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## A RAPID APPROACH FOR BASAL AND FEED MEDIA OPTIMIZATION IN ambr<sup>®</sup> 15 BIOREACTORS

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A Chemically-Defined (CD) and Animal Origin-Free (AOF) custom media optimization approach was developed using the ambr<sup>®</sup> 15 microbioreactor system. This approach combines pre-qualified blends of well-characterized media, a series of high-throughput Design of Experiment (DoE) studies and analyses to optimize a fed-batch process, and on-site dedicated media application specialist support. This system can be utilized when commercially available media fall short of performance expectations and high-producing cell lines must be developed as quickly as possible. In comparison, fully customized media and feed development requires significant funding, time, and in-house expertise in media development. Using this media optimization approach, a 17-day fed-batch process was developed for a CHO DG44 cell line producing an IgG1 antibody. In less than 6 months, optimized basal and feed media were selected for the cell line and process development parameters including temperature, pH, and additional supplementation were examined using the ambr<sup>®</sup> 15. From simple fed-batch (glucose only) to fed-batch culture, the peak viable cell density (VCD) was increased 2.5-fold and harvest titer was increased 4-fold. A similar optimization was also performed using traditional shake flask culture. Comparable improvements in peak viable cell density and titer were seen in both shake flask and microbioreactor culture systems. However, the media selected using the shake flask culture system differed from the media designed using the ambr<sup>®</sup> 15 microbioreactor system. The improvements gained using both microbioreactor and shake flask optimizations were confirmed using 5L single-use stirred-tank bioreactors.