering technology efficiently transfects a variety of cell types, including historically difficult-to-transfect cells such as primary cells, with low levels of cell toxicity.
- MaxCyte flow electroporation has the safety, efficiency and scalability to support cell therapy and gene editing development from early R&D through to patient treatment.
- Production scale-up from the MaxCyte STX to the MaxCyte VLX is seamless – high cell viability and transfection efficiencies are maintained without the need for reoptimization.
- MaxCyte electroporation has the reproducibility, and scalability for use in biomanufacturing.
- MaxCyte electroporation offers a non-viral means of engineering T-cells that have in vitro and in vivo anti-tumor activity.
- MaxCyte’s instruments are closed, computer-controlled, cGMP-compliant systems with a Master file with the US FDA & Health Canada enabling simplified migration to the clinic.