

## **FUTURE CHALLENGES IN BIOLOGICS CELL CULTURE ENGINEERING**

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The biotechnology industry is at an important transition point. Over the last 30 years much has been learned about development and industrialization of Cell Culture processes largely from broad spectrum development of monoclonal antibodies in CHO cells. However, important learning has also been taken from expression and culture of complex proteins. Now we look to a future where designer molecules will replace the standard monoclonal modalities in new product development and competition and changing regulatory and economic paradigms will drive the need for unprecedented titers, product quality control and speed to market. Fortunately, we face these new challenges armed not only with historical knowledge, but with a new spectrum of molecular engineering, process modeling and analytical tools that promise unprecedented productivity combined with metabolic and product quality control. This talk will outline the opportunities of the future and highlight the technology developments that position the industry to meet these challenges.