Changing Lives Through Research

Liz Enyenihi, 15, of Knoxville, TN, spent last summer working in a basic science laboratory in the Department of Surgery as a participant in the national Physician Scientist Training Program.

Tennessee High School Student Spends Summer Sequencing DNA

Many students spend summer at camp or the pool. Not Liz Enyenihi – now a 15-year-old sophomore at Farragut High School outside Knoxville, TN. She spent her summer working eight-hour days in the laboratory of Jefferson's Director of Surgical Research, Jonathan R. Brody, PhD, and living in a University of Pennsylvania dormitory.

Enyenihi is part of the Physician Scientist Training Program (PSTP) offered by the Distance Learning Center – a nonprofit organization dedicated to developing and supporting the next generation of minority students in science, technology, engineering, and math. The PSTP supports a national pool of minority child prodigies across a 10-year regimen (typically from seventh grade through the college senior year). With a multi-institutional approach, the program rotates these "whiz kids" through basic science labs in academia, the National Institutes of Health (NIH), and the pharmaceutical industry.

Enyenihi joined the program after eighth grade and spent the summer of 2012 at Southern Methodist University, where she took science courses and classes about research writing, giving presentations, and statistics. The goal: to prepare her to work in a real lab. According to the Jefferson scientists she worked alongside, Enyenihi was indeed well prepared to jump in and participate. During her time in Philadelphia, she worked on DNA subcloning using polymerase chain reaction (PCR) to amplify DNA.

"I also did a lot of DNA sequencing in order to subclone a piece of mutant DNA," Enyenihi says. "By sequencing DNA, we were trying to identify a mutation." She notes that she also had a chance to perform gel electrophoresis – a technique used to separate DNA based on its size. "Before the summer, I'd learned about gel electrophoresis, but I had never actually done it – or used the centrifuge, microcentrifuge, and incubators," she says. "It was scary at first, but it all went well."

She adds that she was pleasantly surprised by the autonomy she enjoyed during the program: "Although I received a great deal of support from Dr. Brody and his team, no one from PSTP was looking over my shoulder," she recalls. "Only at the end – when I delivered my presentation, abstract, paper, and poster – did they see what I had gained from the experience."

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Enyenihi demonstrated a great deal of knowledge and perseverance in the lab, and despite being a self-described "shy person," she also excelled at presenting her key findings. She delivered the presentation twice – once to more than 40 PSTP staff and students in a large University of Pennsylvania lecture hall and again to the laboratory faculty and staff at Jefferson. She received top marks for her PSTP talk and left her Jefferson mentor and co-workers equally impressed.

"It was great to have a front-row seat to Liz's development into a young scientist during the summer," says Dr. Brody. "I think she came away with an 'I can really do this or anything' type attitude, which is what makes this program so special to be a part of." He will have the chance to work with Enyenihi again, as she returns to his laboratory next summer.

Though she's long planned to become a physician, Enyenihi says her summer in Philadelphia exposed her to a new world: the life of a scientist. "Until this experience, I never really understood what a scientist does. I had only learned about it in class and in textbooks. I really enjoyed doing the work in the lab, and now I'm considering an MD-PhD program," she concludes – adding that she hasn't made a final decision. (That can wait until she's at least 16!)

On the Job

Eleanor Fitzpatrick, RN, MSN, CCRN

Eleanor "Elly" Fitzpatrick joined Jefferson in 1987 as a clinical nurse specialist. Initially serving in the Intermediate Surgical Intensive Care Unit (ISICU), she soon became clinical nurse specialist for the Surgical ICU (SICU), as well. While her title has stayed the same, over the past 26 years Fitzpatrick has embraced and championed significant changes in nursing care – most recently, the growing emphasis on evidence-based initiatives.

With primary responsibility for staff education, Fitzpatrick trains and supports new nurses coming into the units. The two critical-care units are staffed by more than 80 nurses; at one time or another, Fitzpatrick has worked closely with every one of them. Fitzpatrick also develops and communicates policies and procedures for new equipment, tools and techniques. She serves as co-chair of the central venous catheter safety committee and represents her units as part of the ongoing Magnet re-designation process. The Magnet Recognition Program® recognizes health care organizations for quality patient care, nursing excellence and innovations in professional nursing practice.

Fitzpatrick takes a highly collaborative approach to her multi-faceted role. She is quick to praise the intelligence and dedication of Jefferson's nursing professionals: "Our staff nurses know what it's like to do the work, and they're unbelievably smart. I welcome their insights and talents in helping educate other nurses and in developing procedures."

Fitzpatrick also remains an active clinician with a strong commitment to patient-centric care. When working directly with patients, she strives to provide the level of care she would want for her own loved ones. And she enjoys not only the human connection of patient care, but also the direct experience with ever-evolving nursing tools and procedures.

Finally, Fitzpatrick appreciates the chance to participate in nursing research projects, including a study of early and progressive mobility after surgery (which resulted in a reduction in ventilator days and a slight reduction in SICU length of stay) and another focused on limiting sedation on ventilated patients to support early breathing tube removal. "Nursing research is driving the evidence-based approach, and the way we do things is changing rapidly," Fitzpatrick concludes. "Keeping nurses aware of best practices is more important than ever."

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