

SUMMER RESEARCH PROGRAM EVALUATION: CLASS 2011

*External Evaluation: Neuroscience Research Opportunity to Increase Diversity (NeuroID)
University of Puerto Rico, Rio Piedras*

Prepared by:

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Introduction

The primary goal of the Neuroscience Research Opportunity to Increase Diversity (NeuroID) Program is to foster and enhance the interest of undergraduate students to pursue a research career in neuroscience through the integration of formal courses, community outreach opportunities, and mentored research experience. The summer research program is an important component of the NeuroID program. Students in their junior year are required to participate in a summer research program at the State. Students can apply for a summer program that is a laboratory of a mentor's close collaborator, a laboratory based on specific techniques that may need to be transferred for the benefit of their research project or a potential institution to pursue graduate school.

Evaluation Purpose and Scope

The Center for Evaluation and Sociomedical Research (CIES) of the Graduate School of Public Health, University of Puerto Rico Medical Sciences Campus partnered with the NeuroID Program of the University of Puerto Rico to perform a process evaluation for the project. This report summarizes the evaluation of the **Summer Research Program** *experience of the NeuroID Class 2011*. The evaluation focused on students' satisfaction with summer research program.

Methods and Procedure

Students' satisfaction with the summer research program was evaluated through an online questionnaire. The SurveyMonkey.com website was used to design the instrument and allow students access to the questionnaire. Students were invited to participate by email. Students email addresses were provided by the program staff. Weekly reminders were sent to those who had not completed the questionnaires. Approximately, six reminders were sent to the participants.

The students' questionnaire includes 31 questions through which socio-demographic information, as well as information pertaining to general satisfaction and specific satisfaction with various aspects of the summer research program was gathered. The surveys were designed to be completed in 10 to 15 minutes.

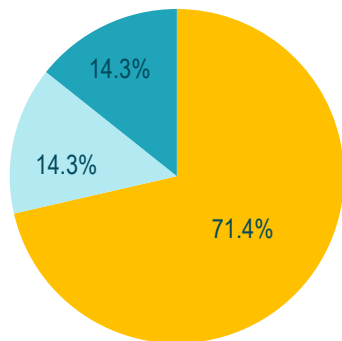
NeuroID Students Summer Program Experience (Class 2011)

◆◆Boston ◆◆New York◆◆Texas ◆◆Florida◆◆Nebraska◆◆

Demographics

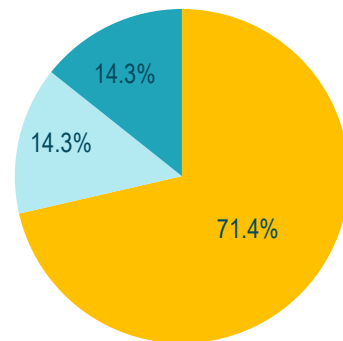
There were a total of 7 students that completed the questionnaire. Most of the participants were male (71.4%) while (28.6%) were female. The majority of the students (71.4%) were affiliated to the University of Puerto Rico, Rio Piedras Campus (see Graph 1). More than half of the students (71.4%) reported Biology as their major (see Graph 2).

Graph 1. Academic Institution Affiliation



■ UPR-RP ■ Inter-Bayamon ■ Sagrado Corazon

Graph 2. Academic Concentration (major)



■ Biology ■ Chemistry ■ Psychology

All of the students (100.0%) were 'very satisfied' with the summer research experience. Students also describe their summer research experience and the aspects they most liked (see Figure 1).

Figure 1. Students Summer Research Experience

*"The summer research experience **allowed me to gain insights into the field of work** that most interest me in neuroscience...I am certainly, even more convinced that I want to pursue a career in neuroscience..."*

*"I am very satisfied with this summer research experience because it **fulfilled** all my **expectations**..."*

*"... the experience was very **enriching** and worthwhile. I was able to **learn new techniques** and approaches to scientific questions..."*

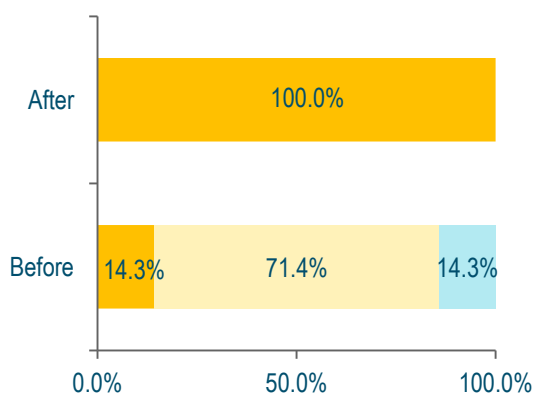
*"...I was able to study a subject with **high ties** to my personal **future goals** and I was encouraged to think and act like a graduate student. It reinforced my commitment to science and my **passion for neuroscience research**"*

