



The REWARDS of Research

“I think there’s a misconception that research is really boring and really isolated,” commented Kirstie Keller, a senior from Snoqualmie, WA, as she talked about her work in Gonzaga Professor Kirk Anders’ yeast genetics lab, “but it’s actually quite the opposite. It’s very social, very creative, and really interactive.”



One of the students with whom Kirstie has collaborated over the years is fellow senior Isaac Strong from Canby, OR. Isaac, a first-generation college student, has been doing research since his freshmen year. “I was taking an ecology class, and the professor told us about GU’s undergraduate summer research options, so I interviewed with Dr. Anders. I came in pre-med, but after working in the lab, I decided on a Ph.D. instead.”

For several years in the genetics lab, both students were involved in studying the effects of aneuploidy (the gain or loss of a chromosome or chromosomes) in yeast cells, and each was responsible for a specific part of the project. Using a process known as microarray hybridization, Isaac analyzed extracted DNA to see whether aneuploidy had occurred in chromosome 6 of the yeast cells they grew, and Kirstie became proficient at using bioinformatics and DNA manipulation strategies as she worked to insert a new gene into the same chromosome.

Dr. Anders praised both students for their work. “I gave them both challenging projects to work on, which required good lab skills and a precise knowledge about what they were doing.” He added, “Isaac and Kirstie have the key characteristic of curiosity. They ask a lot of questions and don’t stop asking until they’re satisfied with an answer.”

In addition to the lab skills each perfected, both students were listed as second authors on a published paper in a peer-reviewed journal. “[Being a second author] makes you feel like you are actually contributing and being respected for the work you are doing,” Kirstie said. Isaac agreed, “I didn’t know how good that was until I went to my [graduate school] interviews and people were surprised that I’m a co-author on a paper.”

The experience in Dr. Anders’ lab along with encouragement from other professors led the two budding scientists to participate in nationally-recognized internships during the summer before their senior years. As one of 16 student interns, Kirstie conducted research on a cancer-causing protein called Myc at the Fred Hutchinson Cancer Research Center in Seattle under the mentorship of Dr. Robert Eisenman, a Primary Investigator (or lead researcher on the project). At the end of the program, she presented her work to world-famous scientists including recent Nobel Prize recipient Linda Buck. “I was having a heart attack,” Kirstie shared, “but it was so amazing to have her there asking questions.”

For his part, Isaac received the honor of being named Gonzaga’s first Exceptional Research Opportunities Program (EXROP) scholar through the Howard Hughes Medical Institute (HHMI). EXROP allows partner schools to nominate students who come from underrepresented backgrounds in college to compete for a summer research placement with top Primary Investigators across the country. Through EXROP, Isaac spent 10 weeks at The Rockefeller University in New York City studying with Dr. Cori Bargmann in the field of neural circuits and behavior. Isaac’s project dealt with identifying genetic regions that were responsible for a certain behavior in *C. elegans* (free living round worms). “The research was very stimulating, and though I decided I didn’t want to do neuroscience, one of the coolest things was that I got to talk to the faculty, grad students, and the post docs about grad school,” Isaac explained. “I actually chose to apply to the grad school I’ll attend because of what several of them said about the program and their experiences there.”

Kirstie too commented on how helpful her program was in continuing her passion for research and encouraging her application

to graduate programs. “After going to The Hutch, there was no question in my mind that I wanted to go to grad school. I want to do research.” Kirstie also commented on how the preparation she gained from her experiences at Gonzaga assisted her during her experience in the renowned cancer research lab. “The program definitely pushed me a lot, but I felt prepared in how to tackle a problem and look in primary literature from my basics of being at GU.”

The preparation at Gonzaga and the additional research opportunities each has pursued have paid dividends for both students. A few months after graduation, Kirstie will be at The Johns Hopkins University and Isaac at University of California – San Francisco’s Tetrad program. “I got into all 5 of the schools where I interviewed,” Isaac shared. “I chose UCSF because it’s a top notch program and all the people were welcoming—actually, it reminded me a lot of Gonzaga,” he added.

Kirstie’s Ph.D. program at Johns Hopkins focuses on multiple aspects of biology, and she’d eventually like to share her knowledge with college students in the classroom. She’s excited that Johns Hopkins allows graduate students to create their own new course for undergraduate students. “I know it will be hard to get it approved by the dean, but I think the best part about science is getting other people excited about science,” she commented.

As Kirstie and Isaac move on to their next stages of research and education, the Gonzaga summer and school-year research programs will welcome more student researchers marveling over new puzzles to be solved. As Dr. Anders explained, “The only way to find out what research is like is to get involved and do it,” and, at Gonzaga, “doing” science is highly encouraged.

“The reason I came to Gonzaga was so that I could teach and do research with undergraduate students,” Dr. Anders shared. Through these hands-on experiences, future GU students will learn, like their predecessors, that scientific research allows for creativity, critical thinking, and collaboration—a wonderful combination of factors that contribute to personal and professional growth and can lead to great opportunities in the future. Just ask Kirstie and Isaac.

