
BIOGRAPHICAL SKETCH

NAME: Yadira Ortiz-Castellano

POSITION TITLE: PhD Student

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Puerto Rico at Cayey, Cayey PR	B.S.	6/2004	Natural Science
University of Puerto Rico at Rio Piedras, San Juan PR	M.S.	12/2015	Biology
University of Puerto Rico at Rio Piedras, San Juan PR	PhD	6/2020	Biology

A. Personal Statement

As I embarked on my higher academic development, my final goal was not a scientific research career. I discovered this career after being invited to apply for the RISE Program. During my time participating in the program, I was exposed to different fields of research during the following semesters and summer internships. With these experiences I discovered how perfect this career was for me. Even though I did not continue graduate studies immediately upon obtaining my B.S. degree, I was constantly exposed to research advances by working as the Lab Tech for the RISE program at UPR Cayey. I frequently had the opportunity to attend seminar from researchers from the States and Puerto Rico. Listening to these seminars confirmed that this was what I wanted to do. In 2012 I was accepted to the Biology Master's program at the University of Puerto Rico in Rio Piedras to continue my education.

Upon deciding my research area for my master's thesis, I met with Dr. Jose Agosto. I had prior knowledge of his work from when I worked in the RISE program. When we met and talked personally about his work and possible projects it prompted my interest in the field of neurobiology and everything that is involved with sleep behavior. As my project took shape I learned about working with *Drosophila melanogaster* and how to use it as a model for the study of sleep behavior. Another important aspect of this early training was working with extensive literature research which led to the formation of my project. During this time, I learned that the gut microbiota can have important influence on the central nervous system. We therefore aimed to answer the following questions: Does the composition of the gut microbiota change in accordance to sleep behavior or lack of sleep? Does the presence of gut microbiota influence sleep patterns? Does the immune system play a role in the communication of the gut microbiota with the central nervous system? My findings were presented in my thesis dissertation on August 2015 entitled: Interactions Between Sleep, Macrophages and Gut Microbiota of *Drosophila melanogaster*. Among the results obtained from this work we presented that the overall number of gut microbes change from day to night as well as changes in the overall abundance with a decrease or increase in the relative abundance of specific bacteria in relation to sleep behavior. Also, manipulating the gut microbiota with the use of antibiotic treatment affect total sleep time as well. These findings suggest that there is indeed a link between the gut microbiota and sleep behavior. My experience during this time only confirmed the perfect fit that scientific research is for me and helped me pin point the area in which I would like to specialize in, neurobiology. For this reason, I decided to pursue my PhD degree in August 2015.

As I continue my professional development, I decided to continue on with the gut microbiota – sleep studies since I find it of great interest how bacteria can influence the central nervous system. The propose research involves looking more closely at the molecular mechanisms between the bidirectional communication between the brain and gut by looking specifically at the relationship between and sleep and the gut microbes. Obtaining a clearer understanding of these mechanisms could provide more effective treatments for sleep disorders and applied to other psychological conditions that have been linked with the presence of the intestinal microbiota.

The experience I have gained from my past research experience and from my years as a lab technician have equipped me to continue in my preparation and education with a clear goal in mind. After completing the PhD, I plan to experience a Post-Doctoral opportunity in the field of neuroimmunology. This field of research combines the two areas that have grown of great interest for me. Meanwhile, I will continue to learn about the field as I work on my own research in the coming years. I believe that this area of research can lead to better treatments of central nervous system related disorder such as anxiety, depression and sleep among others.

B. Positions

Activity/Occupation	Beginning Date (MM/YYYY)	Ending Date (MM/YYYY)	Institution/Company	Supervisor/ Employer
Waste water plant operator	01/2005	02/2006	ETAG Corp.	Eli S. Bermudez
Secretary	03/2006	01/2007	Trinity Clinic	Dr. Fasto Lora
Laboratory Technicians	01/2007	07/2012	UPR-Cayey, RISE Program	Dr. Robert Ross
Laboratory Instructor	08/2012	06/2013	UPR-RioPiedras	José Fontanez
Research Assistant	08/2013	06/2015	UPR-RioPiedras	Dr. Jose L. Agosto

C. Contribution to Science

As an undergraduate student I had the opportunity to participate in a range of research from behavioral to molecular studies. These experiences helped me discover that research at a more molecular level is what held my interest the most. One experience in particular took place over the summer at the Ponce School of Medicine. Under the supervision and guidance of Dr. Idaliz Flores, I worked on a project with the goal of identifying genetic markers that could provide an endometriosis diagnostic tool by blood test. During my time there I worked isolating DNA and running PCRs to analyze polymorphism in GSTT1 and GSTM1 in families with endometriosis patients. By the end of my 2-month internship, our results indicated that patients with a family history of endometriosis have a higher probability of mutations of GSTT1. This was not observed in sporadic cases of endometriosis. Taken together this could indicate that this condition may be different at a genetic level when comparing patients with a family history to the sporadic patients with no family history.

Upon entering graduate school in the Master program, I worked closely with Dr. Jose Agosto and Dr. Claribel Luciano on the development of a new project. With Dr. Agosto's expertise in circadian rhythm and sleep regulation, Dr. Luciano's knowledge in microbiology and immunity and my previous experience in molecular techniques guided us to the formation of the project to study of the link between the gut microbiota with sleep regulation. Among the studies performed during my thesis research work, we found that upon rearing fruit flies in food medium supplemented with an antibiotic cocktail, changes in total sleep were observed. Flies reared in antibiotics showed a decrease in total sleep. We are currently working on a manuscript to reporting the findings obtained from this work.