BECKMAN
FRIDAY FEATURE

Early Exposure to Clinical Setting Sparks Research Interest

Above: 2023 Beckman Scholar Abigail Ali (r) with BSP Mentor Dr. Isaac Skromne (l)

Abigail Ali is an undergraduate student conducting research in the lab of Dr. Isaac Skromne at the University of Richmond. Together, they're investigating ways to deliver medication directly to the bones of patients who need targeted treatment. Specifically, they're looking to provide proof of principle that carbon nanodots can successfully accomplish the task, sending functional proteins and molecules where they are needed, because that could pave the path to new drugs and therapies for bone diseases. It's research that represents an opportunity to make a real difference for people suffering from diseases that significantly diminish their quality of life. For Ali, it's work that seems to have blossomed from the seeds of inspiration planted during youth. Ali's dad is a doctor who would sometimes bring them with him to the hospital and into the clinical lab.

"It gave me an appreciation for all the research and time that goes into developing treatments that greatly impact patients," explained Ali. "After taking more science classes in high school, I discovered that I love learning about biology on the molecular level, and a few shadowing experiences with my dad's colleagues really solidified my love of research before I even entered undergrad."

At the University of Richmond, Ali had been working on a project for about six months and making substantial progress when their mentor shared the idea of applying to the Beckman Scholars Program, which provides funding through the Arnold and Mabel Beckman Foundation for 15-month mentored undergraduate research experiences.

"I thought it would be a great opportunity to get my name out into the community and to meet people who are interested in a research career outside of my university," reflected Ali. "Getting real life experience at the Beckman Symposium and meeting people from all different backgrounds have been a truly invaluable experience for me."

Left: Beckman Scholar Abigail Ali works with Casper Zebrafish in the Skromne lab at the University of Richmond

Ali's project aims to develop calcium-binding carbon nanoparticles to transport proteins to bones in order to treat skeletal diseases like osteoporosis. The work involves utilizing adult Casper Zebrafish in part because of their regenerative properties and also because their genetically modified skin creates transparency that makes it easy to track medicine delivery.

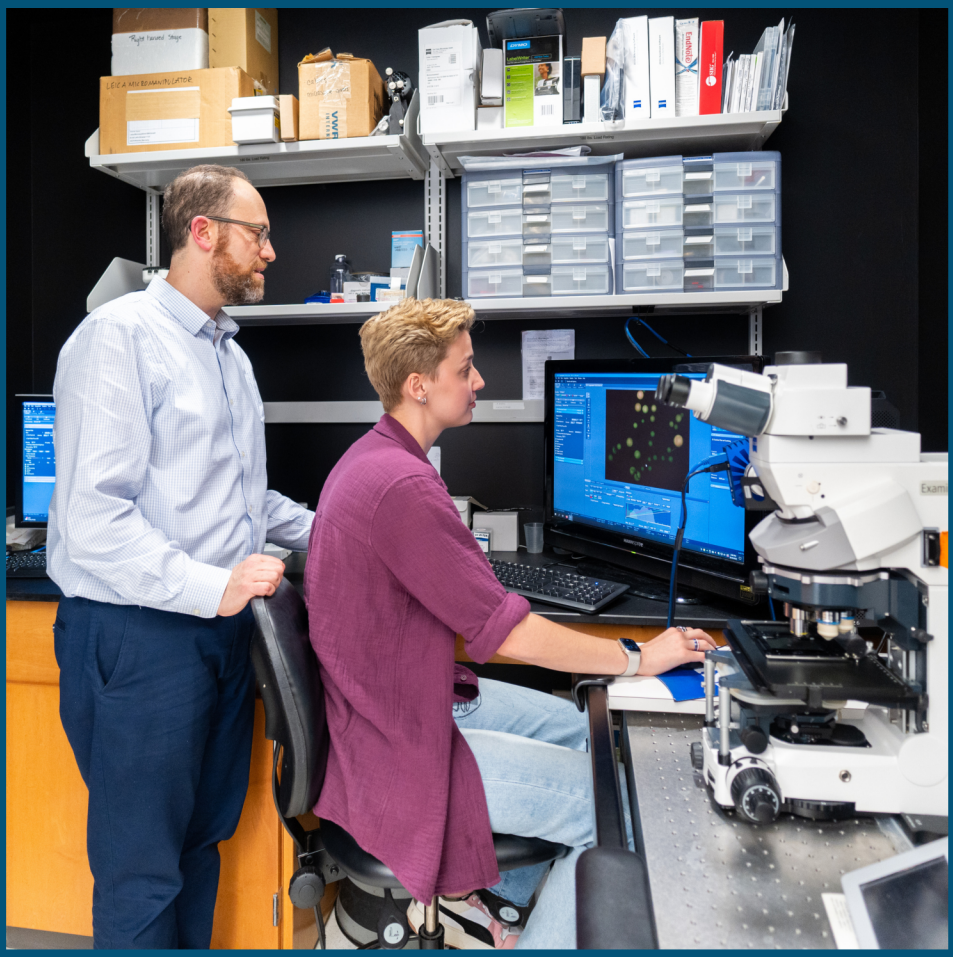
"My project, though based in biological applications, is heavily influenced by chemistry during the synthesis process," Ali shared. "The interdisciplinary nature of my research has really broadened my understanding of how these two topics intersect. I've gained a fairly unique experience of having a second mentor in the chemistry department who provides a different perspective. Having mentors in both the chemistry and biology fields has allowed me to find ways to bridge both areas of research, and to improve my skills as a problem solver."

It's that mentored aspect of the research experience Ali has found to be particularly meaningful because the one-on-one interactions have supported skill development such as research and scientific writing and enabled open communication about career aspirations and options. Overall, Ali's career prospects and self-confidence have been buoyed, and the plan is to continue research all the way through senior year.

"At the University of Richmond, we also have the opportunity to complete a post-bacc summer research term if we want to finish up our project," Ali stated. "I think that is a very viable option for me if there are any loose ends I need to tie up or other researchers that I need to train so that they can continue my project after I graduate. While I am not certain where life is going to take me, I know that I definitely want research to be a continuous part of my life."

Ali is currently in their junior year and has started the process of looking into various graduate schools and PhD programs with the goal of identifying one that could be the right fit.

"I hope to potentially explore research topics outside my current research," they said, "but still within the scope of biochemistry and molecular biology." ■



Above: Dr. Isaac Skromne (l) mentors 2023 Beckman Scholar Abigail Ali (r) as part of an undergraduate research project focused on the development and characterization of carbon nanodots-protein conjugates for the treatment of bone disease.

Ali is a junior studying at the University of Richmond.

All images provided courtesy of the University of Richmond; thank you to Jamie Betts, Photographer, and Sunni Brown, Director of Media and Public Relations.