

## **Roundtable Discussion on Continuous Manufacturing in Biologics; Successes and Challenges**

### **May 26<sup>th</sup>, 2021**

### **Virtual**

#### **Executive Summary**

Continuous manufacturing (CM) is an approach to pharmaceutical manufacturing that can significantly reduce manufacturing costs, and as a result, lower drug prices and increase access to quality medications. ICM has already been implemented for some small molecule drugs, but there are challenges to adapting it for biologics. Solving these challenges is a high priority since biologics represent some of the most cutting-edge but costly to manufacture therapies available. Therefore, lowering their manufacturing costs is essential to achieving access to these drugs for patients.

On 26 May 2021, USP hosted a Roundtable Discussion on Continuous Manufacturing in Biologics; Successes and Challenges. This event brought together subject matter experts from academia and industry to discuss approaches to CM as it relates to biologics. The panel discussed the current state of CM and how USP can help with the adoption of these technologies.

As was discussed during the roundtable, the main advantage of CM is continuous cell culturing that minimizes the amount of time required to produce a biologic. The main challenge lies in integrating upstream manufacturing processes, such as perfusion cell culture, with downstream purification steps in a continuous manufacturing stream. This task is made more difficult because even well-developed upstream CM technologies are not yet widely accepted in the industry. This was not surprising to the discussants since new methods create regulatory uncertainty, and manufacturers generally prefer familiar technologies where they believe they can better predict regulators' responses. The decision to adopt a new process is often based on conventional return on investment (ROI) calculations. However, traditional frameworks, such as ROI, may not account for the value-added by innovation and other intangibles.

#### **How to overcome barriers**

Participants discussed the following approaches to overcoming barriers to the adoption of CM for biologics.

- Regulators and manufacturers must agree on a framework for quality-by-design (QbD) and how it can be implemented for CM
- Approaches must focus on general principles for CM that are applicable across various processes and a shared understanding of QbD
- How to integrate drug substance and drug product manufacturing for vial-to-vial manufacturing
- Development of novel value assessment frameworks to properly assess risk vs. benefit and inform business decisions

The panel also discussed other issues of interest to manufacturers, including the Emerging Technology Team (ETT) at the FDA, how and when to introduce ICM into a process, and the practical costs and needs for CM.

### **Path forward**

USP is actively advocating for CM by publishing in-depth reviews of the field, convening experts to guide the development of standards and best practices, and sponsoring research on process analytical technologies. USP is also focusing on building capability within the industry by developing training and education programs to help foster a shared understanding of CM best practices. Finally, USP will continue to host roundtable discussions and workshops in the US and India and work with the FDA to provide the industry with guidance through the upcoming ICH Q13 guidelines.

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