



*Beckman Scholar Clara Rodriguez presents her undergraduate research, "Skin Topography Analysis for Forensic Application," during a Plenary Session at the 2023 Beckman Symposium. Photo credit: Corey Sandler, OC Event Photos*

# Mentored Research Reveals Growth Opportunities in Mistakes and Challenges

Clara Rodriguez is a Beckman Scholar and first generation college student at Binghamton University, State of New York.

"My abuelos (grandparents) moved from Puerto Rico to New York over 70 years ago in efforts to give their family access to better living opportunities. The closest my grandfather got to a higher education was

as a superintendent for a building where professors lived," Rodriguez shared. "My father built his plumbing company from the ground up 24 years ago. Both he and my mom worked hard to provide me with the support I needed to do well in my academics so that I could dream greater dreams and reach higher heights...I used my family's inexperience with higher education as a

springboard into the unknown.”

In that unknown, Rodriguez found the world of research, filled with plot twists and discovery, through the Beckman Scholars Program at Binghamton University. It challenged her to ask questions and consistently seek out opportunities to learn.

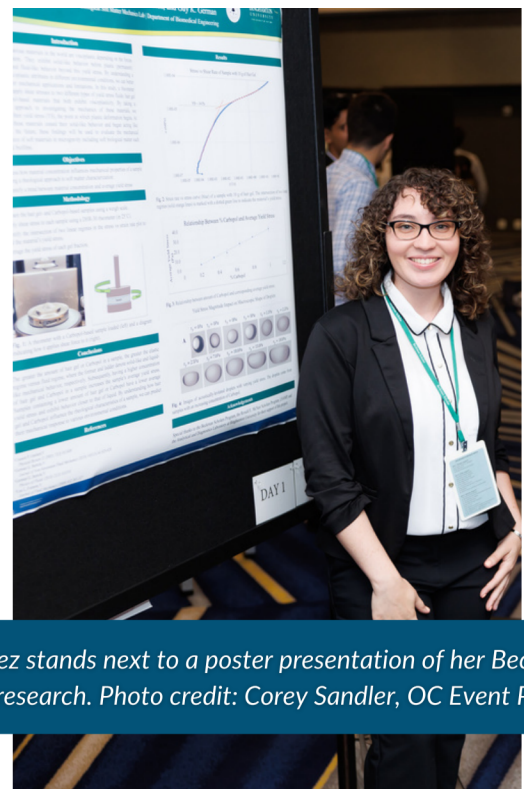
“I was already working in the Biological Soft Matter Mechanics lab under Associate Professor Guy German at this time,” she explained, “and was looking for a way to empower myself to go deeper into research.”

It was the program’s networking opportunities and the diverse professions represented within its community of awardees that were particularly attractive to Rodriguez, who thought that the whole of research was not exclusively conducted within the walls of a lab.

“Ideas can be sparked anywhere, even in a conversation.” She surmised the promise of that, coupled with access to the Beckman Symposium and funding for conference admission, gave her valuable experiences interacting with people she wasn’t likely to meet otherwise. Applying to the Beckman Scholars Program was an effort to connect with a community that shared her own values toward achieving results and being of strong character. Additionally, Rodriguez intended that her

Beckman-funded research would involve learning with both resilience and humility, themes she found echoed in Dr. Arnold O. Beckman’s Seven Rules for Success, along with not being afraid of making mistakes.

“As the frontier of discovery, research is the border between the known and the unknown. We are bound to make mistakes, but how we learn from them and what we build off them is the harvest that we reap,” she said. “My research experience as a Beckman Scholar has allowed me to learn at my own pace by appreciating mistakes and unexpected challenges as the opportunities they are. From learning new instruments and data collection strategies to optimizing the efficiency of protocols, there is a pleasure that comes from improving one step at a time. There’s pleasure in recognizing the



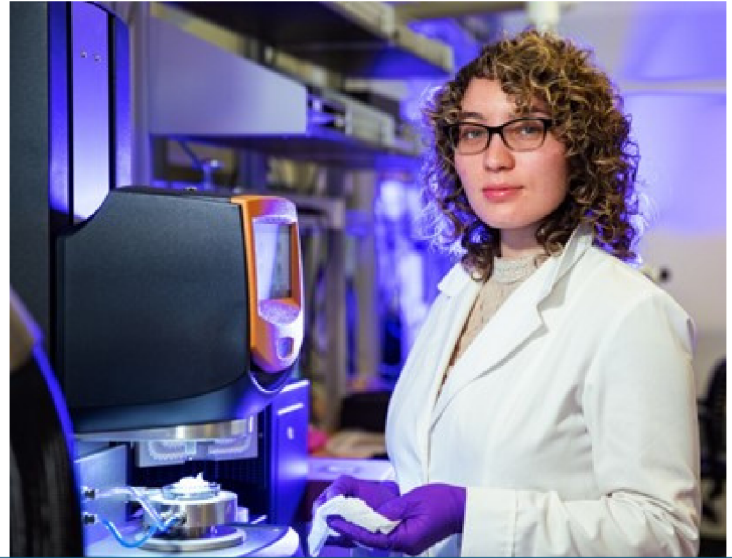
*Rodriguez stands next to a poster presentation of her Beckman-funded research. Photo credit: Corey Sandler, OC Event Photos*

impact research and its results will have, too.”

Rodriguez’s project is focused on skin analysis for forensic application endeavors. It aims to provide better understanding of the utility of skin topography in identification purposes by identifying and tracking the unique repeating patterns of the skin over time and considering alternative ways skin can be used to broaden existing forensic analysis methods.

“My research on soft matter characterization works to improve our understanding of the mechanics of soft materials. Using a rheometer, I apply shear force to different materials as a means to find their yield stress, which is the point at which solid-like behavior ceases and the material exhibits liquid-like behavior instead,” explained Rodriguez. “These findings are being used in conjunction with other ongoing projects in our lab to understand the mechanical behavior of soft materials in microgravity including soft biological matter such as bacterial biofilms.”

The plan is to continue the research work in biomaterials and biomechanics as preparation for a PhD in biomedical engineering, with the long-term goal of working in research and development. Expanding and diversifying her knowledge of the subject matter and skills as a scientist were goals shared by her BSP Mentor as well, and Rodriguez



*Clara M. Rodriguez, a biomedical engineering senior at Binghamton University, using a rheometer to characterize the mechanics of soft materials. Image credit: Binghamton University, State University of New York/Casey Staff*

credits his receptiveness to questions and encouragement to try new, innovative strategies with helping her grow as a researcher and improving overall team effectiveness.

“My ambition is to use the skills I learn to advance regenerative technology for improved medical treatment, especially for emergency responders, military personnel, and veterans,” she shared. “Oftentimes research isn’t a ‘solo’ mission, so being able to work alongside other ambitious budding professionals helps me identify areas that I can work on and how I can best contribute to our efforts. Having such a learning environment that allows for creativity, independence, and collaboration inspires me to cultivate and promote similar work cultures in the future...I am extremely grateful to have Dr. German as my mentor... I’m very grateful for everyone that has made this program possible and for how it has honed me as a researcher!” ■