Raw Materials Process Impact Case Studies

Thursday, October 24, 2013
1:30 pm ~ Registration begins
2:00 – 5:00 pm ~ Presentations & Networking
North Carolina Biotechnology Center

Program Organizers:
Kelly Wiltberger, kelly.wiltberger@biogenidec.com
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Agenda

1:30 – 2:00 pm  Registration/Networking

2:00 – 2:10 pm  Speaker Introduction

2:10 – 2:40  Bryan Looze, Senior Engineer, Digital Development, Operations Technology, Amgen Inc.  
“Controlling Process Variability due to Raw Material Variability”

2:40 – 3:15 pm  Olga Smiliotopulos, Culture Process Development, Pfizer Inc.  
“Identifying and Solving a Cell Growth Inhibition Issue Observed in Single-Use Shake Flasks”

3:15 – 3:30 pm  Break/Networking

3:30 – 4:10 pm  Eric Peng, PhD., Cell Culture Development, Biogen Idec  
“A scale-down model to test raw material variability”

4:10 – 4:50 pm  Jannmeet Anant, EMD Millipore  
“Supporting the biopharmaceutical manufacturer - A supplier’s perspective on Raw Material Management”

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Bryan Looze
Senior Engineer, Digital Development, Operations Technology
Amgen Inc.

Title
“Controlling Process Variability due to Raw Material Variability”

Abstract
Recent developments in technology have enhanced the capabilities of pharmaceutical manufacturing processes to manage incoming raw materials. These include employ digital data transfer with key suppliers to improve supply chain transparency to raw materials used in the composition of cell culture media and the implementation of analytical technology at manufacturer to monitor raw material variability.

Bio
Bryan Looze is a Senior Engineer with Amgen and has 7 years’ experience in the Biopharmaceutical industry. He is a chemical engineer who earned a bachelor's from the University of Massachusetts and is a Master's candidate at the Illinois Institute of Technology. Bryan leads the global implementation of real time multivariate monitoring technology across Amgen's manufacturing sites and supports raw material data management and multivariate data modeling and analysis.
Title: “Identifying and Solving a Cell Growth Inhibition Issue Observed in Single-Use Shake Flasks”

Abstract: Single-use systems are used throughout cell culture operations on a daily basis for a variety of uses. Although the advantages are many, challenges including inconsistent process performance have been observed in these systems. A common single-use system is the disposable polycarbonate shake flask. These sterile shake flasks are simple to use and available in a variety of sizes, creating ease for inoculum expansion activities. This presentation describes the experimental approach and data identifying leachables/extractables as the cause of an observed cell growth inhibition in large single-use shake flasks. The factors that led to the inconsistent nature of this observed growth inhibition are identified. The experiments highlight differences between vendor, flask size, clone, cell host, seeding density, batch duration, and media/media components. Information on resolving the issue will also be provided.

Take Home Message: Effects of leachables/extractables present in single-use systems can be cell host specific. Factors besides lot-to-lot variability can contribute to the inconsistent nature of these effects.

Bio: Olga Smiliotopoulo is a Culture Process Development Scientist in Bioprocess Research and Development at Pfizer, Andover, Massachusetts. Olga joined the Andover site in 2005, as an Analytical Scientist supporting Quality Control testing of Raw Materials. In 2009 she transitioned to Bioprocess R&D and began her career in cell culture, developing processes for Pfizer’s biologics portfolio. She holds a Master of Science in Chemistry, specializing in Biochemistry along with a Graduate Certificate in Biotechnology and Bioprocessing from the University of Massachusetts, Lowell, MA. Preceding her graduate studies, she earned a Bachelor of Science in Chemistry, with Professional Chemistry Concentration at Bridgewater State College, Bridgewater, MA. Recently, Olga has studied cell growth inhibition in single-use systems associated with leachables and extractables.
Title: “A Scale Down Model to Test Raw Material Variability”

Abstract:
During a tech transfer across sites at similar scale, an unusual drop in cell growth and viability was observed in the production stage, while the typical small scale model showed normal cell culture performance. After investigation, several raw materials were identified as leading suspects including the shear protectant. Following a switch in respective raw material lots, the culture performance returned to the expected range supporting the hypothesis. Subsequently, a specific scale down model was developed and tailored for raw material screening. Additionally, the mechanism causing underperformance was investigated in conjunction with the application of various analytical methods to study lot-to-lot variation.

Bio:
Haofan Peng (Eric) obtained his chemical engineering BS degree at National Taiwan University. He received his PhD from the State University of New York at Buffalo in chemical and biological engineering where he focused on cell and biomaterial interactions. Eric is now working in the Pilot Scale, Cell Culture Development group at Biogen Idec and is responsible for raw material screening and process scale-up. He is actively collaborating with the Quality Control Bioassay group to support a successful raw material screening method which will be key in preventing future large scale manufacturing failures.
Title:
"Supporting the biopharmaceutical manufacturer - A supplier's perspective on Raw Material Management"

Abstract:
Processes for the production of biopharmaceuticals can often be complex, relying on specific manufacturing, monitoring and control systems. In addition, a large number of raw materials are utilized from various suppliers, including starting/source materials, in-process materials, excipients, packaging components, and device/delivery components. Therefore, it is important for biopharmaceutical manufacturers to understand the critical material attributes (CMAs) of their raw materials and which of those affect process or product variability, as well as how to control that variability. The regulatory guidance on raw material control is scattered; although science-based and risk-based approaches are consistently emphasized by regulators. This talk will highlight key aspects and trends in raw material management from a supplier perspective (EMD Millipore), focusing on quality agreements, supply chain management, and change control. A case study will be presented on recent filtration device changes and the comprehensive qualification approach taken by EMD Millipore.

Bio:
Janmeet Anant is the EMD Millipore Regulatory Advocate, focused on the products and services utilized for biopharmaceutical manufacturing. Janmeet has been involved in supplying and supporting the industry with upstream and downstream bioprocess technologies for the past 15 years. Recently, Janmeet has been involved in key industry associations that influence the regulatory environment, such as the Parenteral Drug Association (PDA), Bioprocess Systems Alliance (BPSA), the American Society of Mechanical Engineers - Bioprocessing Equipment (ASME-BPE), and American Society for Testing and Materials (ASTM). Janmeet has a Bachelor's of Science degree in Chemistry and a Ph.D. in Pharmacology.