Applied Molecular Biology and Biotechnology: New Technology-Based Programs at the University of Delaware

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ABSTRACT

A recent trend in molecular life science (MLS) education at the associate, undergraduate, and master levels has been the introduction of a variety of biotechnology (BT) majors. Often, these majors have evolved as offshoots of existing chemistry or biology curricula. At the University of Delaware, a novel hands-on and industry-oriented program in BT has been designed. Modeling the curriculum off of a highly successful MLS program, this workforce skills-based program offers many of the elements associated with profession-based laboratory programs, namely assessment of both theoretical and technical competency and practical internships. This report details factors contributing to the successful development of such programs, in which the goal is to prepare students to hit the ground running as entry-level scientists who are ready to work in the BT and biopharmaceutical sectors. Components that were found to be significant to this endeavor included (1) the development of a highly hands-on–based curriculum, (2) the incorporation of practical rotations (practica) completed at BT and biopharmaceutical industry sites, and (3) the design of instruments used to assess technical competency. Outcome analyses suggest that a competency-based curriculum not only ensures that graduates are workplace-ready, but also that they can provide a solid foundation for further study at the doctoral or professional level. Creation of such programs by MLS-hosting departments can be relatively straightforward given preexisting administrative know-how and infrastructure. In addition to filling a critical need in the biopharmaceutical workforce sector, these programs can provide new revenue streams for the department.

ABBREVIATIONS: BT - biotechnology, MLS - molecular life science.

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