PDA Journal
of Pharmaceutical Science and Technology

Artificial Intelligence and Pharmaceutical Production

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PDA J Pharm Sci and Tech **2023**, *77* 145
Access the most recent version at doi:10.5731/pdajpst.2023.001423

EDITORIAL

Artificial Intelligence and Pharmaceutical Production

The production of pharmaceuticals, food ingredients and industrial chemicals is big business in the United States. There have been advances in the use of Big Data for continuous monitoring of biopharmaceutical processing leading to process intensification, which we addressed in this journal in the past issues. Having said that, pharmaceutical production is a complex and highly regulated industry. There have been considerable advances in genetic engineering, proteomics, metabolomics, and machine learning that have not translated into pharmaceutical production and biopharmaceutical processing in a meaningful way.

PDA and the *PDA JPST* are always looking for the most recent advances to bring to our readers. And the current issue is no exception. We lead off with a study that uses AI-powered continuous process verification of bioreactor processing. This study outlines how continuous process verification can be achieved using machine learning and artificial intelligence. (See also, Rathore, AS & Fernandez-Lahore M, J. Chem. Technol. Biotechnol 2022:97:2287.)

Some of the other research articles shed light on such topics of parenteral production as sterilization, filling of liquid parenteral products, and determination of leachables in glass vials. The article by Ben-David speaks to loading patterns in an autoclave running overkill steam sterilization cycles. The tolerance interval during filling of liquid parenteral drug products is addressed by Schmelzer and Sutter. And Breckenridge, et al., present on leachables from glass vials and their identification using inductively coupled plasma mass spectrometry.

Lastly, a word about the 2022 Frederick D. Simon Paper of the Year award. The Journal Editorial Board and selection committee chose the paper by Lenger et al., ***100% Control of Controlled Ice Nucleation Vials by Camera-Supported Optical Inspection in Freeze-Drying*** as the awardee. The "best" in scientific literature is a very difficult decision, however. There were very close seconds—papers by Franzese, et al., Coleman, et. al., Stanley, et. al., and Boltres. These manuscripts were published in the *PDA JPST* Volumes 75(6), 76(1) and 76 (2). My congratulations to all the authors for their well-done studies and their submissions to the Journal. I am grateful for their support.

I look forward to your engagement and contributions. The success of this Journal relies on you!

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