PI: **GARCIA-ARRARAS, JOSE E**	Title: Neuroscience Research Opportunities to Increase Diversity (NeuroID)	
Received: 05/23/2014	FOA: NS14-010	Council: 01/2015
Competition ID: FORMS-C	FOA Title: NIH BLUEPRINT PROGRAM FOR ENHANCING NEUROSCIENCE DIVERSITY THROUGH UNDERGRADUATE RESEARCH EDUCATION EXPERIENCES (R25)	
2 R25 NS080687-06	Dual: NB	Accession Number: 3694513
IPF: 578706	Organization: UNIVERSITY OF PUERTO RICO RIO PIEDRAS	
Former Number:	Department: Biology	
IRG/SRG: ZNS1 SRB-M (88)	AIDS: N	Expedited: N
Subtotal Direct Costs (excludes consortium F&A) Year 6: 490,726 Year 7: 496,505 Year 8: 501,872 Year 9: 507,319 Year 10: 512,851	Animals: N Humans: N Clinical Trial: N Current HS Code: 10 HESC: N	New Investigator: N Early Stage Investigator: N
Senior/Key Personnel:	*Organization:*	*Role Category:*
Irving Vega Ph.D	University of Puerto Rico, Rio Piedras Campus	PD/PI
Migdalisel Colon-Berlingeri Ph.D	University of Puerto Rico, Rio Piedras Campus	Co-PD/PI
Maria Jimenez-Chafey Ph.D	University of Puerto Rico, Rio Piedras Campus	Consultant
Nicole Ortiz	Center for Evaluation and Sociomedical Research	Consultant
Marizaida Sanchez Ph.D	Center for Evaluation and Sociomedical Research	Consultant

Appendices

Appendix neuroid evaluation instrument descriptio

Additions for Review

Updated Pages	MaldonadoVlaar Biosketch.pdf
Updated Pages	GarciaArraras Biosketch.pdf
Updated Pages	New Leadership Plan.pdf
Updated Pages	Info on New Directors.pdf
Updated Pages	Cover Letter.pdf

OMB Number: 4040-0001
Expiration Date: 06/30/2016

APPLICATION FOR FEDERAL ASSISTANCE
SF 424 (R&R)

3. DATE RECEIVED BY STATE	**State Application Identifier**

1. TYPE OF SUBMISSION*

❍ Pre-application ● Application ❍ Changed/Corrected Application

4.a. Federal Identifier
R25NS080687

b. Agency Routing Number

2. DATE SUBMITTED
2014-05-23

Application Identifier

c. Previous Grants.gov Tracking Number

5. APPLICANT INFORMATION **Organizational DUNS*:** 143960193

Legal Name*: University of Puerto Rico, Rio Piedras Campus
Department: Biology
Division: College of Natural Sciences
Street1*: P.O. Box 70377
Street2:
City*: San Juan
County:
State*: PR: Puerto Rico
Province:
Country*: USA: UNITED STATES
ZIP / Postal Code*: 00936-8377

Person to be contacted on matters involving this application
Prefix: First Name*: Ana Middle Name: Last Name*: Feliciano Suffix:
Position/Title: Coordinator, Postaward Division
Street1*: P.O. Box 21790
Street2:
City*: San Juan
County:
State*: PR: Puerto Rico
Province:
Country*: USA: UNITED STATES
ZIP / Postal Code*: 00931-1790
Phone Number*: 787 763-4949 Fax Number: 787 772-1497 Email: chernandez@degi.uprrp.edu

6. EMPLOYER IDENTIFICATION NUMBER *(EIN) or (TIN)** 1900002456-A1

7. TYPE OF APPLICANT* H: Public/State Controlled Institution of Higher Education

Other (Specify):
Small Business Organization Type ❍ Women Owned ❍ Socially and Economically Disadvantaged

8. TYPE OF APPLICATION*

❍ New ❍ Resubmission
● Renewal ❍ Continuation ❍ Revision

If Revision, mark appropriate box(es).
❍ A. Increase Award ❍ B. Decrease Award ❍ C. Increase Duration
❍ D. Decrease Duration ❍ E. Other *(specify)* :

Is this application being submitted to other agencies?* ❍Yes ●No What other Agencies?

9. NAME OF FEDERAL AGENCY*
National Institutes of Health

10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER
TITLE:

11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT*
Neuroscience Research Opportunities to Increase Diversity (NeuroID)

12. PROPOSED PROJECT
Start Date* Ending Date*
04/01/2015 03/31/2020

13. CONGRESSIONAL DISTRICTS OF APPLICANT
00-000

SF 424 (R&R) APPLICATION FOR FEDERAL ASSISTANCE

14. PROJECT DIRECTOR/PRINCIPAL INVESTIGATOR CONTACT INFORMATION

Prefix: First Name*: Irving Middle Name: Last Name*: Vega Suffix: Ph.D

Position/Title: Professor
Organization Name*: University of Puerto Rico, Rio Piedras Campus
Department: Biology
Division: College of Natural Sciences
Street1*: P.O. Box 70377
Street2:
City*: San Juan
County:
State*: PR: Puerto Rico
Province:
Country*: USA: UNITED STATES
ZIP / Postal Code*: 00936-8377
Phone Number*: 787 764-0000, x.3868 Fax Number: 787 764-2610 Email*: irvingvega@gmail.com

15. ESTIMATED PROJECT FUNDING

a. Total Federal Funds Requested*	$2,594,815.00
b. Total Non-Federal Funds*	$0.00
c. Total Federal & Non-Federal Funds*	$2,594,815.00
d. Estimated Program Income*	$0.00

16.IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?*

a. YES ○ THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:

DATE:

b. NO ● PROGRAM IS NOT COVERED BY E.O. 12372; OR

○ PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW

17. By signing this application, I certify (1) to the statements contained in the list of certifications* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances * and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)

● I agree*

** The list of certifications and assurances, or an Internet site where you may obtain this list, is contained in the announcement or agency specific instructions.*

18. SFLLL or OTHER EXPLANATORY DOCUMENTATION File Name:

19. AUTHORIZED REPRESENTATIVE

Prefix: First Name*: Ethel Middle Name: Last Name*: Rios-Orlandi Suffix:

Position/Title*: Acting Chancellor
Organization Name*: University of Puerto Rico, Rio Piedras Campus
Department: Biology
Division: College of Natural Sciences
Street1*: P.O. Box 70377
Street2:
City*: San Juan
County:
State*: PR: Puerto Rico
Province:
Country*: USA: UNITED STATES
ZIP / Postal Code*: 00936-8377
Phone Number*: 787 763-4949 Fax Number: 787 772-1497 Email*: chernandez@degi.uprrp.edu

Signature of Authorized Representative*
Ethel Rios-Orlandi

Date Signed*
05/23/2014

20. PRE-APPLICATION File Name:

21. COVER LETTER ATTACHMENT File Name:1247-Cover letter.pdf

424 R&R and PHS-398 Specific Table Of Contents

OMB Number: 4040-0010
Expiration Date: 06/30/2016

Project/Performance Site Location(s)

Project/Performance Site Primary Location

❍ I am submitting an application as an individual, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

Organization Name:	University of Puerto Rico, Rio Piedras Campus
Duns Number:	1439601930000
Street1*:	College of Natural Sciences
Street2:	Julio Garcia Diaz Room ???
City*:	San Juan
County:	
State*:	PR: Puerto Rico
Province:	
Country*:	USA: UNITED STATES
Zip / Postal Code*:	00931-3360
Project/Performance Site Congressional District*:	00-000

File Name

Additional Location(s)

Funding Opportunity Number: RFA-NS-14-010. Received Date: 2014-05-23T16:13:35.000-04:00

OMB Number: 4040-0001
Expiration Date: 06/30/2016

RESEARCH & RELATED Other Project Information

1. Are Human Subjects Involved?* ❍ **Yes** ● **No**

1.a. If YES to Human Subjects

Is the Project Exempt from Federal regulations? ❍ Yes ❍ No

If YES, check appropriate exemption number: _ 1 _ 2 _ 3 _ 4 _ 5 _ 6

If NO, is the IRB review Pending? ❍ **Yes** ❍ **No**

IRB Approval Date:

Human Subject Assurance Number

2. Are Vertebrate Animals Used?* ❍ **Yes** ● **No**

2.a. If YES to Vertebrate Animals

Is the IACUC review Pending? ❍ Yes ❍ No

IACUC Approval Date:

Animal Welfare Assurance Number

3. Is proprietary/privileged information included in the application?* ❍ **Yes** ● **No**

4.a. Does this project have an actual or potential impact - positive or negative - on the environment?* ❍ **Yes** ● **No**

4.b. If yes, please explain:

4.c. If this project has an actual or potential impact on the environment, has an exemption been authorized or an environmental assessment (EA) or environmental impact statement (EIS) been performed? ❍ Yes ❍ No

4.d. If yes, please explain:

5. Is the research performance site designated, or eligible to be designated, as a historic place?* ❍ **Yes** ● **No**

5.a. If yes, please explain:

6. Does this project involve activities outside the United States or partnership with international collaborators?* ❍ **Yes** ● **No**

6.a. If yes, identify countries:

6.b. Optional Explanation:

	Filename
7. Project Summary/Abstract*	1240-Abstract.pdf
8. Project Narrative*	1241-Project Narrative.pdf
9. Bibliography & References Cited	1242-REFERENCES.pdf
10.Facilities & Other Resources	1243-Facilities & Other Resources.pdf
11.Equipment	1244-Major Equipment.pdf
12. Other Attachments	1245-Advisory Committee.pdf 1246-Leadership Plan.pdf