*"I am very satisfied...I was able to **contribute**...and at the same time I learn a lot of **new things**, techniques, theory [and] used new scientific equipment..."*

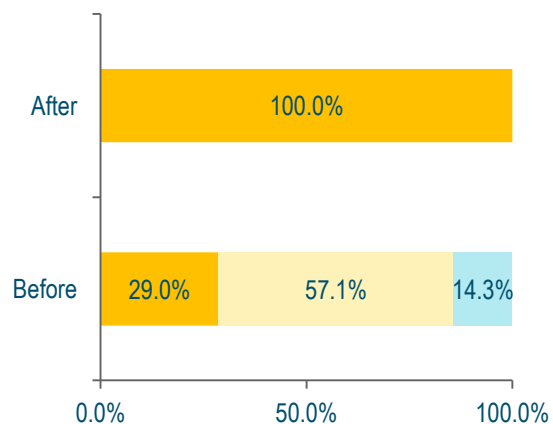
Skills Self-Assessment

Students were asked to rate their laboratory research skills **before and after** the summer research program. Before the summer program the majority of the students described their skills to **prepare reports about the investigation work** and **critical interpretation of scientific literature** as “medium” or “low” (see Graphs 8-9). It is important to highlight that these were the skills students reported the lower level of proficiency. In general, after the summer program most of the students described their laboratory research skills between “high” or “medium”. The skills with the highest level of proficiency after the summer program were **determine the appropriate laboratory protocols to conduct experiments**, **development of plausible hypothesis**, **manipulate the laboratory instruments and equipment properly** (see Graphs 3-4, 7).

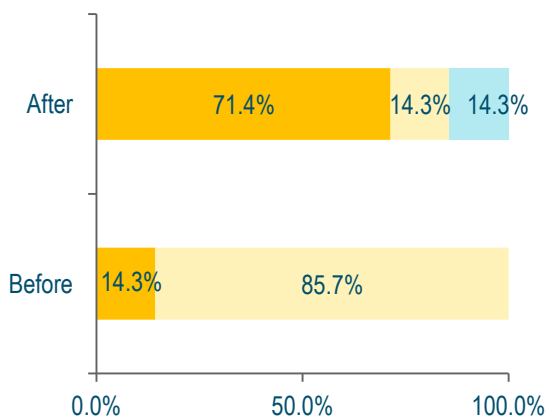
Graph 3. Determine the appropriate laboratory protocols to conduct experiments



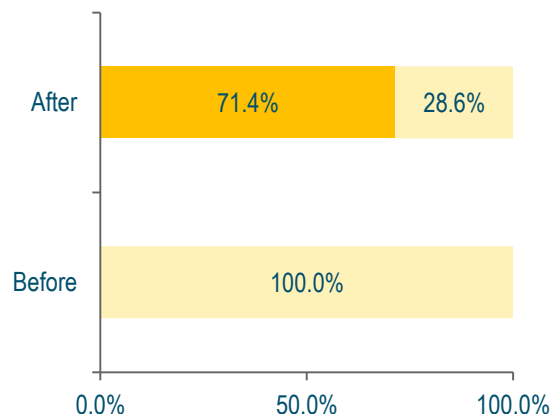
Graph 4. Manipulate the laboratory instruments and equipment properly



