2020 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 (January – May, 2020). All students will participate in an international research experience (5-7 weeks) during the summer of 2020. 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 2020, students will travel to Spain 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). The project explores how specialist versus generalist foraging strategies in two different honey bee subspecies relate to dopamine signaling differences. In 2019, 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. 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. In 2019, students will travel to France.
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:

Bethzaida Birriel  
Grant Administrator  
NSF Partnerships in International Research & Education  
Institute of Neurobiology  
201 Blvd del Valle  
San Juan, Puerto Rico 00901  
bethzaida.birriel@upr.edu

copy: mark.miller@upr.edu

Deadline: January 31, 2020

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

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

Date: __________________________