

High school teachers shine as students during NIEHS STaRS Institute

By Kelly Lenox

For two weeks in July, eleven high school teachers turned the tables and became students, as part of the expanded NIEHS Science, Teachers, and Research Summer Institute (STaRS).

The program is designed to broaden teachers' understanding of basic biomedical research and, thereby, strengthen the biomedical research community - a focus of the NIEHS [strategic plan](#). STaRS participants will be able to go back to their schools with the knowledge they've gained, and help build student knowledge of, and enthusiasm for, environmental health sciences, including up-to-date laboratory technology and diverse career possibilities.

Collaboration increases impact

Offered in collaboration with North Carolina New Schools, ([NCNS](http://ncnewschools.org/)) (<http://ncnewschools.org/>)

the program evolved from an earlier externship (see [story](#)) to the present STaRS Institute, in order to enable more teachers to participate. According to Ericka Reid, Ph.D., director of the NIEHS Office of Science Education and Diversity (OSED), a two-week design best combined depth of the experience with ability of teachers to participate. "We wanted an extended experience for as many teachers as possible," she said.

Eleven teachers were selected from the pool of applicants.

- Tonya Adams - Union County Early College High School
- Yolanda Blakeney - Cabarrus-Kannapolis Early College High School
- Barbara Bohacova, Pharm.D. - Warren Early College High School
- Amy Jessup, D.V.M. - East Surry High School
- Charles Patton - Rowan County Early College High School
- Travis Seese - Athens Drive High School
- Brandi Simonof - Nash-Rocky Mount Early College High School
- Linda Sutton - Polk County Early College High School
- Sula Teachey - Wayne School of Engineering at Goldsboro High School
- Thomas Venetta - Vance County Early College High School
- Justin Wheelles - Yadkin Valley Regional Career Academy

The syllabus was developed by Huei-Chen Lao of OSED; Robert Petrovich, Ph.D., head of the Protein Expression Core Facility in the Laboratory of Structural Biology; Ronald Cannon, Ph.D., staff scientist in the Laboratory of Toxicology and Pharmacology; and George Fromm, Ph.D., postdoctoral fellow in the Laboratory of Molecular Carcinogenesis. A number of other NIEHS and NTP scientists volunteered as well (see [text box](#)).

Based on teachers' interests and curriculum needs, the program engaged participants in learning basic biomedical research techniques; touring the labs and Clinical Research Unit; receiving an overview on environmental health from NIEHS and NTP Director Linda Birnbaum, Ph.D.; and hearing lectures by NIEHS postdocs, on everything from epigenetics to bioinformatics.

Creativity and enthusiasm in abundance

In the hallway outside the confocal microscopy lab, Lao observed, "Teachers are some of the most creative people I know." Teachey validated Lao's observation when she presented her classroom session on toxicology, which called for students to set up a dose-response experiment. "I'd ask the teacher who runs the community garden if we could have some seedlings, which would make the experiment go a lot faster [than starting from seeds]," Teachey said.

Sutton was enthusiastic about discussing bioethics and recombinant DNA. "I feel a lot better about addressing students' concerns about animal research and bioethics, after seeing the NIEHS animal facility," she said.

Enthusiasm reigned even as the program drew to an end. "You all were so dedicated," said Lao, at the closing session, in which the teachers presented the classroom projects they'd created. Sutton replied, "In the labs, we never got tired, because we were so excited about what we were doing." Simonof summed it up by saying, "It's been a priceless experience for all of us."



"This experience helps us find more ways to hook [students] in and interest them in the sciences," said Blakeney, center, shown in lab with Cannon, left. (Photo courtesy of Steve McCaw)



1/7

Jessup and the other teachers learned a variety of basic biomedical research techniques in lab sessions during the first week. (Photo courtesy of Steve McCaw)



2/7

"Coming here and seeing new applications of what the students are studying, and being able to take that back to the classroom, is really important," said Simonof, right, shown in the lab with Cannon. (Photo courtesy of Steve McCaw)



3/7

"Like a lot of us, I'm really turned on by epigenetics and how far the field has gotten. It's exciting and adds a lot to biology," said Venetta. "We've had some discussion of great ways to introduce epigenetics in the classroom." (Photo courtesy of Steve McCaw)



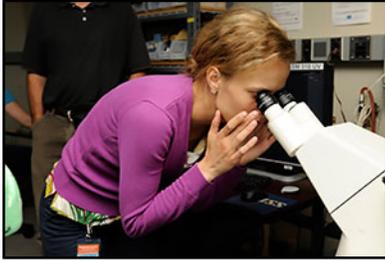
4/7

Patton, like all the teachers, proved versatile, moving from tour to lecture to lab to instructional design over the course of the varied program. (Photo courtesy of Steve McCaw)



5/7

"I learned a lot about bioinformatics here, and I haven't talked with the kids about that in the past," said Adams. "Epigenetics and gene therapy will also really interest them and I'll fit in as much as I can about those topics." (Photo courtesy of Steve McCaw)



6/7

Bohacova captured a common sentiment when she described the value of sharing the experiences with her students. "Whether it's doing things in the lab or learning more about bioinformatics, technology, or biostatistics, it's really important for students to understand the breadth of what it means to be a scientist," she said. (Photo courtesy of Steve McCaw)



7/7

Biomedical engineer Jeff Tucker demonstrated confocal microscopy to the teachers. Shown, from left, Tucker, Adams, Bohacova, and Jessup. (Photo courtesy of Steve McCaw)



Participants and some of the instructors gathered for a photo at the end of the program. From left, back row, Andrea Austin, NCNS STEM field coordinator, Petrovich, Venetta, Blakeney, Jessup, Humble; second row, Sutton, Patton, Simonof, Teachey, Bohacova, Lao; front row, Cannon, Adams, Wheelles, Reid, Seese. See text box for complete list of instructors and volunteers. (Photo courtesy of Steve McCaw)

NCABR Rx for Science Literacy workshops at NIEHS

In another teacher-focused program, NIEHS offered two continuing education workshops this spring through the North Carolina Association for Biomedical Research (NCABR).

On April 24, NIEHS scientists and staff presented a workshop on The What, Where, How, and Why of Health Science Research. A second workshop, on Cell Biology and Cancer, was held on June 20. Both workshops are part of the NCABR Rx for Science Literacy series.

Regina Williams, director of programs at NCABR, visited the STaRS group July 15, to inform them of upcoming opportunities offered by NCABR and their network of funders. Of particular interest is the upcoming fall NCABR conference, Bridging the Gap.

"What makes our conference unique among science, technology, engineering, and mathematics teachers is that we have a big focus on helping you make connections with museums and nearby institutions," Williams said.

The STaRS Institute program would not have been possible without the following instructors and volunteers:

Linda Birnbaum, Ph.D.	Page Myers
Terry Blankenship-Paris, D.V.M.	Simone Otto, Ph.D.
Christopher Campos, Ph.D.	Robert Petrovich, Ph.D.
Ronald Cannon, Ph.D.	Bart Phillips, Ph.D.
Molly Cook	Gary Powell, Ph.D.
Joanne Damborsky, Ph.D.	Charles Romeo, Ph.D.
Matthew Edin Ph.D.	Shepherd Schurman, M.D.
Lori Edwards	Jeff Tucker
Neal Englert, Ph.D.	Mitzie Walker
Jennifer Fostel, Ph.D.	Shannon Whirledge, Ph.D.
George Fromm, Ph.D.	Kimberly Wiggins, Ph.D.
Juhee Haam, Ph.D.	Belinda Wilson
Michael Humble, Ph.D.	

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