Funding Opportunity Number: RFA-NS-14-010. Received Date: 2014-05-23T16:13:35.000-04:00

Abstract

This proposal entitled Neuroscience Research Opportunities to Increase Diversity (NeuroID) from the University of Puerto Rico Rio Piedras Campus aims to increase the opportunities available for undergraduate students in the area of Neurosciences. **This proposal builds upon the experiences gathered during the current funding period to enhance and strengthen the mentoring and training activities of the NeuroID program, incorporating an emphasis in developing active-learning skills and strengthen emotional competence.** NeuroID takes advantage of the strong Neuroscience expertise among UPR investigators and fortifies the underlying neuroscience network that joins undergraduate students, island investigators and their collaborators in mainland institutions. The main goal of the NeuroID program is to increase diversity in the neurosciences by establishing a cohort of interested students that will receive academic and professional training in neuroscience-related research. The selected students will be Hispanics from different gender, race, social status and physical needs. The core of the program is a comprehensive research experience for undergraduate students based on a *research-with-purpose* training philosophy. The training program consists of three major components: (1) Research Experience - An intense research experience during the academic year and two research summer experiences: one at the UPR and the other in a laboratory at an institution in the mainland USA that have active T32 training grants in neuroscience and/or excellent track record in recruiting and training underrepresented minorities. (2) Academic training – an academic program based on active learning activities, seminars, workshops and selected courses to enhance their knowledge in neurobiology, quantitative biology and understanding of a research career. (3) Student development activities - Participants will enter a mentoring program that includes community outreach activities, writing in science, oral presentations and career counseling to enhance their professional capabilities. The proposed activities together with an established mentoring program with ethnic and race-representative members of the Neuroscience community as role models will serve to increase the student competitiveness and enhance their interest in continuing a research career in neuroscience. The NeuroID program will extend the impact of other successful programs at the University of Puerto Rico, not only by focusing on the neuroscience field but also by greatly expanding the program to students from primarily-undergraduate institutions in the San Juan metropolitan areas, which increases the pool of available applicants as well as providing an inclusive and broader training program.

Project Narrative

The main goal of the NeuroID program is to increase diversity in the Neurosciences by establishing a cohort of interested students that will receive academic and professional training in neuroscience-related research and developmental activities. Specifically, the NeuroID program will be primarily training dedicated Hispanic undergraduate students, which at the end the program will pursue a research career in Neuroscience. The core of the program is a comprehensive research experience for undergraduate students based on an established research-with-purpose training philosophy that integrates research and community outreach activities, to enhance empathy, social responsibility and self-motivation skills. At the end, students will have the necessary research, academic and professional skills to succeed in a research career in neuroscience.

FACILITIES AND OTHER RESOURCES:
All investigators, serving as mentors for NeuroID participants, have their own research laboratory with the necessary equipment to perform their specific research. Although the UPR-Rio Piedras (UPR-RP) will be the main and host campus, NeuroID participants could also select research mentors at the UPR-Medical Sciences Campus (UPR-MSC). Theses campuses are about three miles apart from each other, connected by a public train transportation system; it takes 15 minutes from one campus to the other. In addition, both campuses have common-use facilities that are available to any faculty or graduate student, some at a fee-for-service rate. The investigators are mainly associated to the Biology Department at the UPR-RP and in the Department of Anatomy and Neurobiology at the UPR-MSC. Additionally, investigators at the Institute of Neurobiology, ascribed to the UPR-MSC, are also involved in the mentoring of NeuroID's students. The facilities and other resources at these sites are:

UPR-RP Biology Department facilities

The Microscopy Facility allows researchers to investigate cell ultrastructure using nondestructive imagining methods. The facility is equipped with a confocal and a two photon microscopes that allow studies of organelle structure and function and conjugated antibodies; measurements of DNA and RNA; identification of cytochemicals; determination of oxidative metabolism and andionic fluxes (Ca2+ flux); and surface imaging and 3D reconstruction, among others.

The Center for Monoclonal Antibody Production provides the necessary expertise and equipment for the generation and maintenance of monoclonal antibodies. The facility serves for the production of monoclonal antibodies, the isolation and characterization of antigens, purification of antibodies, in vitro immunocytochemical techniques and cryopreservation.

Animal Research Facility is supervised by a veterinarian and faculty member. The veterinarian visits the facility once a week and is on-call for any emergency. The operation (cage changing and washing, evaluation and receiving of animals, and inventory and purchasing) of the facility is supported by trained veterinary technicians 7 days a week. The cages are changed once a week unless a specific cage may need to be changed more often. Only four mice are allowed per cage to avoid fights between littermates, especially in male cages. All animals housed at the facility are required to have an approved protocol by the Institutional Animal Care and Use Committee (IACUC) (Animal Welfare Assurance Number A-3258-01 and USDA Registration Number 94-R-103) at $0.10/mouse/day fixed per diem.

The Tissue Culture Facility has two horizontal laminar flow hoods, one biological safety cabinet, three inverted microscopes, one inverted flourescence and Hoffman-modulation contrast microscope, one Millipore water purification system, three CO2 incubators, one large 4˚C refrigerator, one -20˚C freezer, autoclave, one table top centrifuge, one microcentrifuge, and one oven, three liquid nitrogen containers, and one computer.

The Microarray Facility is equipped with instrumentation and personnel for complete functional genomics experiments. It has an Agilent microarray slide scanner, Agilent Microarray Slide Hybridization Oven, Agilent Bioanalyzer for RNA, DNA, and protein, BioRad iCycler Real Time RT-PCR system, Arturus PixCell II Laser Capture Microdissection System, Flouroskan, and a NanoDrop. It also provides support and training to facility users.

The Sequencing and Genotyping Facility provides students and researchers with access to state-of-the-art equipment for collecting automated sequence and genotype data for a low cost, towards creating an alliance of researchers and students who share core research technology and who work together to strengthen the scientific infrastructure and research competitiveness within Puerto Rico. Services include: sequencing, Genotyping, AFLPs, microsatellite analysis, T-RFLPs, SNP validation and screening, new primer walking sequencing, primer design, on site support for faster service, troubleshooting, personalized assistance, technical support on various molecular biology techniques, emergency data-retrieval, education, seminars, and trainings/workshops. Equipment includes: an ABI 3130xl Genetic Analyzer; LiCOR IR2 DNA Analyzer and Odyssey; NanoDrop ND-100 Spectrophotometer; DNA 120 SpeedVac System; 14-15C Ultra Centrifuge for 96-well plates; PTC-100 Thermocycler; and GeneAmp PCR System 9700.

The Bioinformatics Satellite Laboratory has three PC~Rs (Dell 650) and two Apple G5s that are connected to the servers. The facility is available for data storage and analysis, or for workshops. Available software includes: Agilent Feature Extraction; Endnote; ERDAS Imagine; Gene Codes Sequencher; MacClade; OLIGO; Sequenche; FileMaker; PC MACLAN; SPOT; Lasergene; SNP Discovery; MATLAB Student; Mesquite; MrBayes; PAUP; BioEdit; Mega3; TreeView; SplitsTree; R; ADOBE; S Suite; and SAGA Generation, Clustalx; DNASTAR Lasergene; MrBayes; Paup; Sequencher; Treeview; Splitstree; and EMBOSS. There are two rack-mounted DELL Poweredge 1750 servers which are used as: Amanda server (Backup Server); EMBOSS Explorer; LDAP slave; and the Firewall. Another ASA server can be used for data storage, and is used as the server for LDAP, NFS, and Samba.

Proteomics Facility (PF) is an integrated facility between the Rio Piedras Campus (RPC) and the **Biomolecular Sciences Building (BSB, see below)**. The facility at the RPC mass spectrometry equipment was purchased with UPR matching funds to set up an Island-wide Protein Mass Spectrometry facility. This facility was established in 2006 as a five-year plan that was initiated by Dr. Irving Vega. Dr. Vega has utilized mass spectrometry for the identification of novel posttranslational modifications on pathological tau proteins purified from transgenic mouse models and Alzheimer's disease brains and collaborate in different projects as proteomics expert. The PF has not only provided continuity to Dr. Vega's research work, but also served as framework to initiate multi-disciplinary collaborations with other investigators in the UPR system. In an effort to increase the capabilities of the PF, new mass spectrometry instruments were purchased as an institutional effort to expand protein research in the island. The instrumentation at both sites complements each other and provides an integrated effort to maximize the usage of the state-of-the-art technology available. Therefore, the equipment at RPC and the BSB comprise the PF. The PF at the RPC is equipped with a ProteomeX LTQ-XL workstation (Thermo-Scientific). This proteomic workstation couples multidimensional liquid chromatography (LC) with mass spectrometry (MS). This instrument has a Surveyor®HPLC system on-line with an LTQ linear ion trap mass spectrometer. The Surveyor®HPLC system allows us to perform 2D-LC by combining a strong cationic exchange column on-line with two C18 reverse phase (RP) columns for further separation. Additionally, the LTQ-XL is equipped with a syringe pump that allows direct infusion of the protein sample to the ESI source. This feature provides the capability of performing biomass analyses of purified proteins or tandem mass spectrometry of simple peptide mixture. This LTQ-XL is complemented by a UPLC/MS Xevo-QToF (Waters Corp.) and MALDI ToF /ToF (Waters Corp.) at the BSB. These mass spectrometry instruments enhance the capabilities of the LTQ-XL and provide versatility since they expand the number of applications that can be done. In addition to the mass spectrometers, the PF at BSB has the instrumentation necessary to derived structural analysis of purified proteins of interests. This facility is equipped with circular dichroism, Differential Scanning Calorimetry, high throughput crystallization unit (Mosquito - Nanodispensing robot) and nuclear magnetic resonance (Bruker Ascend 700).

