



2018 Application Form

**National Science Foundation (NSF)
Partnerships in International Research & Education
*Neural Mechanisms of Reward & Decision (NMR&D)***

This PIRE research program consists of a consortium of four interdisciplinary subprojects that are unified by the goal of increasing our understanding of brain mechanisms mediating reward and decision processes. Each subproject partners investigators and students from the University of Puerto Rico (UPR) with a team of international researchers. Countries represented include Canada, Chile, Egypt, Italy, and Turkey. **Undergraduate students will receive training in UPR labs (March – May, 2018). All students will participate in an international research experience (5-7 weeks) during the summer of 2018.** The research projects range from the field behavior of honey bees to specific genes and membrane channels that participate in the reward circuitry of mammals:

Project 1. Dopaminergic signaling and the modification of host behavior by parasites (M.W. Miller, PI). This project will advance the collaboration of Dr. Mark Miller (Institute of Neurobiology, UPR), Dr. Roger Croll (Dalhousie Univ., Canada), and Dr. Mohamed Habib (Theodor Bilharz Research Institute [TBRI], Cairo, Egypt). The project explores how the behavior and choices that an animal makes are affected by parasitism. In 2017, students conducted research in Israel and England.

Project 2. Dopaminergic signaling during adolescence: Effects of sex and stress. (A.C. Segarra, Co-PI). This project supports the collaborative efforts of Dr. Annabell C. Segarra (University of Puerto Rico) and Dr. Katia Gysling (Pontificia Universidad Católica de Chile, Santiago, Chile). This research explores whether differences in dopaminergic circuitry between adolescent and adult rats renders the adolescent brain more susceptible to environmental insults that may impair decision making and the reward circuitry.

Project 3. Dopamine and plasticity in complex behavior (T. Giray, Co-PI). This international collaboration combines the capabilities of our Turkish collaborators in genetics and ecology with the behavioral physiology expertise of co-PI Tugrul Giray (UPR Rio Piedras Campus), and the animal behavioral experience of Drs. Charles Abramson (Oklahoma State University) and Harrington Wells (University of Tulsa). The project explores how specialist versus generalist foraging strategies in two different honey bee subspecies, typically found in different geographies relate to dopamine signaling differences. In 2018, students will work in Greece and France.

Project 4. Biophysical properties of dopaminergic neurons (C.A. Jiménez-Rivera, Co-PI). This project supports a collaboration between Dr. Carlos Jiménez-Rivera (Dept. of Physiology, University of Puerto Rico) and Dr. Marco Diana (Dept. of Drug Sciences, University of Sassari, Sassari, Italy). The project combines neuroanatomical and physiological approaches to characterize dopaminergic neurons that contribute to reward and decision processes.

Application Form:

Name: _____

Permanent address: _____

Telephone: **home:** _____ **cell:** _____

Email: _____

Date of birth: _____

Student ID number: _____

US citizen: **yes:** _____ **no:** _____ **Soc. Sec. No:** _____

Name of parent, guardian, or spouse: _____

Address (if different from above): _____

Telephone: _____ **Relationship:** _____

Academic Information

College or University: _____

Status: full-time: _____ part-time: _____ **No. of credits:** _____

Current year studies: _____

Expected graduation date: _____ **GPA:** _____

Major field of study: _____

Research Experience (if any)

Mentor: _____

Location of lab: _____

Title of project: _____

Please attach the following documents:

- 1. Official transcript.**
- 2. Two letters of recommendation.**
- 3. Personal Statement:**

Please provide an essay (no more than 2 pages) describing:

- 1. The reasons why you wish to participate in the NSF PIRE program. Indicate why you should be selected to participate in the PIRE program, what skills and talents you can bring to it, and what you expect to gain from it.**
- 2. Your research experience.**
- 3. Your future plans after completion of the B.S.**

Return completed application to:

**María de Lourdes Benitez
Grant Specialist
NSF Partnerships in International Research & Education
Institute of Neurobiology
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San Juan, Puerto Rico 00901**

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copy: bethzaida.birriel@upr.edu

Deadline: February 15, 2018

No action can be taken on incomplete applications.

I, _____ **certify that all information provided
here is correct.**

Date: _____