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Dr. Warnock has conducted research in the areas of cell and gene biomanufacturing, bioreactor design, tissue engineering and cellular mechanobiology. He is actively involved in engineering education research and has earned international acclaim for his work using problem-based learning to enable students to develop professional skills. He currently serves as the director for Engineering Workforce Development for the NSF Engineering Research Center in Cellular Manufacturing Technologies (CMaT).

ABSTRACT: With the approval of the first cell and gene therapies by the FDA and the tremendous promise of emerging biopharmaceutical drugs – biomanufacturing, especially the transformative areas of cell and gene-therapy manufacturing, has rapidly become one of the most critical sectors of the biotech and pharma industry in the United States, and around the world. While early progress has been made to transition from lab-bench scale production through the first phase I and II clinical trials, to now more industrial, scaled manufacturing with 'Big Pharma' companies like Novartis, Bristol Myers Squibb, and Gilead launching commercial products, there are still large gaps that need to be addressed to move the current state of cell and gene therapy manufacturing into the future.

The 2016 National Roadmap (and the subsequent 2017 and 2019 updates) from the National Cell Manufacturing Consortium (NCMC) – a public-private consortium of industry, government, clinical, and academic leaders – identified lack of skilled cell-manufacturing workforce as a major barrier for the acceleration of promising therapies into products – and suggested that these areas need immediate national attention.

This seminar will describe the process of developing a competency model that provides the framework to train the future biomanufacturing workforce across different educational levels.