Biomolecular Sciences Building (BSB) is part of the UPR-RP Campus. It houses research facilities for faculty from the Medical Sciences Campus and the UPR-RP. This 152,000 sq. ft. building located equidistant between the two campuses represents the ideal nexus for a platform that seeks to develop productive collaborations. The BSB is serviced by the new San Juan Urban Train (it is only two stops from the UPR-RP). The BSB provides a shuttling system for samples, chemicals and reagents that will contribute to reduce the physical space between partner campuses and facilitate the accessibility to research facilities. Thus, the BSB was specifically designed as a resource to enhance collaborative research efforts and maximize the integration of research capabilities.

UPR's new Biomolecular Sciences Building

UPR-Medical Sciences Campus (UPR-MSC)

Faculty from the UPR-MSC will be available as mentors for NeuroID participants. The UPR-MSC main building was constructed in 1972 near the Medical Center. In addition to the medical school, it has specialized academic programs such as Pharmacy, Dentistry, Public Health School, School of Health Related Professions and the School of Nursing. The diversity of services, complexity and forefront coverage in the health area have

made the Medical Sciences Campus responsible of superior education in every subject it covers. The Department of Anatomy and Neurobiology has contributed to the training of NeuroID participants. Drs. Mark Miller, Gregory Quirk, Jennifer Barreto and Carlos Jimenez are mentoring student during the current funding period and pledged to host more students during the next funding period. In addition to molecular and imaging core facilities, these investigators' laboratories are equipped with all the necessary equipment and tools to carry out their research projects

The Institute was established in 1967 by Professor José del Castillo as a multidisciplinary interdepartmental facility dedicated to the study of the nervous system structure and function. The Institute is composed of investigators addressing different important questions in neuroscience, such as synapse development to the molecular basis of addiction. The main core facilities at the Institute of Neurobiology are the NeuroImaging Core (confocal, live imaging, electron microscopy), a shared Molecular Neurobiology Core, and a Neurogenetics Core.

OTHER:
The High Performance Computing facility of the University of Puerto Rico includes the a) Center for Numerical Supercomputing, b) Bioinformatics Resource Center, c) Internet2 in Puerto Rico, d) Advanced Videoconferencing, and e) Services to the UPR Community. Services below are available to researchers and students at the University of Puerto Rico-Rio Piedras (UPR-RP). The HPCf is located a few minutes drive away from the Rio Piedras campus.

A. The Center for Numerical Supercomputing offers research accounts for researchers and graduate students alike. Class accounts are available for hands-on practicals and term projects in parallel computing and advanced computational science. The main components are: a Silicon Graphics Origin 300 with 32 x MIPS 14000 600MHz processors, an 85 node dual Xeon linux cluster, a 3 node Silicon Graphics Altix 350 cluster with processors: 36 x Itanium2 1.4 Ghz processors, and an 8 Dual core Opteron 847 2.0 GHz (16 cores) linux server. The Center is an ideal platform for code development and optimization, problem parameterization, preliminary results generation before migration to national supercomputing centers.

B. Bioinformatics Resource Center was refunded through INBRE in October 2004. More information can be found at http://inbre.hpcf.upr.edu/. This center contains high-end hardware, software and services essential to support biomedical research. The areas supported include: genomic and proteomic databases, sequence analysis software, phylogeny software, protein structure prediction and visualization, bioinformatics programming, microarray data visualization and analysis, biostatistics, and research support services and training.

C. The Internet2 effort in Puerto Rico is coordinated by the HPCf. The network has links to all UPR campuses and the Arecibo RadioTelescope. UPR-RP has OC-3 (155Mbits/sec) links to UPR- Mayaguez, UPR Medical Campus, and the Centennial ATM backbone. The GigaPoP of the University of Puerto Rico is also connected to the Centennial ATM backbone, but with a physical connection with a bandwidth of OC-12 (620Mbits/sec). The HPCf has several Gigabit Ethernet connections directly to the core of the GigaPoP. The high bandwidth to the GigaPoP will serve well those researchers of the UPR interested in performing calculations and /or visualization activities with the supercomputers of the HPCf. We have connected the main supercomputers directly to the GigaPoP router with two gigabit Ethernet connections, thus maximizing their accessibility for the demanding traffic generated by the HPCf users.

D. The Videoconference Initiative supports two different videoconferencing technologies: the Access Grid and the industry standard H.323. The Access Grid Node is for Internet2 multicast videoconferences. The H.323 videoconference facilities are currently available in several locations within the UPR system, including at UPR-RRP and UPR-HPCf.

MAJOR EQUIPMENT

Most of the equipment needed by investigators at UPR-RP is in place as a result of a joint effort from the departmental faculty to develop the facilities in Cellular and Molecular Biology by obtaining funds mainly from the UPR and from NIH and NSF. Major equipment includes: a two laser confocal microscope, a Microarray facility with Real time PCR and laser capture equipment, Self-enclosed radioactive facility with Beta and Gamma counters, and other common-use equipments such as, ultra low temperature freezers, autoclaves, densitometers, spectrophotometers, mass spectrometers and protein analytical instruments.

All research laboratories of the proposed mentors have the equipment necessary for the ongoing research. As an example, following is a list of the equipment in the laboratory of Dr. Vega, The laboratory is equipped with benches and furniture to comfortably accommodate 16 students. The laboratory also complies with safety requirements, including eye-shower station, fire-extinguisher, chemical safety cabinets and fume hood. The laboratory is equipped with all necessary tools to support biomarker identification research, including one and two dimensional protein-gel electrophoresis systems, temperature controlled microplate reader, protein transfer chambers, pH meters, balances, benchtop centrifuges, microcentrifuges, pipettes, power supplies, refrigerators (4°C, -20°C and -80°C), PCR machines, ChemiDoc station, UV/visible light spectrophotometer, rotators, water baths, tissue homogenizer, hot/stir plates, autoclave and others. In addition, the lab has an area dedicate to grow bacteria (temperature controlled incubators and shakers, media preparation) that is separated from a cell/tissue culture room (laminar hood, CO2 incubator, microscope, centrifuge, electroporator).

The JGD building accommodates various other facilities for the use of faculty members. These core facilities include:
(1) Cell-Tissue culture room – The facility is equipped with biological safety cabinets, incubators, refrigerators to store medium, cryo-preservation units and autoclaves. The facility is supervised by a faculty member and operated by trained technicians.
(2) High speed centrifuge room – The facility accommodates ultracentrifuges and their corresponding rotors.
(3) Spectroscopy room – The facility house fluorescence and confocal microscopes. The facility is operated and maintained by trained technicians under the supervision of a faculty member.
(4) Protein Purification Systems – The PI has access to a high-performance protein purification system [ÄKTA^{TM}-FPLC^{TM} (GE Healthcare)] available at the Department of Biology.

For more detailed description of major equipment available please see the Facilities & Other Resources Section.

ADVISORY COMMITTEE

The RFA-NS-14-010 established the mission of the advisory committee as to *oversight the development, implementation, evaluation of recruitment strategies, the recruitment and retention of candidates, and the evaluation of the overall effectiveness of the program.* The NeuroID program was able to fulfill this broad mission due to the development of a comprehensive **Advisory Program**. The established program is composed of different committees, taking in consideration all aspects of the NeuroID program. We will continue with the established program, making some changes in order to improve the diversity of the advisory committee and including alumni representation.

The **Advisory Program** is composed of different committees that are interrelated by their function and the participation of the Program Directors. Although we will meet with the different committees individually, the outcome of the evaluations will be distributed to and discussed with all the committees. The committees that form the **Advisory Program** are Faculty Advisory Committee, Student Recruitment and Retention Advisory Committee, External Evaluation Advisory Committee, Alumni Advisory Committee and External Advisory Committee. The responsibilities and composition of these committees are:

1) Faculty Advisory Committee – this committee is formed by faculty members from the UPR-RP campus and other universities. The faculty members were selected due to their experience in training undergraduate students and their respectable academic and research career in neuroscience. The responsibilities of this committee include:

a) Evaluation of the NeuroID programmatic performance based on the established milestones and measurable objectives as reported in the annual report
b) Provide recommendations based on the results reported by the assessment and evaluation plan at the end of every semester
c) Participate in an annual meeting to discuss the progress of the NeuroID program
d) Serve as mentors to students participating in the NeuroID program during the process of applying to graduate school
e) Evaluate the recruitment and retention performance of the NeuroID program and provide recommendations when necessary

In addition to both us (Dr. Vega and Dr. Colón), as Program Directors, the Faculty Advisory Committee is constituted of the following faculty members:

a) **Dr. José E. García-Arrarás** – Department of Biology Professor and neuroscientists. Dr. Gracía-Arrarás is Co-Program Director of the NeuroID program during the current funding period. Due to his research and administrative commitments, Dr. García-Arrarás decided to continue associated to NeuroID but as part of the Faculty Advisory Committee. He has a vast record in program administration and training of undergraduate and graduate students. Dr. Gracía-Arrarás is currently the director of the Biology Graduate Program and member of the Biology GRE Panel. His experience and expertise in the process of applying to graduate school and knowledge about the mission and goals of the NeuroID Program is a great asset to continue the success of our training program.

b) **Dr. Kenira Thompson** – Interim Dean for Research and Associate Professor in the Department of Physiology, Pharmacology and Toxicology at Ponce School of Medicine. Her NIH-funded research laboratory explores gene expression changes in hippocampal plasticity during learning and memory and hippocampal changes that occur following whole brain irradiation and traumatic brain injury. In addition to be a successful female in research and academia, Dr. Thompson has experience training graduate students and is knowledgeable about the skills and academic record that a competitive applicant to graduate school should have. Her contribution will also include participating in our NeuroPizza Nights meeting as a “Hispanic Role Model.”

c) **Dr. Guillermo Bernal** – Professor in the Department of Psychology and Director of the Institute for Psychological Research at the UPR-RP. Dr. Bernal research focuses on the study of cross-cultural mental health with an emphasis in major depression disorder. Dr. Bernal received several awards as mentor (such as the *2009 Wayne S. Fenton Undergraduate Research Education Award* from the National Institute of Mental

Health and *2002 Mentor Award* from the National Hispanic Science Network) and for his research contribution to ethnic minorities (such as *2013 Distinguished Elder Award* from the National Multicultural Conference and Summit and *2008 Distinguished Career Contribution to Research Award* from the Society for the Psychological Study Ethnic and Minority Issues, APA). Dr. Bernal distinguished contribution to the training of undergraduate students and research contribution to ethnic minorities is a valuable asset to the NeuroID program.

