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Discovering Protein Functions and Career Goals: The Suppressor SIKE

by Rebekah Rifareal,
News & Noteworthy Co-Editor

Name: Danice Alston

Project: "Biochemical and Structural Aspects of the Inmate Immune Receptor, Toll-like Receptor 3, and Its Cognate Signaling Pathways"

Program: Initiative for Maximizing Student Diversity (IMSD)

Mentor: Dr. Jessica Bell

Year: Senior

Major: Interdisciplinary Science and Psychology



What was your motivation behind first applying to Initiative for Maximizing Student Diversity (IMSD)?

Discovering IMSD was accidental. I was having a routine advising appointment and discussing future careers when the topic surfaced. At the time, I had no clue about what I wanted to do, so my advisor suggested that I explore research and encouraged me to apply for the program.

Why did you choose IMSD over other research programs? How do you feel IMSD specifically meets your needs as a student researcher?

I wanted to get involved in research for the experience and to find a program that would accommodate each individual's needs. Also, IMSD focused heavily on biomedical research, which matched with some of my interests because I am considering pursuing an occupation as a health professional.

What is the project you are currently working on?

Currently I am trying to investigate a protein called Suppressor of IKKe (SIKE) and trying to determine its specific function. Very little is known about this protein. My research group focuses on host pathogen

interactions in innate immunity. Specifically, we are examining a protein called SIKE because it was discovered to be inhibiting a kinase known as TANK Binding Kinase 1 (TBK1). However, my group found that SIKE is actually phosphorylated by TBK1 so we wanted to discover SIKE's true function in regards to innate immunity. In order to address our question on its function we developed two objectives which were to first determine if the SIKE was expressed in epithelial and myeloid cell types and secondly determine SIKE's influence in cell migration.

What is a typical day (in the lab, office, hospital, etc.) like for you?

I wouldn't say that there is a typical day in the lab because the demands are always changing. Some days are busier than others. Research is a round the clock commitment because it never stops. In research you are constantly discovering things so your schedule varies. I love science, so dedicating a chunk of my time does not bother me.

How do you feel your research can benefit others?

I hope my research will shed light on the SIKE protein because the more that is discovered about it the more we can learn from it.

Describe the dynamics of the mentor-mentee relationship. How has your mentor best helped you?

The mentor-mentee is a close knit partnership. The see-one, teach-one, and do-one philosophy is strongly implemented in the lab. The first week I shadowed my mentors, carrying out tasks such as plating cells and creating western blots. Then I was allowed to perform tasks once I become comfortable and could perform them with a degree of precision. My mentors have helped me develop as an individual. They have helped me build a sense of confidence, provided me with valuable advice, showed me how to find my inner sense of humor and how to be an overall be a leader.

What are the benefits of research? How have you grown through your time doing research?

The benefits are mainly learning new techniques to use in the clinical lab science program. Not all of the experiments go as planned or follow a desired outcome but learning from your mishaps fosters a greater understanding. Research has allowed me to pay attention to details more critically. This project taught me what to expect when working with other people and how to be efficient while working independently.