Engineering Conferences International
ECI Digital Archives

Cell Culture Engineering XV | Proceedings

Spring 5-12-2016

Size matters: Assessment of a larger pore hollow fiber to reduce product retention in perfusion

Samantha Wang
Boehringer Ingelheim, samantha.wang@boehringer-ingelheim.com

Follow this and additional works at: http://dc.engconfintl.org/cellculture_xv

 Part of the Biomedical Engineering and Bioengineering Commons

Recommended Citation

Samantha Wang, "Size matters: Assessment of a larger pore hollow fiber to reduce product retention in perfusion" in "Cell Culture Engineering XV", Robert Kiss, Genentech Sarah Harcum, Clemson University Jeff Chalmers, Ohio State University Eds, ECI Symposium Series, (2016). http://dc.engconfintl.org/cellculture_xv/163

This Abstract is brought to you for free and open access by the Proceedings at ECI Digital Archives. It has been accepted for inclusion in Cell Culture Engineering XV by an authorized administrator of ECI Digital Archives. For more information, please contact franco@bepress.com.

SIZE MATTERS: ASSESSMENT OF A LARGER PORE HOLLOW FIBER TO REDUCE PRODUCT RETENTION IN PERFUSION

Samantha Wang, Bioprocess Engineering, Process Science, Boehringer Ingelheim Fremont, CA
Samantha.wang@boehringer-ingelheim.com
Scott Godfrey, Bioprocess Engineering, Process Science, Boehringer Ingelheim Fremont, CA
Alexandria Lee-Goldman, Bioprocess Engineering, Process Science, Boehringer Ingelheim Fremont, CA
Sanjibita Mishra, Bioprocess Engineering, Process Science, Boehringer Ingelheim Fremont, CA
Samet Yildirim, Bioprocess Engineering, Process Science, Boehringer Ingelheim Fremont, CA
Raquel Orozco, Bioprocess Engineering, Process Science, Boehringer Ingelheim Fremont, CA
Henry Lin, Cell Culture, Process Science, Boehringer Ingelheim, Fremont, CA
Jon Coffman, Bioprocess Engineering, Process Science, Boehringer Ingelheim Fremont, CA

Key Words: Perfusion, Product Retention, TFF, ATF

Traditionally, perfusion processes using either TFF or ATF technologies have utilized hollow fibers made from polymers such as polyethersulfone (PES) or polysulfone (PS) for cell retention. The pore sizes on these hollow fibers range from several hundred kD to a few µm. However, despite the relatively large size of the pores compared to that of the product, retention of product across the hollow fiber over time is a known and common problem in perfusion. Particle size analysis demonstrated accumulation of particles around 100nm in diameter, which are unable to pass through a typical 0.2µm PES membrane. As these particles are on the same order of size as the pores on traditional hollow fibers, the question was asked if increasing the pore size could alleviate the product retention phenomenon. A hollow fiber with a larger pore size dramatically improved product retention across the membrane with little change in cell clarification. Both TFF and ATF modes were explored. A comparison of performance differences between different sized hollow fibers used in perfusion will be presented.