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A Cross-Disciplinary Educational Model in Biomanufacturing to Sustain a Competitive Workforce Ecosystem

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Abstract : Biopharmaceuticals manufacturing is one of the major economic activities worldwide. Ninety-three percent of the workforce in a biomanufacturing environment concentrates in production-related areas. As a result, strategic collaborations between industry and academia are crucial to ensure the availability of knowledgeable workforce needed in an economic region to become competitive in biomanufacturing. In the past decade, our institution has been a key strategic partner with multinational biotechnology companies in supplying science and engineering graduates in the field of industrial biotechnology. Initiatives addressing all levels of the educational pipeline, from K-12 to college to continued education for company employees have been established along a ten-year span. The Amgen BioTalents Program was designed to provide undergraduate science and engineering students with training in biomanufacturing. The areas targeted by this educational program enhance their academic development, since these topics are not part of their traditional science and engineering curricula. The educational curriculum involved the process of producing a biomolecule from the genetic engineering of cells to the production of an especially targeted polypeptide, protein expression and purification, to quality control, and validation. This paper will report and describe the implementation details and outcomes of the first sessions of the program.

Keywords : biomanufacturing curriculum, interdisciplinary learning, workforce development, industry-academia partnering
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