Graph 5. Identification of gap-in-knowledge

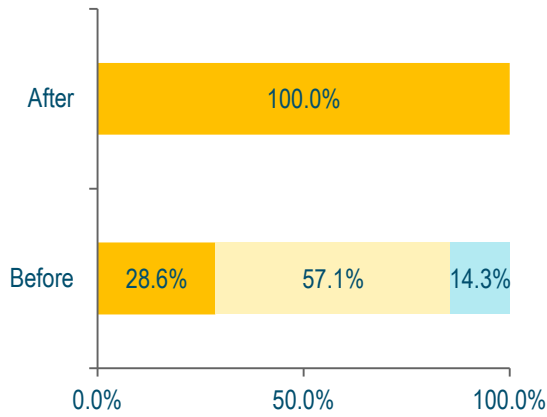


Graph 6. Data analysis

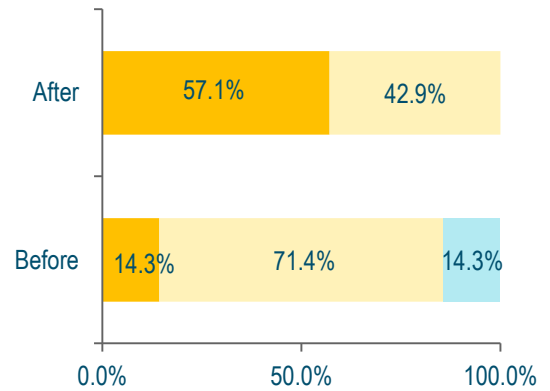


■ High ■ Medium ■ Low ■ None

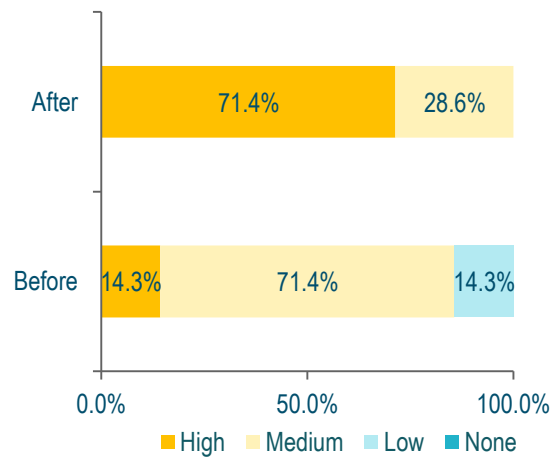
Graph 7. Development of plausible hypothesis



Graph 8. Critical interpretation of scientific literature



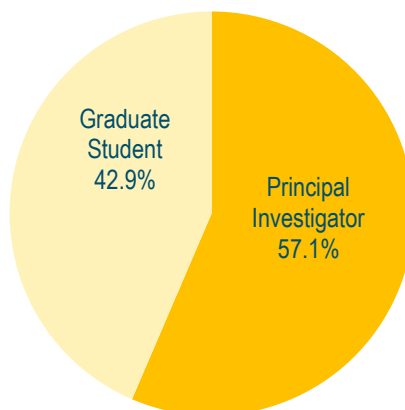
Graph 9. Prepare reports about the investigation work



Mentor

Students also evaluated the support received by their mentor during the summer research program. More than half of the students (57.1%, n=4) reported that their mentor (primary supervisor) were the principal investigator (see Graph 10).

Graph 10. My mentor in the summer program was...



Mentor: Principal Investigator

All of the students (100.0%) were 'very satisfied' or 'satisfied' with the performance of the principal investigator. Students also evaluated specific aspect of the mentor performance. All of the participants (100.0%) reported that were 'very satisfied' or 'satisfied' with the **feedback provided by the principal investigator to aid their research project during summer**. Similarly, all of the students were 'very satisfied' or 'satisfied' with the **scientific and technical support offered by the principal investigator to aid the development of their research project during summer**.

Additionally, students were asked to describe why they were satisfied with the performance of the principal investigator (see Figure 2). The majority of the comments were related to the guidance and support received from their mentors.

Figure 2. Satisfaction with the Performance of the Principal Investigator

"...she was able to **guide me** throughout my experience in order to **build** up my **confidence** and **independence** towards my research project "

"...was **very helpful**..open to different questions regarding the investigation and other aspects of science.."

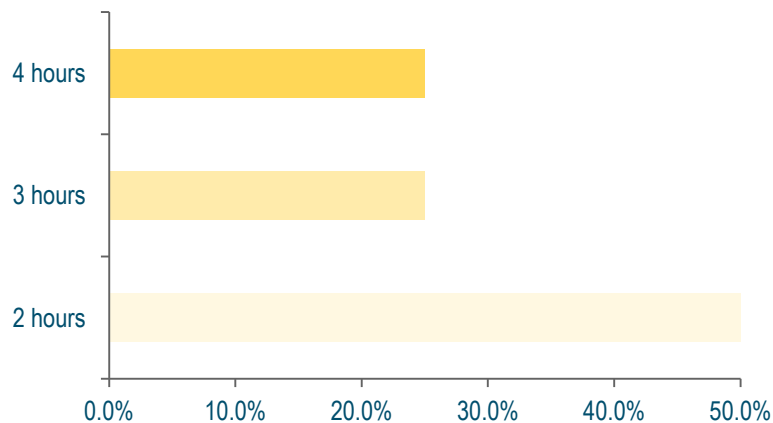
"My PI was **flexible** in terms of letting me work at my own pace and letting me do all the work. But he was also hands-on and **paid close attention to my progress** with weekly meetings. Also, he gave me additional responsibilities to **integrate me into a graduate-level lifestyle**.

"I am very satisfied with the principal investigator because he was always **willing to help** in any way he could, and was **always worried** about his students. He made sure I practiced the techniques I learned and apply my knowledge to the bench..."

Principal Investigator (Mentor): Accessibility

Furthermore, students evaluated how accessible was the principal investigator. All of the students (100.0%) reported that their mentors were 'very accessible'. Moreover, students described how much time the principal investigator spend mentoring them. Half of the student (50.0%) reported the principal investigator spend 2 hours weekly mentoring them (see Graph 11).

