

Going *Viral*

Their Work Saves Lives

By Ann P. Schreiber

Students put their passion for science to work through a unique biomedical sciences program and valuable internships at the nation's top research facilities



Photo: Ann P. Schreiber

Angela Camargo loves doing gel electrophoresis. *Hub?* “You use a gel, and it has a matrix,” the high-school student begins, “and you put your DNA into a well. The DNA travels down because you put it into a buffer that has electrical current. DNA is negatively charged, so it tends to go to the positive end of the gel. The DNA moves down, and as it moves down, smaller strands separate from bigger strands. The larger strands stay up higher, and the smaller ones go lower.”

Camargo applies this technique in her internship at the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) in Frederick, Md. “If you’re looking for a gene or a specific type of fragment of DNA that you need, you’ll be able to identify it based on the size of the DNA,” she explains.

Even if the technique isn’t completely understood by those without scientific training, the importance of the work is. Since 1969, USAMRIID has spearheaded research for medical solutions — vaccines, drugs, diagnostics and information — to protect military service members from biological threats. At the facility, which includes Biosafety Level (BSL) 3 and 4 laboratories, Camargo works with the proteins of the Lassa virus, a BSL-4 virus that can cause viral hemorrhagic fever.

ON THE WEB

- There’s information about the U.S. Army’s research of infectious diseases at: www.usamriid.army.mil/index.cfm
- Learn more about the Frederick Career and Technology Center’s biomedical sciences program at: <http://ctc.sites.fcps.org/biomedical>
- Resources to help teachers expand options for women and girls in science, technology, engineering and math (STEM) can be found at: www.stemequitypipeline.org/Resources/Default.aspx



“SkillsUSA shows that I have involvement in my school and leadership opportunities. I definitely think that’s had a role in getting accepted for college.”

— Megan Toms

Camargo, a senior in the biomedical sciences program at Frederick Career and Technology Center (CTC), is one of many students who’ve had internships either at USAMRIID or at the National Cancer Institute, which is also nearby.

Instructor Kathy Koops says “these internships allow the students to put the skills and concepts they have learned in ‘biomed’ into practice in a real-life setting. They are able to refine their skills, broaden their knowledge and see how these concepts apply to real life. Also, they have the opportunity to work with first-class scientist mentors, who influence them tremendously.

“This program is very rigorous and is an elective,” adds Koops, who uses curricula from Project Lead the Way. “They could take ceramics or weight lifting and get the

same credit. They are willing to work hard because they love what they are learning and they are goal oriented. They see this program as a stepping stone toward their ultimate goal of becoming a health-care provider or research scientist.”

Meagan Parker’s interest was sparked by her eighth-grade science teacher, whom she says was her all-time favorite. She learned about the biomedical sciences program during a presentation by CTC students at her middle school and decided to visit the technology center.

“I came in and they were working with the skeletons that are used to put the body systems on as we learn,” she says. “It really caught my interest. I loved it. I’ve always loved science, so that’s how I got here.”

Now a junior, she’s making the same presentations to middle-school students —

and is eager to get started on her internship, which involves working over summer breaks as well as during the school year.