2) Student Recruitment and Retention Advisory Committee (SRRAC) – the role of this committee is to advise in the recruiting process of participants to the NeuroID program. This committee plays an important role since due to our multi-campus approach recruitment process. The recruitment process used during the current funding cycle is discussed in the Research Strategy Plan, Participants Section. Briefly, the members of this committee helped in the coordination of recruiting seminars and the identification of candidates that fulfill the selection criteria. The responsibilities of this committee include:

a) Coordination of recruitment activities at their respective campuses
b) Evaluate the credentials of students interested in applying to NeuroID
c) Mentor interested students and selected participants at their campuses
d) Facilitate the achievement of the academic program identifying equivalent courses at their campus
e) Participate in an annual meeting with the Program Directors to discuss the evaluation results of students from their respective campuses
f) Recommend effective recruitment and retention strategies that bet suit the population at their respective campuses
g) Recommend mentoring and counseling strategies to respond and satisfy the students' needs

The members of the SRRAC will work hand-in-hand with both Program Directors. These members are:

a) **Dr. Armando Rodríguez and Esther M. Zambrana, MBA, MHSA** – Dr. Rodríguez is the Dean for Research at the Interamerican University Bayamón Campus and Mrs. Zambrana is the director of the Student Development Office. They have being instrumental in the recruiting and retention of students selected from their campus through the coordination of recruitment seminars and mentoring activities. They actively mentor the student in the NeuroID program and help in the coordination of the academic program. Mrs. Zambrana help the student proofread their reports, personal statements and provide advice about how to achieve the career goals.

b) **Dr. Karen Gonzalez Charneco** – Dean for Research at the Metropolitan University. Dr. Gonzalez contributes in the recruitment of students from her campus and advice students about their career expectations. She contributes to the coordination of recruiting activities.

c) **Agda E. Cordero Murrillo, M.S.** – Mrs. Cordero is the new appointed director of the Department of Natural Sciences at Sacred Heart University. She substitutes Dr. Gracia, who was our collaborator during the current funding cycle. Similarly to the faculty of other partner university, they coordinate recruiting seminars in their campus and mentor the selected students. Their help in coordinating the academic program has been very important to the success of the NeuroID program.

d**) Dr. María I Jiménez** – Director of the Counseling Department for Student Development and Staff Clinical Psychologists at the UPR-RP. Dr. Jiménez is an expert in student development and University mental health. Her research focuses in depression and mental health risk factors in college students. Dr. Jiménez research contributions highlight her knowledge about the best practices and skills required in a university mental health professional. Her contribution to the NeuroID program is discussed in detailed in Research Strategy Plan, Recruitment and Retention Plan Section. Dr. Jiménez's contribution will play an important role in the retention and success of NeuroID participants.

3) External Evaluation Advisory Committee – during the current funding period, members of the Center for Evaluation and Sociomedical Research developed assessment tools and conducted evaluation of all training activities associated to the NeuroID program. We have meetings every three months to discuss the evaluation plan and the results obtained. This interaction has contributed to identify the strength of the NeuroID program and to improve the weak or troublesome areas. The responsibilities of the EEAC are:

a) Evaluation of all training activities as described in the Evaluation Plan

b) Conduct focus groups with NeuroID participants
c) Preparing reports in a timely manner
d) Participate in meetings with the Program Directors every three months

The members of the EECC, in addition to both Program Directors, are:

a) **Marizaida Sánchez-Cesareo** – Associate Professor at the Graduate School of Public Health and Director of the Division of Community Services at the Center for Evaluation and Sociomedical Research at the University of Puerto Rico. Dr. Sánchez expertise in evaluation of training and education program has contributed to the development of assessment tools that were used to evaluate the performance of the training activities carried out as proposed by the NueroID program. She has met with us routinely to discuss the outcome of the evaluation plan and direct our attention to areas that need improvement. Dr. Sánchez contribution is crucial to generate the data required to objectively identify strengths and weaknesses in the proposed training plan.

b) **Nicole M. Ortiz, M.S.** – External Evaluator and Co-Director of the Division of Community Services at the Center for Evaluation and Sociomedical Research at the University of Puerto Rico. Ms. Ortiz has been instrumental in supervising a team of external evaluators that have contributed to the development of assessment tools. Ms. Ortiz and her evaluation team carried out the evaluation through on-line questionnaires and organized focus groups at different stages of students' progress in the NeuroID program. She has also contributed in the assessment of the impact that "culturally relevant contextualized activities" have in student perception of science. Ms. Ortiz is a valuable resource of the Evaluation Plan and provides the objective data needed to make timely decisions about the progress of the NeuroID program.

4) Alumni Advisory Committee – alumni of the first cohort (2011) are finishing their first year as graduate students. These students fulfilled the requirements of the NeuroID program and are at a stage closed to accomplish the requirements to become PhD candidates. They will provide valuable information regarding the training activities that they received at NeuroID and their current experience as graduate students. Additionally, they will play an important role in the Recruitment and Retention plan. The responsibility of the members of the committee will be:

a) Complete questionnaires to evaluate how the NeuroID program contributed to their success at different stages of their graduate studies
b) Serve as peer-mentor to students in the NeuroID program, when required
c) Provide feedback about the results and outcomes of the Evaluation Plan
d) Student guest, at least once, to our NeuroPizza Nigths meeting

Although all alumni of the NeuroID program will be part of a post-NeuroID evaluation plan, we have selected three alumni that serve as role model to other students. These are:

a) **Edith Brignoni, B.S.** – Ms. Brignoni finished her Psychology baccalaureate degree at the UPR-RP in May 2013. In addition to fulfilling the requirements of the NeuroID program, she was also a member of the Honor Program which requires the completion and oral defense of an undergraduate thesis. After her graduation, Ms. Brignoni was accepted in the neuroscience post-baccalaureate program at University of Pennsylvania, where she worked under the supervision of Dr. Edward S. Brodkin. Ms. Brignoni work at Dr. Brodkin's lab focused on the development of social behaviors in mouse model relevant to negative symptoms of schizophrenia. Currently, Ms. Brignoni will start her graduate studies in the Interdisciplinary Neuroscience Program at Georgetown University. Her perseverance and experience in her young academic career serve as inspirations to fellow students at the NeuroID program.

b) **Jaime Vaquer, B.S.** – Mr. Vaquer finished his baccalaureate degree in Biology from the UPR-RP in May 2011. He received different awards, including best undergraduate research work and distinguished student award from the Department of Biology. Mr. Vaquer contributed to two published peer-reviewed articles as undergraduate student, while he was President of the Student Council at the College of Natural Sciences at the UPR-RP. Mr. Vaquer is currently a graduate student in the Department of Neuroscience at Washington University, St. Louis, MO; his academic progress as graduate student has been excellent. Based on his leadership, dedication and work ethics, we are sure that Mr. Vaquer will serve as role model to students in the NeuroID program.

c) **Pablo Maldonado, B.S.** – Mr. Maldonado completed his baccalaureate degree in Biology from the Metropolitan University, a primary-undergraduate institution that is partner of the NeuroID program. Mr. Maldonado is an excellent student that developed in the NeuroID program as one of its student leaders. Mr. Maldonado comes from a social disadvantage background, brought up by his grandparents; he had to work in order to be able to pay for his studies. The NeuroID program provide some financial relieve that allow him to focus on his studies in order to pursue his career goals. Currently, Mr. Maldonado is a graduate student in the Neuroscience Department at University of Utah, one of our T32-Sponsored Programs. The perseverance and emotional intelligence of Mr. Maldonado will be inspirational to all NeuroID students.

