



SARTORIUS

Sartorius Industry Educational Session

Tuesday 25 June 2024

10:20 – 10:50

Room – Lammermuir 1

High-Recovery Lentiviral Vector Purification Using an LV Tailored Anion-Exchange Membrane Design

The rapid expansion of Cell and Gene Therapy clinical trials has led to a corresponding increase in demand for viral-based gene delivery vectors. Lentiviral Vectors (LVs) have become highly sought after for ex vivo modification of patient cells, particularly in Chimeric Antigen Receptor T-cell (CAR-T) therapies. However, the industry faces challenges in manufacturing these advanced therapeutics, resulting in limited global supply of drug products, restricted patient access, and low early-line usage. One major bottleneck in LV production lies in their purification. Efficient and reliable LV purification poses a significant challenge due to their structural complexity, typically resulting in low product recoveries of 15-25%. Anion-Exchange (AEX) chromatography, using convective membrane adsorbents, is commonly utilized for the primary capture of LVs from cell culture supernatant. However, this unit operation alone accounts for most of the DSP process losses and typically results in functional product recoveries of only 10-30%. As LVs are increasingly adapted to treat a growing number of disease indications, AEX chromatography presents a widely applicable and adaptable purification method. Therefore, enhancing recoveries is crucial for expanding access to LV drug products.

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