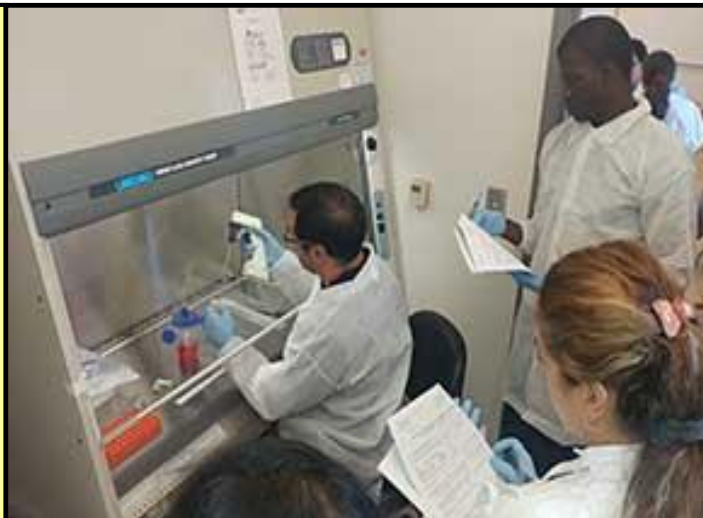


## Faculty, Teachers and Students learn about Biomanufacturing

This summer NBC2 hosted over 65 H.S. students, 30 H.S. teachers, and 35 college faculty for professional development activities in biotechnology labs across the U.S.

NBC2 improved bioscience career awareness by engaging high school communities in biotechnology activities through six BIOMAN Academies for students and three Protein is Ca\$h Workshops for teachers. Three miniBIOMAN conferences (right) introduced cutting-edge biomanufacturing curriculum to 2- and 4-year college faculty from across the U.S. on the topics of *Final Fill and Finish of a Drug Product* (Ivy Tech Community College), *Monoclonal Antibody Production in CHO Cells* (Montgomery County Community College), and *Single Use Technology in Biomanufacturing* (Quincy College). Faculty interested in attending 2018 workshops can obtain details at <http://biomanufacturing.org> this winter.

NBC2 miniBIOMAN workshops each produced a curriculum module designed for easy incorporation into existing programs and courses. These materials can be downloaded freely at [biomanufacturing.org](http://biomanufacturing.org).



miniBIOMAN participants learn to aseptically sample cultures of mAb producing CHO cells (above) and set up pH and DO probes into a 10 liter single-use bioreactor (below)



**High school students from grades 10-12** spent 4 days engaged in interesting and industry relevant hands-on biotechnology lab activities as part of NBC2's BIOMAN academies (left). In addition to performing HPLC analysis, DNA fingerprinting, environmental monitoring and protein purification experiments, they also learned about career pathways in biotechnology and the biopharmaceutical industry. Local industry scientists visited academies to discuss their career paths including college major, research, internships and their first and current job opportunities.



NBC2's summer Protein is Ca\$h workshops introduced the concepts of biotechnology and biomanufacturing to high school teachers through lectures, hands-on lab experiments, industry guest presentations and a tour of a local biotechnology company. Instructional materials were provided to aid in the implementation of the material at the high school level. Teachers were engaged in discussions about bioscience career paths and local employers, information they can use to guide their students to future STEM careers.



## NBC2 Expands Website to Include new Instructor's Portal

New and seasoned biotechnology and biomanufacturing instructors can now access additional educational resources at [biomanufacturing.org](http://biomanufacturing.org). Sign up for access to the new Instructor's Portal for:

**PowerPoint Lectures** that accompany each chapter of the *Introduction to Biomanufacturing* textbook

**A Comprehensive Biomanufacturing EXAM** developed in collaboration with industry partners and biomanufacturing technicians. This exam is organized into six areas that assess critical knowledge underlying the activities of biomanufacturing technicians on the job: *Critical Thinking, Math & Science, Operation Control & Management, Production & Processing, Quality, and Technology & Equipment*. The NBC2 comprehensive biomanufacturing exam was developed as a tool to evaluate student knowledge upon completion of an associates degree level course or program in biomanufacturing.

**Curriculum Modules** that are ready to insert into a new or existing biomanufacturing program. NBC2's newly developed curriculum addresses the current needs of the industry with each module containing the laboratory procedures and lectures needed for implementation.

**Standard Operating Procedure flex forms** for instructors to request SOPs in .docx format to adapt and incorporate into their laboratory activities.

***Access to Instructor's Portal coming this October at [biomanufacturing.org](http://biomanufacturing.org)!***

