

INTENSIFICATION OF VIRAL VECTOR PRODUCTION AND CLARIFICATION BY INTEGRATION OF PERFUSION PLATFORMS

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Gene Therapies represent an important new frontier in therapeutic development as they have the potential to treat diseases that have previously been difficult to manage. The new gene therapies currently being developed will address larger patient population and/or using higher dosage needed for global clinical and commercialization. Manufacturing improvement is therefore needed to realize the full potential of gene therapy. We will present two case studies which illustrate the next generation viral vector manufacturing process. The first case study will demonstrate how integration of perfusion platforms, alternating tangential flow (ATF) and the tangential flow depth filtration (TFDF) to bioreactor led to 2-4-fold increase of total rAAV8 yield comparing to the current bioreactor process. The second case study will show how the perfusion TFDF platform used in clarification mode was applied to increase lentivirus (LV) yield through multiple harvests. The cell retention filters enabled the continuous harvest clarification of LV particles present in the media during the virus production, demonstrating the potential for continuous upstream-downstream processing of secreted LV vectors. The implementation of the TFDF in a continuous clarification strategy during the harvest led to a total yield of more than 200% potent LV compared to the depth filtration process.

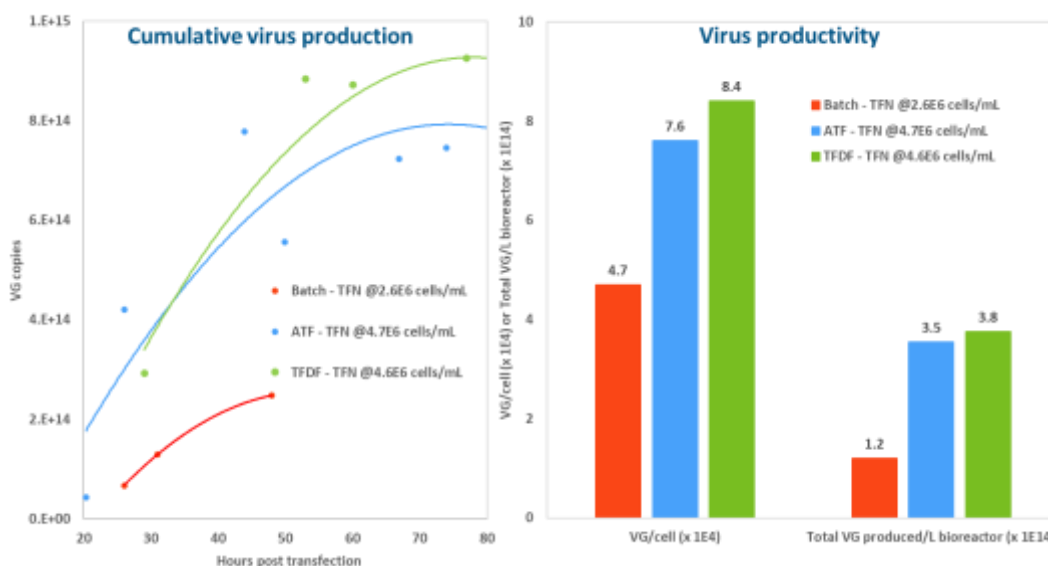


Figure 1 – AAV8 production using ATF or TFDF in perfusion mode