Inquiro, the UAB undergraduate science research journal

Volume 2009 | Number 3 Article 31

2009

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faculty interview: chemistry

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While at UAB, undergraduates tend to associate specific courses with certain professors. Organic chemistry is no exception. When it comes time for a student to begin the organic chemistry sequence, one name stands out above the rest, Dr. Jacqueline Nikles.

Born and raised in Uniontown, Ohio, Nikles attended Marietta College, a small, private 4-year college in Marietta, OH. Marietta had an ACS approved chemistry tract with a degree requiring undergraduate research. While pursuing her undergraduate degree, Nikles did a research project on organometallic complexes. She also participated in experience for undergraduates (REU) at the University of Toledo during the summer between her junior and senior year. From her lab experience she realized her passion for chemical research, and she decided to earn a doctorate in chemistry. She attended Case Western Reserve in Cleveland, OH and did research on effect of micelles on the reduction of ketones. She earned her Ph.D. in physical organic chemistry in 1985. After completing her Ph.D. she did a post doc in the chemistry department at Rutgers University in New Brunswick, NJ. She did research on the effect of micelles on oscillating chemical reactions. She also did research with the medical school on the use of micelles to bind antibiotics to the surface of prosthetic devices.

Dr. Nikles and her family moved to Tuscaloosa in 1990 and

began working at UAB in June 2001 as assistant professor and coordinator of the organic chemistry program. She has been responsible for developing the organic chemistry curriculum, which includes both the lectures and the laboratories. Since her arrival, she has introduced a recitation section as a means of enhancing student learning and has also created an Honors Organic Chemistry course for qualified undergraduates that includes both lecture and lab.

I had the pleasure of being enrolled in Dr. Nikles' Honors Organic Chemistry lab. Centered on guided inquiry, this lab section allowed me to choose my own research project, giving me a sense of freedom. The students learn the skills needed to do research in organic chemistry. The capstone experience in the lab allows the students to choose a target molecule and propose a viable synthesis. Each group is charged with the task of ordering the proper chemicals and developing an experimental procedure that fits within the time constraints given. By devising such a project, students are allowed to get a feel for life in a research lab where one starts with nothing but a long-range goal and must devise a pathway to achieve that goal on their own with minimal instruction.

Dr. Nikles' husband, the other Dr. Nikles, is a chemistry professor at the University of Alabama. They collaborate on research focusing on targeted drug delivery using polymeric micelles. One of the options for cancer treatment is chemotherapy. However, the toxic drugs kill both normal and cancerous cells leaving a patient with side effects such as hair loss, weight loss, and a compromised immune system. Dr. Nikles and her husband are working to design a water-soluble package with targeting sensors on the surface of the micelles. These targeting micelles will deliver the drugs specifically to the cancer cells and will allow for the drug to be turned on and off at those particular sites. David Curiel in the Gene Therapy Center at UAB, along with some co-workers, have teamed up with Nikles and her husband on this innovative research project. Undergraduates also play an active part in the processes of the research. On several instances, their research has been brought to UAB to use certain equipment not available elsewhere.

The importance of participating in research is something that Dr. Nikles tries to instill in undergraduates considering research as a career option. "Research is not always glamorous, and sometimes things don't always work," says Nikles. She stresses the fact that students sometimes get the wrong idea about research when subjected to regular chemistry course labs where experiments are always designed to work. Research is about exploring the unknown. "There could be a period of 6 months in a graduate school lab where no results are obtained," she says, "and research experience as an undergraduate can help prepare you for these obstacles. One should be able to adjust and then subsequently readjust when the time comes for it." She warns students against taking the 5-year commitment plunge that is graduate school without having experienced firsthand how research relates to them. Dr. Nikles truly believes that students have a multitude of opportunities at UAB to determine if research is a future career option. "One can find plenty of things for undergraduates to do besides washing dishes," she points out. Overall, Dr. Nikles is pleased with the progress the UAB chemistry department has made in getting students involved in research. "Since Dr. Graves' arrival as Chair of this department, we have really stepped up the push to get students involved in labs earlier than junior year. Some are even starting as freshmen to gain experience in the laboratory." With this initiative, Nikles has high hopes for the future of undergraduate chemistry students.

As she continues to mold the organic chemistry program at UAB, Dr. Nikles will continue to relay the importance of undergraduate research to her students. Her educational research has yielded a successful program where undergraduates can get a taste of graduate school life, not to mention a love for working in the laboratory and the desire to pursue research as a career.