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Honors in Action: Summer Research

August 29, 2017

Every morning during the summer of 2017, Mattie Braselton (chemistry '18), Lauren Love (chemistry '19) and Marina Michaud (chemistry '17) entered a lab, prepared their resources, and conducted experiments. Three Georgia Southern University Honors students had the opportunity to conduct undergraduate research through the National Science Foundation: Research Experiences for Undergraduates (REU). Braselton conducted research at the University of Mississippi, Love traveled to Atlanta to work at Georgia Institute of Technology and Michaud worked at North Carolina State University. These students assisted professors at each university who were conducting their individual research.

Braselton worked with Dr. Jared Delcamp, assistant professor of chemistry and biochemistry at the University of Mississippi. His current research focused around the ability of dye-sensitized solar cells to convert any visible light into electrical energy. Braselton's role in Delcamp's lab was to conduct experiments dealing with organic synthesis.

"Each day, I collaborated with the graduate student before I began any of my experiments because organic synthesis requires a significant amount of preparation beforehand. I wrote a procedure, gathered materials, and prepped my lab space. Some experiments could take me fifteen minutes to set up or two hours depending on the nature of the experiment. Most reactions took between four to twelve hours to complete," she explained.

This experience at the University of Mississippi gave Braselton a new opportunity to expand upon her undergraduate research skills. The research she completed this summer was not "in the slightest similar to my honors thesis," she said. The REU gave her the opportunity to branch out and try different fields of research, while experiencing a new campus and gaining new mentors.



Mattie Braselton in the lab.

"Mattie was a tremendously devoted student, that remained flexible in changing projects halfway through the summer and still made substantial progress toward her project," said Dr. Delcamp.

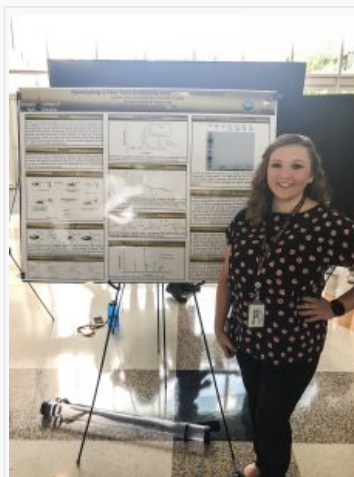
Love worked with Dr. Amit Reddi, assistant professor at Georgia Institute of Technology. The research focused on finding "proteins that bind heme, an essential iron containing nutrients required for much of life on Earth," said Dr. Reddi. Love conducted daily experiments with graduate students in order to discover the essential proteins.

"This summer I was researching Heme and Hemoproteins. Heme is an important cofactor in a vast array of cellular processes. However, heme is actually toxic to cells, so its concentration must be carefully controlled. Several diseases are associated with malfunctions in heme trafficking such as certain cancers, cardiovascular diseases and aging and age-related neurodegenerative diseases," Love said.

Love has not officially begun her undergraduate research at Georgia Southern University, but her experience this summer gave her a window into the research aspect of her major, and she thoroughly enjoyed it.

"Getting to do intensive research was incredible. Prior to my REU, I had no plans for research in my career, but I fell in love with the research. Now, I want to do research as an MD," she said.

This summer allowed Love to challenge herself in a hands-on setting. Dr. Reddi appreciated her love for learning: "Lauren impressed the entire lab with her intelligence, confidence, and work ethic. For someone so young to be producing data, raising intriguing questions, and proposing new ideas on par with more senior graduate students was a real pleasure to watch and demonstrates the outstanding scientist she is and the high quality of education she is receiving at Georgia Southern University."



Lauren Love presents her research.

Marina Michaud spent her summer at North Carolina State University, working with Dr. Joshua Pierce, assistant professor of organic chemistry. The focus of Dr. Pierce's research was the ability to use "biologically active marine, natural products for medicinal applications," said Michaud.

"The task I was given involved the development of a novel access to a 2-thiazoline scaffold, which is present in a variety of natural products with anticancer, antimicrobial, and antiviral properties. We envisioned access to this scaffold through a photo induced synthetic approach. As part of the REU program, I learned how to model chemistry computationally and integrate my theoretical computational studies into my experimental approach," she said.

Michaud was presented with new obstacles within the familiar environment of organic total synthesis, because her undergraduate honors research revolves around the similar topic, specifically

medicinal chemistry. However, Michaud explained that, "each

molecule we synthesize as organic chemists presents its own unique obstacles and demands our creativity to maneuver towards our objective. Therefore, this summer I was able to apply and strengthen the synthetic mindset I have learned over the course of my thesis at Georgia Southern, as well as gain completely new knowledge and ideas that I can now utilize in my strategies going forward."

Braselton, Love and Michaud appreciated their mentors who became an invaluable resource throughout the summer. The field of science is large, with a plethora of options to research. A mentor provides a student with a solid foundation to lean upon. These mentors were once students and therefore understand the common challenges and obstacles presented to undergraduates.

"In the end, I know I finished this summer as a much stronger chemist due to the tenacious leadership of Dr. Pierce. Having Dr. Pierce now as a mentor opens countless doors for my career path that I simply would not have had access to previously. Each mentor that I had along the way has provided me with the connections I needed to reach the next stepping stone toward my goals," said Michaud.

The National Science Foundation (NSF) made it possible for both Mattie Braselton and Marina Michaud to have this opportunity. The NSF funds undergraduate students who wish to gain more experience in the field of research. "The REU helped me narrow down what I truly want to do for the rest of my life," Braselton said.

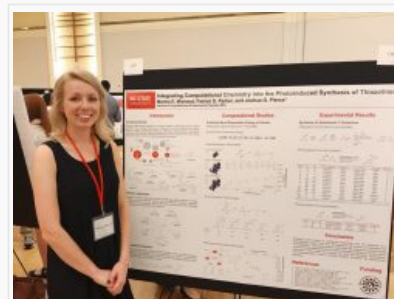
Research is an important facet of a college student's career. Honors students should not limit themselves to their undergraduate honors thesis at Georgia Southern University. Braselton and Michaud looked for more opportunities to push themselves further in their academic career.

Michaud said, "Each research experience you take hold of creates countless opportunities to learn deeply about a new subject, expand your technical skills, develop your research capabilities, and extend your professional network. Seize these opportunities!"

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Marina Michaud presents her research.

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