5) External Advisory Committee – maintaining close communication with colleagues at universities in the mainland USA is an important asset to the NeuroID program. We sustain great collaboration with T32-Sponsored program directors, where our students go to participate in summer research internship. They have also visited us through the NeuroPizza Night meetings to directly interact with NeuroID students, providing insights into their careers and the graduate program they direct. We also maintain great communication with Puerto Rican neuroscientists at universities in the mainland USA that serve as “Hispanic Role Model” to NeuroID students. Therefore, the External Advisory Committee is composed of two groups of neuroscientists: T32-Sponsored program and Hispanic Role Model. These two groups contribute to the NeuroID program:

a) Advise Program Directors about new selection criteria and admission requirement to graduate programs
b) Help coordinate workshops to supplement and enhance the academic curriculum
c) Serve as mentor to NeuroID students in the application process to graduate school
d) Evaluate the NeuroID’s outcomes and submit their comments and suggestions
e) Participate in NeuroPizza Night meetings, at least once per funding cycle

The two advisory groups are composed of:

a) **T32-Sponsored Programs** – Drs. Richard Born (Harvard), Mandana Sassanfar, Diego Restrepo (Univ Colorado Denver), Dwight McBride (Northwestern), Irwin Lucki (UPENN), Kristen A. Keefe (Univ of Utah) and Dawn Eastmond (Scripps) are closed collaborators of the NeuroID program that have contributed their time and experiences to mentor our students. The interaction is growing stronger over the time and we expect to strengthen it during the next funding period (please see letter of support).

b) **Hispanic Role Model** – Drs. Daniel Colón (Yale), Jim O. Vigoreaux (Univ. of Vermont), Maribel Ríos (Tufts), Marcelo Febo (Univ. of Florida) and Manuel Navedo (UC Davis) are Puerto Rican neuroscientists and professors at universities in the mainland. These colleagues provide a culturally relevant dimension to research career in neuroscience that expands the concept of Puerto Rico beyond its geographical limits as an island. NeuroID students interacted with them at the NeuroPizza Nights, establishing a mentoring relationship that persists even after graduation. They serve as inspiration to our students, contributing to their retention in our program.

LEADERSHIP PLAN

This proposal is a dual effort from two active program directors of undergraduate research programs. The two of them share strong interest in the development of undergraduate students in the neurosciences. Based on their expertise and research interests, they agreed to share the program responsibilities. Their philosophy is that direct contact with the students is of extreme importance to the success of the program. Together they combine the extensive administrative experience and neuroscience research expertise of Dr. Vega with the science education research, teaching proficiency and highly effective interactions with undergraduate students of Dr. Colón.

The ongoing plan is to share the responsibilities as follow: Dr. Vega will be in charge of the day-to-day supervision of all personnel and program activities. He will be the contact person with undergraduate institutions and with the research mentors both on the island and mainland institutions. He will coordinate the recruitment of students and oversee the selection process. He will provide advice and assistance to students in terms of external summer experiences and graduate programs. He will organize invited speakers for the seminars and monthly meetings. Finally, he will monitor the on-going status of all ex-trainees, assuring that the program is fulfilling its goal of increasing diversity in the neurosciences. He will prepare reports and implement those program changes deemed necessary.

Dr. Colón will participate in the overall management of the Academic Program and Evaluation Plan. Specifically, she will monitor students' academic performance and provide counseling as to upper level courses and advice the NeuroID students in their poster and oral presentations. She will be in charge of maintaining the NeuroID Program website and use this site (and the NeuroID Facebook group) to maintain communication with current students and ex-trainees. She will also be in charge of coordinating the professional development summer activities for the incoming students. She will keep track of the research done by our trainees, each semester discussing their progress reports with them and when necessary with their research mentors, assuring that at the end of their appointed period they fulfill all the requirements of the training program. She will keep all statistics related to promotional task, applications and evaluations of all candidates; analyze the statistics and meet with the External Evaluator to discuss the formative assessment of all activities sponsored by the NeuroID program and determine the degree to which the objectives have been achieved. She will assist Dr. Vega on writing reports and implementing those necessary changes to achieve the proposed goals.

The two PDs have an excellent working relationship and collaborate at the scientific and academic level, planning training activities and teaching courses. Their offices are close to each other and they usually consult daily on various issues. Nonetheless, in case of conflicts, these will be presented to the Faculty Advisory Committee, comprised by Dr. Jose E. Garcia-Arrarás, Dr. Guillermo Bernal and Dr. Kenira Thompson, which will make a decision as to resolve the conflict.

OMB Number: 4040-0001
Expiration Date: 06/30/2016

RESEARCH & RELATED Senior/Key Person Profile (Expanded)

PROFILE - Project Director/Principal Investigator

Prefix: First Name*: Irving Middle Name Last Name*: Vega Suffix: Ph.D

Position/Title*: Professor
Organization Name*: University of Puerto Rico, Rio Piedras Campus
Department: Biology
Division: College of Natural Sciences
Street1*: P.O. Box 70377
Street2:
City*: San Juan
County:
State*: PR: Puerto Rico
Province:
Country*: USA: UNITED STATES
Zip / Postal Code*: 00936-8377

Phone Number*: 787 764-0000, Fax Number: 787 764-2610 x.3868 E-Mail*: irvingvega@gmail.com

Credential, e.g., agency login: IRVEGA

Project Role*: PD/PI Other Project Role Category:

Degree Type: Ph.D. Degree Year: 2001

	File Name
Attach Biographical Sketch*:	1235-VegaIE.pdf
Attach Current & Pending Support:	

Tracking Number: GRANT11654548 Funding Opportunity Number: RFA-NS-14-010 . Received Date: 2014-05-23T16:13:35.000-04:00

PROFILE - Senior/Key Person

Prefix: First Name*: Migdalisel Middle Name Last Name*: Colon-Berlingeri Suffix: Ph.D

Position/Title*: Associate Professor
Organization Name*: University of Puerto Rico, Rio Piedras Campus
Department: Biology
Division: College of Natural Sciences
Street1*: P.O. Box 70377
Street2:
City*: San Juan
County:
State*: PR: Puerto Rico
Province:
Country*: USA: UNITED STATES
Zip / Postal Code*: 00936-8377

Phone Number*: 787 764-0000, Fax Number: 787 764-2610 x.3868 E-Mail*: lisycolonberlingeri@yahoo.com

Credential, e.g., agency login: MIGDACOLON

Project Role*: Co-PD/PI Other Project Role Category:

Degree Type: Ph.D. Degree Year: 2003

	File Name
Attach Biographical Sketch*:	1236-MColonBer.pdf
Attach Current & Pending Support:	

PROFILE - Senior/Key Person

Prefix: First Name*: Maria Middle Name I Last Name*: Jimenez-Chafey Suffix: Ph.D

Position/Title*: Director
Organization Name*: University of Puerto Rico, Rio Piedras Campus
Department: Counseling Dept for Student De
Division: Deanship of Student Affairs
Street1*: PO Box 23137
Street2:
City*: San Juan
County:
State*: PR: Puerto Rico
Province:
Country*: USA: UNITED STATES
Zip / Postal Code*: 00931-3137

Phone Number*: 787 764-0000, Fax Number: 787 763-4885 x.56800 E-Mail*: maria.jimenez16@upr.edu

Credential, e.g., agency login: MARIAJIMENEZ

Project Role*: Consultant Other Project Role Category:

Degree Type: Psy.D. Degree Year: 2002

	File Name
Attach Biographical Sketch*:	1237-Maria I Jimenez.pdf
Attach Current & Pending Support:	

PROFILE - Senior/Key Person

Prefix: First Name*: Nicole Middle Name Last Name*: Ortiz Suffix:

Position/Title*: Senior External Evaluator
Organization Name*: Center for Evaluation and Sociomedical Research
Department:
Division: Community Service
Street1*: PO Box 365067
Street2:
City*: San Juan
County:
State*: PR: Puerto Rico
Province:
Country*: USA: UNITED STATES
Zip / Postal Code*: 00936-5067

Phone Number*: 787 620-1907 Fax Number: E-Mail*: nicole.ortiz2@upr.edu

Credential, e.g., agency login: NICOLEORTIZ2

Project Role*: Consultant Other Project Role Category:

Degree Type: M.S. Degree Year: 2009

File Name

Attach Biographical Sketch*: 1238-Nicole Ortiz.pdf

Attach Current & Pending Support:

PROFILE - Senior/Key Person

Prefix: First Name*: Marizaida Middle Name Last Name*: Sanchez Suffix: Ph.D

Position/Title*: Associate Professor/Director
Organization Name*: Center for Evaluation and Sociomedical Research
Department:
Division:
Street1*: PO Box 365067
Street2:
City*: San Juan
County:
State*: PR: Puerto Rico
Province:
Country*: USA: UNITED STATES
Zip / Postal Code*: 00936-5067

Phone Number*: 787 620-1907 Fax Number: E-Mail*: marizaida.sanchez@upr.edu

Credential, e.g., agency login: MARISANCHEZ

Project Role*: Consultant Other Project Role Category:

Degree Type: Ph.D. Degree Year: 2002

File Name

Attach Biographical Sketch*: 1239-Marizaida Sanchez.pdf

Attach Current & Pending Support:

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Irving E. Vega, Ph.D.	Associate Professor
eRA COMMONS USER NAME (credential, e.g., agency login) IRVEGA	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
University of Puerto Rico, Mayagüez, Puerto Rico	B.S.	1992-1996	Biology
Rutgers, The State University of New Jersey	Ph.D.	1996-2001	Cell Biology and Neuroscience
Rutgers, The State University of New Jersey	Postdoctoral	2002	Cell Biology and Neuroscience
Mayo Clinic Jacksonville	Postdoctoral	2002-2005	Neuroscience

