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research narrative

Translational Research for Undergraduate Students

Nicole Guyette and Karin Tran

Undergraduate research provides students with opportunities to gain a broader perspective on the scope of the field of science. Students introduced to research at an earlier stage are able to explore areas they may have never previously considered. Presently, professional schools are encouraging undergraduate students to participate in research, anticipating that more students will return and accept faculty positions as clinical researchers. Therefore, undergraduate students interested in scientific research should consider the possibility of researching with their professional school of interest.

As founding officers of the Pre-Optometry Club at UAB, Karin Tran and I learned about the possibility of research at the school of optometry through Keely Stewart, our advisor for the organization and student affairs representative for the UAB School of Optometry. I had never done research before and wanted to explore the research aspect of optometry. Karin, on the other hand, spent her previous semester conducting research with Dr. Thane Wibbels but wanted a more optometry-related research experience. After visiting different laboratories, we both decided to work with Dr. Rod Fullard, whose translational research (moving basic science into clinical practice) focuses on dry eye studies, tear collection, and cytokine analysis. We spent the spring semester of our junior year assisting Dr. Fullard's Ph.D student Lucy Kehinde with her research on varying cytokine levels in extended versus

daily contact lens wear. The tear collection training and monitoring required for this study enabled us to gain patient interaction experience. In addition, we were able to utilize the pipetting techniques we had learned from multiple chemistry labs.

Currently, Karin and I are conducting our own independent research study as part of the honors biology research program, validating the tear levels for chemokines Interleukin 8 and IP-10 measured by Cytometric Bead-Based Assay (CBA) with the corresponding levels for identical duplicate samples by enzyme-linked immunosorbent assay (ELISA). Some researchers believe that both chemokines have misleading tear concentrations as a result of assay interference by tear components. By comparing the two assay types for each chemokine, our studies will provide validation of the CBA measured tear levels. The basis of our projects entails collecting nonstimulated and stimulated tear samples from twenty participants in order to run the CBA and ELISA.

Getting Involved in Undergraduate Research

To gain a broader perspective on how research can help undergraduate students learn about the range of possibilities of their professional school choice, we interviewed two UAB School of Optometry faculty members, Dean John Amos and Dr. Keshia Elder. The UAB School of Optometry houses world-class investigators. As such, it provides ample research opportunities for undergraduate students. When asked about his view on undergraduate research at the school, Dean John Amos of the UAB School of Optometry said that he strongly supports the idea of getting interested students involved in the many research opportunities the school has to offer. Previously, students were responsible for seeking out research op-



portunities by individually contacting research professors at the school. However, with the newly established Pre-Optometry Club at UAB, Dean Amos believes the organization will serve a critical role in recruiting more students to research at the school as an alternative to the undergraduate campus. The club creates relationships between pre-optometry students and the faculty at the school of optometry, allowing students to gain a broader view of the different areas of research in order to find one that best fits their interests. For pre-optometry students, especially, researching at the optometry school would be more relevant to their career interests. Dean Amos further believes that participation in undergraduate research at the school of optometry will provide a more in depth understanding of basic and clinical research that may lead to a future concentration in a research career.

According to ocular surface disease investigator Dr. Keshia Elder, "Undergraduate research allows students to get a good taste of what research is like, so they can decide if they are interested without becoming fully committed." Her statement describes exactly how undergraduate research has provided us with the opportunity to attain a fast-track Master of Science degree. Being able to use our undergraduate honors research project as the basis of our Master of Science project has relieved the pressure



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of balancing the Master of Science program with the optometry program. Undergraduate research experience at the UAB School of Optometry has also made us more competitive as prospective optometry students because of the relationships we have formed with researchers and professors. Although Karin and I are both pursuing the O.D/M.S. degree, students do not have to be pre-optometry to participate in research at the school. The Department of Vision Science offers Master of Science and Ph.D. programs for those who are interested solely in vision research.

Overall, research is a learning experience, and we advise students to explore undergraduate research. If students already have a professional program of interest, they should experience the clinical side of that program through research. Researching through the professional school builds a network of connections among the faculty, thereby creating a more competitive application. Research could be an unknown interest waiting to be discovered by the right student.

