



2023 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, France, Greece, Spain, and Turkey. **Undergraduate students will receive training in UPR labs (March – May, 2023). All students will participate in an international research experience (5-7 weeks) during the summer of 2023.** The research projects range from the effects of parasites on brain function in snails 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) and Dr. Pablo Varona (Universidad Autónoma de Madrid). The project explores how the behavior and choices that an animal makes are affected by parasitism. In 2023, students will travel to Spain.

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). The project explores how specialist versus generalist foraging strategies in two different honeybee subspecies relate to dopamine signaling differences. In 2023, students will travel to France and Greece.

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. François Georges (University of Bordeaux, Neurodegenerative Diseases Institute). 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 submit the following documents:

1. Official transcript.

2. Two letters of recommendation.

Letters should be sent by the recommenders directly to:

bethzaida.birriel@upr.edu and maria.benitez9@upr.edu

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:

Maria de Lourdes Benítez
NSF Partnerships in International Research & Education
Institute of Neurobiology
201 Blvd del Valle
San Juan, Puerto Rico 00901

maria.benitez9@upr.edu

copy: bethzaida.birriel@upr.edu

Deadline: February 28, 2023

Be advised that no action can be taken on incomplete applications.

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

Date: _____