A. Personal Statement

I am an Associate Professor and Investigator in the Department of Biology at the University of Puerto Rico – Río Piedras Campus (UPR-RP). As underrepresented minority in biomedical research, I understand the needs of my community and integrate my own career experiences to provide the best mentoring and training opportunities to Hispanic students of different race and social status. I was a NIH-MARC fellow during my undergraduate studies, coming from a low-middle class family where my parents hold vocational degrees. As graduate student, I successfully applied for a NRSA-Pre-doctoral fellowship (F31) and as post-doctoral fellow I obtained a NRSA-F32-Post-doctoral fellowship. These professional development milestones set the basis to establish an academic career at the UPR-RP that is centered on three important cornerstones: research, teaching and administrative duties. My research interest is in the area of neurological diseases, specifically the pathobiology of tau-mediated neurodegeneration. Our research work focuses on the identification of biomarkers that allow us to better understand the molecular processes associated to tau-mediated neurodegeneration as observed in neurological disorders such as Alzheimer's disease. I have sustained funding from career development grants (SCoRE and SC1) and AREA grant (R15) through this first eight years at the UPR-RP. The research team that I supervised is composed of 5 PhD-graduate students and 10 undergraduate students. Over 20 undergraduate students trained in the lab in the last eight years. These students continued their graduate training at either MD, PhD, MD/PhD or MD/JD programs in Puerto Rico or abroad. I also successfully trained graduate students and a post-doctoral fellow, whom is already an Associate Professor at the UPR-Humacao Campus; two graduate students have gone to continue post-doctoral training. Importantly, undergraduate and graduate students in the lab work together in specific research projects. These collaborations contributed to published articles, where they shared authorship (bolded names below). As professor, I teach undergraduate and graduate students in areas such as biochemistry, proteomics and cellular and molecular biology. The teaching load is distributed throughout the academic year. Administratively, I served as Assistant Dean of Research, contributing to enhance the research endeavor at the UPR-RP level. Additionally, I have being the program director of this NIH-ENDURE NeuroID program for the past four years. I am in charge of all the administration and training activities associated to the NeuroID program. Taken together, the successful integration of research, teaching and administrative roles provide me the necessary experience to continue strengthening the NeuroID training program and contribute to enhance diversity in the neurosciences.

B. Positions and Honors.

Positions

2005-2010 **Assistant Professor**; Department of Biology; University of Puerto Rico-Rio Piedras Campus, San Juan, Puerto Rico

2013-2014 **Assistant Dean for Research**; Office of the Dean of Graduate Studies and Research; University of Puerto Rico-Rio Piedras Campus

2006-present **Director**, Protein Mass Spectrometry Core Facility, University of Puerto Rico-Rio Piedras Campus

2010-present **Associate Professor**; Department of Biology; University of Puerto Rico-Rio Piedras Campus, San Juan, Puerto Rico

Honors

1994 MARC-NIGMS Undergraduate Fellowship National Institute of General Medical Sciences; University of Puerto Rico, Mayagüez CampusMayagüez, Puerto Rico (T34)

1996-1998 NIH-Initiative for Minority Student Development, UMDNJ (T32GM55145)

1998-1999 NIH-Training Grant, Department of Biochemistry, UMDNJ (T32GM08360)

1999 NRSA, MARC-Predoctoral Fellowship National Institute of General Medical Sciences National Institutes of Health (F31GM20274)

2001 Research Achievement Award, UMDNJ-Robert Wood Johnson Medical School

2001 NJAS-Award for Achievement in Research, Senior Academy Student Award, New Jersey Academy of Science

2001 ASCB/Minorities Affairs Committee Travel Award, 41st American Society for Cell Biology Annual Meeting

2001 MAC/Pfizer, Inc. Poster Award, Minorities Affairs Committee Poster Session, 41st American Society for Cell Biology Annual Meeting

2002 Robert and Clarice Smith Fellowship in Neurodegenerative Diseases and Stroke Robert and Clarice Smith Foundation Mayo Clinic Foundation

2003 NIA/NIH-Technical Assistance Workshop Travel Award

2004 NRSA, Postdoctoral Fellowship National Institute of Neurological Disorders and Stroke National Institutes of Health (F32-NS047930)

2004 Keystone Symposia Minority Travel Award; Meeting: *Mass Spectrometry in System Biology*; Keystone Symposia

2008 Carl Storm Underrepresented Minority Fellowship, Gordon Research Conference: Neurobiology of Brain Disorders

C. Selected peer-reviewed publications (selected from 25 peer-reviewed publications).

Publications:

1. Schauber C, Chen L, Tongaonkar P, **Vega I**, Lamberstson D, Potts W and Madura K. Rad23 links DNA repair to the ubiquitin-proteasome pathway. Nature (1998) 391:715-718.

2. **Vega IE** and Hsu SC. The Exocyst complex associates with microtubules and mediate vesicle targeting and neurite outgrowth. J. Neuroscience (2001) 21:3839-3848.

3. Sahara N, **Vega IE**, Ishizawa T, Lewis J, McGowan E, Hutton M, Dickson D and Yen SH Phosphorylated p38MAPK specific antibodies cross-reacted with sarkosyl-insoluble hyperphosphorylated tau proteins. J. Neurochem. (2004) 90:829-838.

4. Ko L-W, DeTure M, Sahara N, Chihab R, **Vega IE** and Yen SH. Recent advances in experimental modeling of the assembly of tau filaments. Biochim. Biophys. Acta (2005) 1739:125-139.

5. ***Vega IE**, Hamano T, Propst JA, Grenningloh G and Yen SH. Calpain mediated degradation of SCG10 protein upon Taxol-treatment and Tau overexpression. Exp. Neurology (2006) 202: 152-160

6. ***Vega IE**, Traverso EE, **Ferrer-Acosta Y**, **Matos E**, Colon M, Gonzalez J, Dickson D, Hutton M, Lewis J and Yen SH. A novel calcium binding protein is associated with tau proteins in tauopathy. J. Neurochem. (2008) 106(1):96-106.

7. Figueroa R, Steenland K, MacNeil J, Levey AI and ***Vega IE**. Geographical differences in the occurrence of Alzheimer's disease mortality: United States vs. Puerto Rico. Am J Alzheimer Dis Other Demen (2008) 23(5):462-469

8. Steenland K, MacNeil J, **Vega I** and Levey A. Recent trends in Alzheimer disease mortality in the United States, 1999 to 2004. Alzheimer Disease and Associated Disorders (2009) 23(2):165-170.

9. Livney MG, Clark CM, Karlawish JH, Cartmell S, **Vega IE**, Entenza-Cabrera F and Arnold SE (2011) Ethnoracial differences in the clinical presentation of Alzheimer's disease. Am. J. Geriatr. Psychiatr. 19:430-439.

10. **De Jesús-Crotés H**, **Nogueras-Ortíz CJ**, Gearing M, Arnold SE and ***Vega IE** (2012) Amphiphysin-1 protein level changes associated with tau-mediated neurodegeneration. Neuroreport. 23:942-946

11. **Ferrer-Acosta Y**, **Rodriguez-Cruz EN**, **Vaquer-Alicea AC** and ***Vega IE** (2013) Functional and Structural Analysis of the Conserved EFhd2 Protein. Protein Pept Lett. 20:573-583.

12. Arnold SE, **Vega IE**, Karlawish JH, Wolk DA, Nunez J, Negron M, Xie SX, Wang LS, Dubroff JG, McCarty-Wood E, Trojanowski JQ and Van Deerlin V. (2013) Frequency and Clinicopathological Characteristics of Presenilin 1 Gly206Ala Mutation in Puerto Rican Hispanics with Dementia. J Alzheimers Dis. 33:1089-1095

13. **Ferrer-Acosta Y**, **Rodriguez-Cruz EN**, Orange F, **De Jesus-Cortes H**, **Madera B**, **Vaquer-Alicea J**, Ballester J, Guinel M JF, Bloom GS, ***Vega IE** (2013) EFhd2 is a novel amyloid protein associated to pathological tau in Alzheimer's disease. J. Neurochem. 125:921-931.

14. **Nogueras-Ortiz CJ**, **De Jesús-Cortes HJ**, **Vaquer-Alicea J**, ***Vega IE**. (2014) Novel autoimmune response in a tauopathy mouse model. Front Neurosci. 2014 Jan 10;7:277. doi: 10.3389/fnins.2013.00277. eCollection 2014 Jan 10.

