TOWARDS A UNIVERSAL CHO REFERENCE PLATFORM FOR THE BIOTECHNOLOGY COMMUNITY

Michael Betenbaugh, Johns Hopkins University
Venkata Gayatri Dhara, Johns Hopkins University
Harnish Mukesh Naik, Johns Hopkins University
Yiqun Chen, Johns Hopkins University
Kelvin H. Lee, University of Delaware
Jongyoun Baik, University of Delaware
Douglas Nmagu, University of Delaware
Sarah W. Harcum, Clemson University
Daniel C .Odenwelder, Clemson University
Seongkyu Yoon, University of Massachusetts Lowell
Hemlata Bhatia, University of Massachusetts Lowell
Huolong Liu, University of Massachusetts Lowell

Keywords: CHO, reference platform, media, reproducibility

Chinese Hamster ovary (CHO) cells are widely used both by academic researchers and in the biotechnology industry. However, comparing studies across a wide spectrum of labs in the CHO community has been challenging due to the different variants of host cell line, culture media and proteins of interest used in the individual laboratories. Unfortunately, unlike other communities, there is no standard CHO platform that can be used as a baseline for experimentation and evaluation, leading to a limited understanding of how a result or innovation from one group may be applied to another group. This limits the pace at which innovations in cell line development are achieved by the community. As a result, there is a growing need to create and establish a common platform with the goal of comparability and compatibility across the CHO bioprocessing community. The Advanced Mammalian Biomanufacturing Innovation Center (AMBIC) is a US based academic-industrial-government collaborative initiative dedicated to developing improved upstream biomanufacturing methods. Together, AMBIC’s five academic and sixteen industrial members are working together to implement a newly developed CHO based reference platform that has performance characteristics similar to what is used in the industry. Our initial goals have been to identify reference production and host cell lines together with a common platform medium used in the production of model recombinant protein targets, including antibodies and other targets. These cell lines are also being used to develop standardized processes that can be comparable across AMBIC sites and within the CHO community. In concert, these reference platforms are being applied to evaluate and understand CHO cell line capabilities and processing parameters for improving the production platform. Our progress in establishing a reference cell host and the partner media and processing parameters will be described, and the role of such a reference standard in helping to define the scope of other AMBIC research endeavors will also be delineated. We believe such a reference CHO platform will facilitate a robust and dynamic CHO research and development environment and hasten progress in cell culture engineering in coming decades.