



## High school students challenging their brains

Ag lab's 'Student Researcher Day' spurs juniors, seniors into science

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High school students worked on "cleaving" a coriander seed Thursday in Terry Isbell's chemistry lab at the National Center for Agricultural Utilization Research.

It wasn't abstract or irrelevant busy work. Isbell explained the relevance of the work to America's trade imbalance and the national farm economy.

That was an astounding and exciting correlation, and one that became infectious throughout the day as 16 students rotated among three labs to work alongside scientists on real-life problems.

Thursday was the third "Student Researcher Day" at the lab. Junior and senior

high school students throughout the Tri-County Area were invited to apply for a day of hands-on lab work, discussions with practicing scientists and lunch with staff at the center, including scientists who rank among the world's best.

Student Researcher Day is part of the center's effort to turn high school students on to the excitement of basic scientific research untethered by corporate sponsorship or grant money.

In brief remarks, Isbell explained how his lab is trying to cleave the coriander seed and split the fat molecule into oleic acid and lauric acid. Students grappled with the conundrum of trying to figure out how to use oxidation, but to stop the process in the first phase in order to extract the lauric acid.

Isbell explained that lauric acid is a detergent component in shampoo, and American manufacturers currently depend on imported lauric acid. Having a domestic source would help America's trade imbalance.

The other component, oleic acid, is used in nylon, he said, "so out of one crop, two products can be used."

He told students coriander, also called cilantro, can be grown in central Illinois and many regions of the United States as part of a crop rotation following winter wheat, thereby producing additional farm income.

During a lunch break, lab director Paul Sebesta told students that basic science means signing on for a "career of discovery."

"This lab opened in 1940 with our first generation of scientists working here. We're now on our third generation of scientists," Sebesta said. "Students in high school today are our fourth generation. This program is our opportunity to entice you to seek careers in science. Today is your opportunity to work in a lab, not a classroom."

Lily Liu, a junior at Dunlap High School, walked out of Nancy Alexander's lab after photographing DNA and said, "Really cool. We get to do a lot more here. There is definitely a lot of exciting hands-on work in the labs here."

Liu, 16, is thinking about pursuing a career in biochemical or biomedical engineering. She was the only girl in a class of 20 last year in her high school's introduction to engineering class.

Blake Holzgrafe, a junior at Notre Dame High School, is considering a career in health sciences and found work in Alexander's lab separating DNA "extremely exciting."

"I signed up for the day because in my education so far I haven't really experienced first-hand science. A lot of this is more advanced than I imagined," he said.

"I want to get as much experience as I can with science before I start applying to medical schools. The work going on here is about using your brain to make leaps ahead in critical discoveries. We've got to solve problems by thinking outside the box. Obviously, we can't keep doing things their way we have in the past."

Alexander, a molecular biologist, told students, "I never do the same thing day after day. I'm not on an assembly line. Every day I'm challenging my brain."

She is working on fungi and ways to keep the food supply safe.

"I highly encourage young people to go into science. There is still an incredible amount of work to be done. If we don't keep up with science and technology, our society will go down hill," she said.

"We need to figure out how to feed the world without fighting. If we are to keep the food supply safe, we need to be ahead of the game. We can't be behind the fact and still stay ahead of bioterrorism."

Alexander, who has been at the lab 30 years and is close to retirement, said when she applied to graduate school, an administrator

tried to discourage her, saying that she would end up leaving her career to marry and have a family.

She has always tried to make positions in her lab available for students and tries to encourage female students.

Last week, Alexander stopped by Proctor First Care and was diagnosed with pneumonia. The female physician had been a student working in Alexander's lab 25 years ago.

"She came here as a high school student and worked here for two more summers, then I lost touch with her," Alexander said. "I don't know how to change politicians or the bureaucracy, but we can take little steps here to help students. It feels good to be able to do that."

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