

SCALE-DOWN HIGH THROUGHPUT PERFUSION DEVELOPMENT WITH AMBR 250

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The ambr® 250 bioreactor system (Sartorius Stedim) has become a useful tool for CHO cell culture process development, increasing throughput and decreasing development timelines. The ambr® 250 provides the ability to independently run up to 24 single-use fed-batch bioreactors through the use of an automated liquid handling platform. Growing interest in intensified perfusion processes for continuous biomanufacturing has created a need for an equivalent high throughput small scale system for perfusion. Thus far, only discrete models and semi-continuous approaches have been available to mimic perfusion processes at small scale. With the development of the ambr® 250 perfusion system, truly continuous medium exchange and cell retention at the 200mL scale has been achieved. Primary criteria for evaluating the applicability of the ambr® 250 perfusion system to modeling larger scale intensified perfusion processes include viable cell density and volumetric productivity. We have demonstrated the development system can support growth of CHO cell cultures in excess of 90 million cells per milliliter with IgG volumetric productivity greater than 3 g/L/day. These results are comparable to data obtained at the 10L scale. Sustainability of culture, impact on product quality, and potential use for applications ranging from clone selection to scale-down modeling will be discussed.