Graph 11. Approximately, how much time (hours-weekly) did the Principal Investigator spend mentoring you?



Experience of the students that their primary supervisor was **NOT** the Principal Investigator

Approximately, half of the student (42.9%, n=3) reported that their mentor was not the principal investigator in the laboratory. Graduate students were identified as the primary supervisors (see Graphic 10). All of the students (100.0%) were 'very satisfied' with the performance of their primary supervisor during the summer program. Students also evaluated specific aspect of their primary supervisor performance. All of participants (100.0%) reported that were 'very satisfied' with the **feedback provided by their primary supervisor to aid their research project**. Similarly, the students (100.0%) were 'very satisfied' with the **scientific and technical support offered by their primary supervisor to aid the development of their research project**.

Additionally, students were asked to describe why they were satisfied with the performance of the primary supervisor. The majority of the comments were related to describe the support received from their primary supervisor (see comments below).

"I am very satisfied with my primary supervisor because she was very accessible, professional and supportive during the whole process of my summer research..."

"I am very satisfied because the mentor was always present and available to answer my questions. He explained well the concepts and was very supportive throughout the entire experience"

"My primary supervisor was very helpful; primarily during the first few weeks while she was demonstrating the techniques...Overall, she was ALWAYS available to answer questions...She was very patient and gave a lot of feedback on my performance"

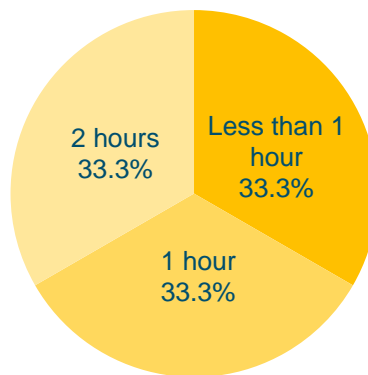
Primary Supervisor: Accessibility

Furthermore, students evaluated how accessible was the primary supervisor. All of the students (100.0%) reported that their mentor were very accessible. Moreover, students described how much time the principal investigator spend mentoring them. Student (100.0%) reported the primary supervisor spends 5 hours or more weekly mentoring them.

Even though the students **were not directly supervised** by the principal investigator they evaluated their interaction with them. In general, student were '*very satisfied*' with the performance of the principal investigator. All of the participants (100.0%) reported that were '*very satisfied*' with the **feedback provided by the principal investigator to aid their research project during summer** even though he/she was not their primary supervisor. Similarly, students (100.0%) were '*very satisfied*' with the *scientific and technical support offered by the principal investigator to aid the development of their research project during summer*.

Moreover, students evaluated how accessible was the principal investigator. All of the students (100.0%) reported that the principal investigator was '*very accessible*'. Additionally, students described how much time the principal investigator spend with them. Less than half of the student (33.3%) reported the primary supervisor spends 2 hours weekly with them (see Graph 12).

Graph 12. Approximately, how much time (hours-weekly) did the Principal Investigator spend mentoring you?



Students also described their interaction with the principal investigator even though they were not their primary supervisor. Most of the comments described their satisfaction with the principal investigator (see comments below).

“I am very satisfied with the principal investigator because she was very helpful in clearing doubts about the project and revising the project informs. In addition, I really liked the way in which she manages her laboratory and interacts with the laboratory member”

“Very satisfied, she was available whenever I needed to meet with her, responded emails promptly and was helpful during the process of preparing a presentation, abstract and paper...”

“I am extremely happy with my PI for the summer. From the very beginning he took time from his obviously very busy schedule... met with me regularly to discuss my work. He showed enthusiasm for having me there during the summer. He gave a lot of positive feedback and was very happy with my work.”

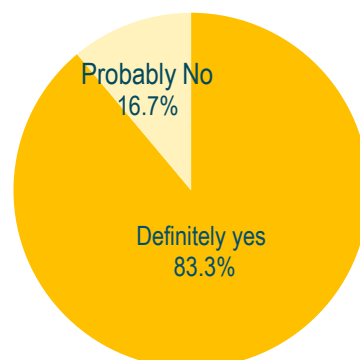
Summer Program Impact

All the students were asked to evaluate how the summer program contributed or advanced their scientific career (see Graphic 13). The aspect student rated as their major gain from the summer research experience was *“learning a laboratory technique”*. The aspects with small or moderate gain were the following: *“understanding of the research process”, “learning ethical conduct” and “skills in scientific writing”*.

Recommendations

The majority of the students (83.3%) agreed that they would recommend the laboratory where they had the summer experience to another NeuroID student (see Graphic 14).

Graph 14. Would you recommend the laboratory where you had the summer experience to another NeuroID student?



Graph 13. How the summer research experience contributed to the improvement of the following aspects...?