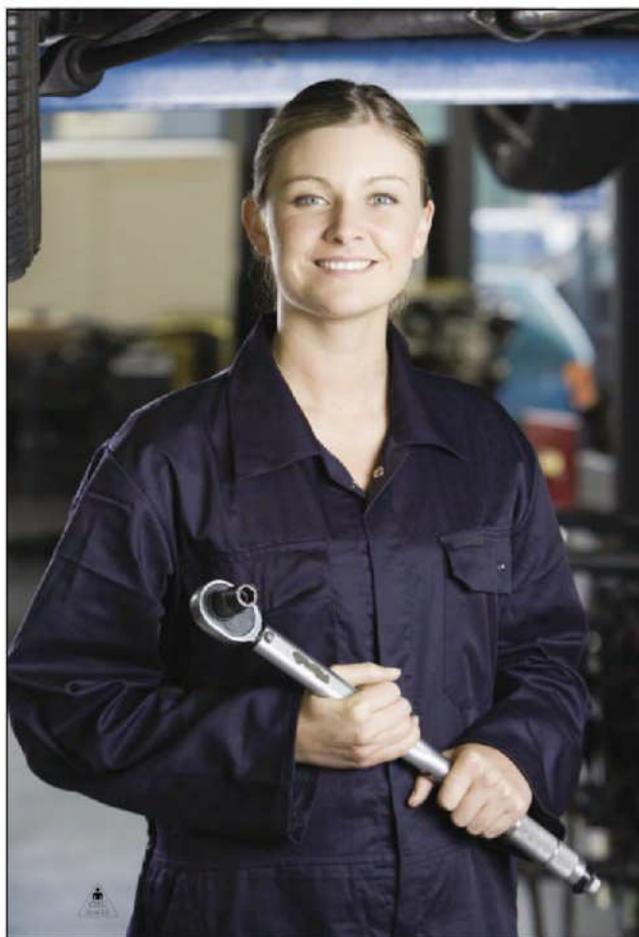
“I applied this year [for an internship] to the National Cancer Institute. I’m not old enough to apply to USAMRIID, unfortunately, but I’m really excited,” Parker adds.

SkillsUSA has improved her communications skills, she says, and “that should help me in this area.

“I will do research on anything. I love science. I don’t really have a specific topic of interest. I like learning everything we learn in biomed, so [I’ll go] anywhere they want to put me.”

Senior Megan Toms says she, too, loves being in the biomedical sciences program. “I was discouraged by my guidance counselor to come here, but I knew that this type of program was exactly what I wanted to do. I am very proud to be a CTC student.

“I’m really shy,” Toms adds, “but SkillsUSA taught me that even if you’re really shy, you can become a leader. I participated in two fall leadership conferences, and I earned my statesman and



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advanced statesman degrees. That helped me a lot in learning the professionalism to go on to the workplace and making a résumé and a portfolio. Even colleges are asking for résumés now.”

Toms competed in SkillsUSA’s Promotional Bulletin Board event, which “really helped me to come out of my shell, because I had to practice my speech in front of teachers and other students,” she remembers. “It really helped me to become a better public speaker and to be more confident in my abilities.”

She adds that SkillsUSA’s Health Occupations Knowledge Bowl competition was a great way for her to learn how to interact on a team.

“I’m very serious about my life and my career and my education. SkillsUSA shows that I have involvement in my school and leadership opportunities. I definitely think that’s had a role in getting accepted for college.” Toms plans to attend Stevenson University in Owings Mills, Md., where she’s

earned a Presidential Scholarship, the school’s highest award.

The three are passionate about their internship opportunities and not fazed by the biohazards they may be facing. Because of the involvement of their scientist mentors and the safety precautions in place, they feel safe being in these labs. And, they find the work meaningful.



Toms



Camargo



Parker

As Camargo says, “Having the opportunity to work with that bacteria or whatever it is and being able find something that can kill it, but not kill the person in the process, that’s really rewarding. I know for the Lassa virus, there is no cure.

“They have treatment, but not a cure. It’s a hemorrhagic fever, and it causes organ failure and bleeding from every orifice in your body. It’s really horrible, kind of like Ebola. I get the opportunity to work with something without a cure, and I could eventually be one of the people who finds a cure. To help the soldiers overseas and maybe the natives of that area who also get infected by the virus, I think that’s really rewarding.”

Parker is a bit awestruck by the possibility of being involved in finding a cure for cancer, among other things.

“You have to set goals for yourself,” she points out. “I think that’s what’s great about working in science: you could be putting something out there that could lead to a cure. Science definitely is my passion. It’s what I want to pursue in my life.” ●



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