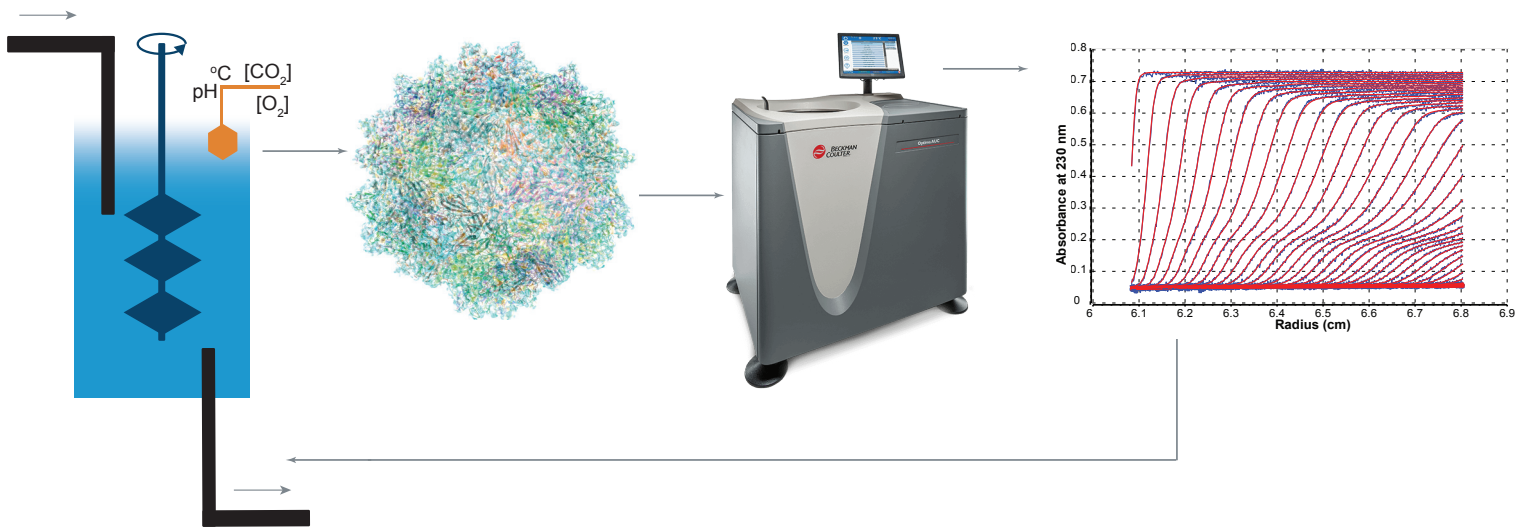




In this issue: Cell Culture Optimization using data from AUC

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How can data from AUC help improve AAV Production Yield?

Introduction: Existing production methods of AAV yield up to 10¹³ viral genomes (VG)/liter. Here we showcase a study by Joshi et al., which increases viral vector production efficiency 20x fold by spiking the growth media with added nutrients (“fedbatch” process). Data from AUC was used to assess empty/full ratios and packing efficiency of viral capsids {Ref} for different growth conditions.

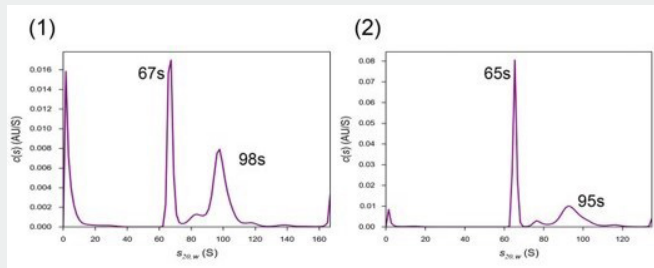
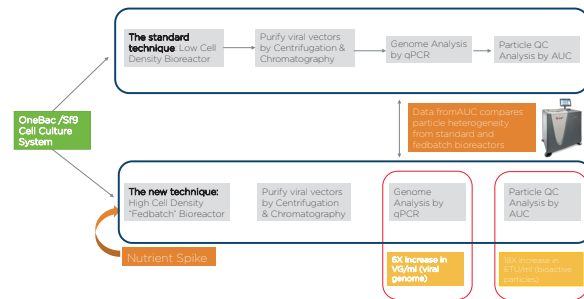


Senior Applications Scientist
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QC Analysis by AUC data

Fedbatch bioreactors improve yields

The Fedbatch growth technique spikes the cell culture with additional nutrients, which improves both the maximum cell density as well as the copies of viral genome produced per cell. Analyzed AUC data is used to determine the genome packaging efficiency (ratio of full to empty capsids) and compare the viral production by traditional and fedbatch methods.

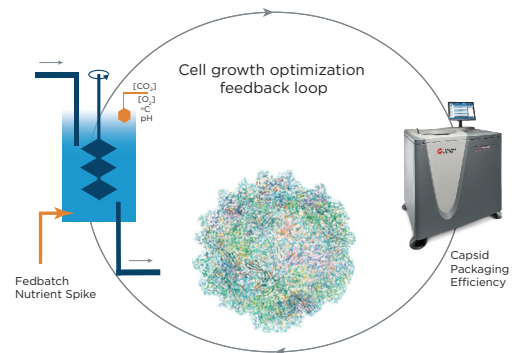


AUC data for analysis of viral packaging efficiency

Sedimentation Velocity AUC is an industry standard technique to assess the ratio of full/empty viral particles. Comparison of AUC data for bioactive particles from Standard/Low Density bioreactor (panel 1) vs. High Density/Fedbatch Bioreactor (panel 2) shows that fraction of loaded viral bioactive particles is the same in both cases.

AUC data analysis helps optimize fedbatch growth

Optimizing growth conditions to maximize virus yield is essential for commercially viable gene therapies. Fedbatch high density growth is one such optimization strategy. Fedbatch grown viral particles are tested for packaging efficiency & genome integrity. Analysis of AUC data is a valuable tool in assessing packaging efficiency of AAV capsids.



Summary

This case study illustrates the importance of AUC in optimizing cell growth conditions for maximum efficiency in viral vector production. Ref: Joshi et. al. Mol Ther. Methods Clin Dev. 2019 Feb 16;13:279-289