15. **Vazquez-Rosa E, Rodriguez-Crus EN**, **Serrano S**, **Rodriguez-Laureano L**, ***Vega IE** (2014) Cdk5 phosphorylation of EFhd2 at S74 affects its calcium binding activity. [*Accepted for publication in Protein Science PRO-14-0049*]

*corresponding author; **bold**: graduate students; **underline bold**: undergraduate students

D. Research Support

Ongoing Research Support

1R15NS081593-01 Vega (PI) 12/01/2012-11/30/2015 $300,000
NIH/NINDS
Autoimmune Biomarker Profiling In Tauopathy

The development of non-invasive diagnostic tools for neurodegenerative disorders, such as Alzheimer's disease and other tauopathies, is crucial for the testing of new forms of treatment that may prevent, retard or revert the progression of these diseases. The proposed research plan intends to characterize and validate the identification of autoimmune responses in the course of tau-mediated neurodegeneration. The results obtained may lead to the discovery of disease-specific protein biomarkers that serve as diagnostic tools and to better understand the pathobiology of tauopathies.
Role: PI

1R25GM097635-01 Garcia-Arraras/Vega (Multi-PIs) 09/01/2010-08/31/2015 $1.7 M
NIH/NIGMS
Neuroscience Research Opportunities to Increase Diversity (NeuroID)
NeuroID aims to increase the opportunities available for undergraduate students in the area of Neurosciences. To achieve this goal, it is proposed a multi-component program which would include research experience, enhanced academic training, community outreach and professional development activities.
Role: PI

Pending Research Support

1R21NS089983 Vega (PI) 12/01/2014-11/30/2016 $275,000
Role of the novel amyloid protein EFhd2 in the pathobiology of tau-mediated neurodegeneration
The proposed project intends to create a novel mouse model where the human mutant tauP301L protein is overexpressed in the presence or absence of the gene that encodes the EFhd2 protein. This novel mouse model is required to directly test the putative pathological role of EFhd2 in tau-mediated neurodegeneration. The results obtain may lead to important breakthroughs that will unmask molecular mechanisms involve in the pathobiology of tauopathies.
Role: PI

Completed Research Support

2P20RR016470-09 Peña S (PI) 08/01/2009-07/31/2014 $10,000
NIH/NCRR
Advancing competitive Biomedical Research in Puerto Rico
The continued development of the biomedical research infrastructure in Puerto Rico is achieved through the implementation of a strengthened and cohesive structure with improved integration of common scientific and educational interests, collaborations, and a newly created Mentoring Initiative.
Role: Core Facility Director

1SC1NS066988-01 Vega (PI) 08/01/2009-12/31/2013 $1.0 M
NIH/NINDS
The role of a novel tau-associated protein in neurodegeneration
The proposed project intends to characterize the role that the novel tau-associated protein TEA plays in the development and/or progression of tau-mediated neurodegeneration.
Role: PI

3S06GM008102-35S1 Arce (PI) 08/01/2006-07/30/2008 $250,000
NIH/Support of Continuous Research Excellence (SCORE)
Minority Biomedical Research Support Awards (MBRS)
Characterization of a novel tau-associated protein in a tauopathy mouse model
This grant intends to characterize a novel tau-associated protein indentified in Dr. Vega’s laboratory.
Role: Subproject Principal Investigator

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Migdalisel Colón-Berlingeri, Ph.D.	POSITION TITLE Associate Professor
eRA COMMONS USER NAME (credential, e.g., agency login) MIGDACOLON	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
University of Puerto Rico, Mayagüez, Puerto Rico	B.S.	1993-1997	Industrial Microbiology
Rutgers, The State University of New Jersey	Ph.D.	1997-2003	Cell. Molec. Pharmacology
Mayo Clinic Jacksonville	Postdoctoral	2003-2005	Cancer Biology

A. Personal Statement

As a biology educator my goal is to provide students with experiences that will motivate them to learn biology and that contribute to the acquisition of scientific and critical thinking skills that is essential for 21st century biologists. My teaching and research approach is **student-centered**. The main areas of my research are: i) design and evaluation of activities that integrate math and bioinformatics into the biology curriculum and ii) evaluation of the impact of undergraduate research experiences in student self-assessed understanding of the nature of science and acquisition of knowledge. To integrate math in biology we incorporated a stronger component of statistics, quantitative and population genetics in the genetics course. In the process of increasing quantitative analysis in the classroom we have modified the traditional lecture-based classes to more active-learning activities including the flipped classroom. To evaluate the undergraduate research courses we implemented an online survey where students self reported gains in skills to manage and understand scientific literature among other research skills. In addition, I am the PI and coordinator of a Research Experience for Undergraduates (NSF-REU) summer program where we have been able to support students from colleges and universities from Puerto Rico and the US-Virgin Islands that lack a graduate program in molecular genetics and bioinformatics.

My participation in the NeuroID program will bring my student-centered approach to contribute to the implementation of the academic and student development activities. As co-Program Director and through my knowledge in molecular biology I will reinforce student understanding of medullar concepts in biology as well as basic laboratory and research skills. In addition I will continue with the *research with purpose* philosophy of the NeuroID program to further develop student scientific identity, self –assurance, emotional intelligence and other competencies that will contribute to their success as students and future scientists. I will be in charge of evaluating the NeuroID program performance and disseminate the impact of the unique set of activities underlying the *research with purpose* philosophy in the scientific community and in our own undergraduate programs.

B. Positions and Honors.

Positions

2006-2009	Instructor	Department of Biology; University of Puerto Rico-Rio Piedras Campus, San Juan, Puerto Rico

2009-present	Investigator	Curriculum Improvement MARC-NIGMS Supplement grant
2012-present	REU- Program director	Department of Biology; University of Puerto Rico-Rio Piedras Campus, San Juan, Puerto Rico
2009-2014	Assistant Professor	Department of Biology; University of Puerto Rico-Rio Piedras Campus, San Juan, Puerto Rico
2014-present	Associate Professor	Department of Biology; University of Puerto Rico-Rio Piedras Campus, San Juan, Puerto Rico

Honors

1995-1997	MARC-NIGMS Undergraduate Fellowship National Institute of General Medical Sciences	University of Puerto Rico, Mayagüez Campus Mayagüez, Puerto Rico (T34)
1996	Leadership Alliance Early Identification Program- Summer Program	Yale University, New Haven CT
1999-2000	Young Investigator Award	Department of Pharmacology, UMDNJ-RWJMS
1999	Research Achievement Award, for Contributions to Research Day March 26	UMDNJ and Rutgers University, New Brunswick, NJ

Academic activities

October 2009-present	Coordination of assessment of student learning in the undergraduate biology curriculum. Design and implementation of assessment activities and instruments. Submit reports to Office for assessment of student learning every semester.
January-September 2013	Leading member of committee for undergraduate biology program evaluation. Comprehensive report was submitted to The Dean of Academic Affairs in September 2013.
August 2013-present	Coordinator of introduction to biological research (BIOL4990). This course introduces undergraduate research to undergraduate students.
August 2013-present	Director of studies for the College of Natural Sciences Honor Studies Program

C. Peer-reviewed publications.

Colón, M. and Walworth, N.C. (2004) Use of in vivo Gap Repair for Selection of Mutant Alleles of a Checkpoint Gene. In Cell Cycle Checkpoint Control Protocols. *Methods Mol Biol*. 241:175-87.

Massol-Deyá, A., Muñiz, A.R., **Colón, M**., Graulau J., and Tang, N.S. (2005) Microbial Community Structure of Pentachlorophenol Contaminated Soils as Determined by Carbon Utilization Patterns. *Caribbean Journal of Science*, Vol. 41, No.1: 138-146.

Calcagno SR, Li S, **Colón M**, Kreinest PA, Thompson EA, Fields AP, Murray NR. (2008) Oncogenic K-ras promotes early carcinogenesis in the mouse proximal colon. *Int. J Cancer* 122 (11):2 462-70.

Vega, I.E., Traverso, E.E., Ferrer-Acosta, Y., Matos, E., **Colon, M**., Gonzalez, J., Dickson, D., Hutton, M., Lewis, J. and Yen, S.H. A novel calcium binding protein is associated with tau proteins in tauopathy. J. Neurochem. 106(1):96-106, 2008.

Colon, M. Using an active learning approach to teach epigenetics. American Biology Teacher 72: 221-222, 2010.

Colon, M. and Burrowes, P. Teaching Biology through Statistics: Application of Statistical Methods in Genetics and Zoology Courses. CBE-Lifesciences education,10, 259-267, Fall 2011.

D. Research Support

Ongoing Research Support

DBI-1156810 Colon (PI) 5/1/2012-4/30/2015 $285,363
NSF-DBI
REU Site: Channeling Bio-Majors into Research Careers in Bio-Molecular Sciences and Informatics

This program focuses on molecular biosciences -- the application of molecular biology and bioinformatics to major areas of biology like molecular genetics, microbiology, neuroscience and evolution. The Department of Biology has about 17 faculties who could serve as mentors. There is a wide range of very interesting and exciting projects for the students. Parallel to the research work, students will participate in a series of workshops, seminars and other activities such as the responsible conduct in research, professional communication skills, career opportunities, and the graduate school application process. REU-CRIB students have access to a rich array of individual mentor's facilities as well as many interdepartmental labs and centers with core facilities such as electron and confocal microscopy, sequencing, microarray analysis, proteomic analysis, etc. Students are selected based on academic record, research performance, and potential for outstanding research in bio-molecular sciences. Students are tracked to determine their continued interest in their academic field of study, their career paths, and the lasting influences of the research experience.
At the end of the program, participants will give an oral presentation at the summer research symposium held at the college of natural sciences.
Role: PI

5T36GM078010-02 Borrero (PI) 09/01/2010-08/31/2015 $900,000
NIH/NIGMS
Integration of Informatics and Quantitative Concepts in Biology at UPR

The goal of this project is to improve the curriculum through the integration of more advanced reasoning and mathematics skills to the Genetics course. Currently we are evaluating the role of statistics requirements in student performance in Genetics. We are also developing a test to dissect student abilities to integrate mathematics in biology with or without the statistics requirements.
Role: Investigator-Genetics component

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.

Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Jiménez-Chafey, María I.	POSITION TITLE Director/ Staff Clinical Psychologist
eRA COMMONS USER NAME (credential, e.g., agency login) MARIAJIMENEZ	

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Tufts University, Boston, M.A.	B.A.	1997	Clinical Psychology & Child Study
Carlos Albizu University, San Juan, PR	MS	2000	Clinical Psychology
Carlos Albizu University, San Juan, PR	PsyD.	2002	Clinical Psychology

A. Personal Statement

I am an early-career investigator and director at the Counseling Department for Student Development at the University of Puerto Rico – Río Piedras Campus (UPR-RP). As Director of the Counseling Department, I coordinate and implement a comprehensive interdisciplinary departmental plan to offer individual and group psychological and counseling services to students enrolled in the UPR-RP. The Department's main mission is to provide professional services to help students achieve their personal, academic, and vocational goals. The Department strives to foster the student's holistic development through early intervention, prevention, and remedial services. My research interests are in the area of mental health in college students and health psychology. During the past few years, my research focus has been on violence in family and dating relationships, psychological risk factors and suicide in college students. I currently co-direct the institutional Suicide Prevention Program which receives funding from a Garrett Lee Smith Campus SAMSHA grant to implement a comprehensive campus suicide prevention plan that includes case management, capacity building in campus gatekeepers, awareness campaigns and protocol development and evaluation. I am also currently co-investigator in an R03 NIDDK grant that studies the efficacy of Cognitive Behavioral Therapy for Latino adolescents with Type 1 Diabetes and depression. As an early career investigator who has supervised undergraduate and graduate students as research assistants in all my research projects, I understand the importance of the *Neuroscience Research Opportunities to Increase Diversity (NeuroID) Program.*
As a consultant, I can coordinate psychological screenings and referrals for students in the Program who present emotional difficulties that may be affecting their academic performance. In addition, in order to promote retention and success for students in the program I can coordinate workshops on the following topics: efficient time management, balancing personal and academic life, strategies for handling stress and anxiety, emotional intelligence, how providing community service can make you a better scientist and researcher, career planning, and preparing to apply to graduate schools, and other topics as needed by students. I am well aware of the need to increase diversity in the neurosciences as well as prepare future researchers in this field and am very pleased to collaborate with this training Program's efforts to recruit and encourage undergraduate students to pursue a research career in neuroscience.

Positions

2012 – present *Director*, Department of Student Counseling for Student Development, University of Puerto Rico, Río Piedras Campus.
2008 - present *Staff Psychologist*, Department of Student Counseling for Student Development, University of Puerto Rico, Río Piedras Campus.
2006 Assistant Research Scientist, *Parent Psycho-educational Intervention in CBT for Depressed Latino Youth Minority Supplement.* University Center for Psychological Services and Research (CUSEP), University of Puerto Rico, Río Piedras Campus.
2003-2005 *Assistant Research Scientist / Project Coordinator*, *Group CBT for depression in Puerto Rican youth with IDDM.* University Center for Psychological Services and Research (CUSEP), University of Puerto Rico, Río Piedras Campus.
2004-2006 *Director*, Mental Health Unit, Center for Diabetes of Puerto Rico
2003 *Psychologist* / Consultant, Council for Preschool Children, Head Start Program
2002-2003 *Psychologis*t, Lucy López Roig & Associates
2002 Primary Therapist, Padró Psychiatric Clinic, Partial Hospitalization Program
2002 Consultant, EDUCREE (Educational Consultants)
2001-2002 Clinical Practicum Supervisor, Carlos Albizu University
2001 *Consultant*, Psychological and Educational Consultants (CONEP)

C. Selected Peer-reviewed Publications (selected published articles from 19)

1. **Jiménez-Chafey**, M.I., Serra-Taylor, J. & Irizarry-Robles, C.I. (2013). University mental health professionals: Suicide experiences, attitudes, practices, and intervention skills. *Journal of College Student Psychotherapy, 27, 238-253.*
2. **Jiménez Chafey**, M.I., Serra Taylor, J., Villafañe Santiago, A. & Jiménez Pastrana, W. (2011). Hijos adultos de padres alcohólicos y factores de riesgo psicológicos en estudiantes universitarios [Adult children of alcoholics and psychological risk factors in college students]. *Actualidades Investigativas en Educación, 1,* 1-20.
3. Villafañe Santiago, A., **Jiménez Chafey**, M.I., De Jesus Carrasquillo, D. & Vazquez, R. (2011). Construcción y validación del cuestionario de experiencias de violencia en las relaciones de pareja y familia en estudiantes universitarios [Construction and Validation of the Family and Relationship Experiences of Violence in College Students Questionnaire]. *Universitas Psychologica, 10*(3).
4. **Jiménez Chafey**, Duarte, Y. & Bernal, G. (2011). Mother-daughter interactions in depressed Puerto Rican adolescents: Two case studies in CBT*. Revista Puertorriqueña de Psicología, 22*, 46-71.
5. Villafañe Santiago, A., **Jiménez Chafey**, M.I., Capella, M., & Collazo, S. (2010). Un modelo de consejería grupal para estudiantes impactadas por la violencia [A group counseling model for female students who have experienced violence in their relationships] *Revista de Ciencias Sociales,* 126.
6. Disdier-Flores, O.M. & **Jiménez Chafey**, M.I. (2010). Association of major depression and diabetes in medically indigent Puerto Rican adults. *Puerto Rico Health Sciences Journal, 29(1*), 30-35.
7. **Jiménez Chafey**, M.I., Bernal, G. & Rosselló, J. (2009). Clinical Case study: CBT for depression in a Puerto Rican adolescent: Challenges and variability in treatment response. *Depression and Anxiety*, 26, 98-103.
8. Bernal, G., **Jimenez Chafey**, M.I. & Domenech, M. (2009). Cultural adaptation of treatments: A Resource for considering culture in Evidence-Based Practice. *Professional Psychology: Research and Practice, 40, 561-568.*
9. Bernal, G. & **Jiménez-Chafey**, M.I. (2008). Cultural adaptation of psychotherapy for ethnic-minority youth: Beyond one-size-fits-all. *Child and Family Policy and Practice Review, 4, 3-6*.
10. **Jiménez Chafey**, M.I. (2008). Conducta e ideación suicida en estudiantes universitarios [Suicidal conduct and ideation in college students]. *Revista Griot, 4*, 5-17.
11. Rosselló, J., Rivera-Dueño, M.T., & **Jiménez-Chafey,** M.I. (2007). Characteristics of Responders and Non – Responders to Psychotherapy for Depression in Puerto Rican adolescents. *Ciencias de la Conducta, 1, 1-27*.

12. Rosselló, J. & **Jimenez Chafey**, M.I. (2007). Depressive and Anxious Symptomatology in Puerto Rican Youth with Type 1 Diabetes Mellitus and their Relationship to Glycemic Control. *Ciencias de la Conducta*, 22, *1, 1-27*.
13. Rosselló, J. & **Jiménez Chafey**, M.I. (2006). Group CBT for depression in adolescents with T1DM: A pilot study. *Revista de la Sociedad Interamericana de Psicología,* 40(2), 219-226
14. Rosselló, J., **Jiménez Chafey**, M.I., & De Jesus, D. (2006). Terapia Cognitivo-Conductual grupal para la depresión en adolescentes con diabetes tipo 1: Un estudio de case [Group CBT for depression in adolescents with T1DM: A case study]. *Pedagogía*, 40.
15. Rosselló, J., Méndez, Y., & **Jiménez Chafey**, M.I. (2005). Reacciones psicológicas de padres/madres de un/a hijo/a con Diabetes Mellitus tipo 1 [Psychological reactions of parents of a child with type 1 diabetes mellitus]. *Revista de la Asociación de Psicología de Puerto Rico, 16*, 71-89*.*

D. Research Support

Ongoing Research Support

5R03DK092547-03 Cumba, E. Bernal, G., Jiménez, M.I., Sáez E. (Co-PI) 09/01/2011 – 06/30/2014
National Institute of Diabetes and Digestive and Kidney Diseases
Absolute and Relative Efficacy of Cognitive Behavioral Therapy for Latino Adolescents with Type 1 Diabetes and Depression.
Role: Co-Investigator

Garrett Lee Smith Campus Suicide Prevention Grant Bernal, G. (PI) 10/01/2011 – 06/30/2014
Substance Abuse and Mental Health Administration, Department of Health and Human Services
Campus Suicide Prevention Grant
This project will create a comprehensive suicide prevention program at the University of Puerto Rico, Rio Piedras Campus that includes, protocol development, gatekeeper training, awareness campaigns and case management.
Role: Co-director

Completed Research Support

R21 DK064747-01 Rosselló (PI) 09/01/03 – 08/31/05
National Institute of Diabetes and Digestive and Kidney Diseases
Group CBT for depression in Puerto Rican youth with IDDM
This project adapted and piloted a CBT intervention for depression in Puerto Rican youth with IDDM.
Role: Project Coordinator

3R01MH067893-03S1 Bernal (PI) 06/01/06 – 05/31/08
National Institute of Mental Health
Research Supplement to Promote Diversity in Health-Related Research
Parent Psycho-educational Intervention in CBT for Depressed Latino Youth
The supplement to this project will evaluated the characteristics related to treatment resistant depression in adolescents and the dose of CBT needed for complete remission of symptoms of depression in adolescents with treatment resistant depression.

Jiménez, M.I. (PI) 08/01/10-07/30/12
Institutional Funds for Research, University of Puerto Rico
Helping professionals' attitudes and intervention skills in relation to suicide ideation and behavior in university students
This project will assess the attitudes and interventions skills in relation to suicide ideation and behavior of professionals who work in university settings counseling students. A training workshop for dealing with suicide ideation and behavior in university students will be developed and tested based on the results of the assessment.
Role: Principal Investigator

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
NICOLE M ORTIZ VEGA	External Evaluator (Co-Director)
eRA COMMONS USER NAME (credential, e.g., agency login) NICOLEORTIZ2	

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
University of Puerto Rico, Rio Piedras Campus	BS	06/2006	Biology
University of Puerto Rico, Medical Sciences Campus	MS	06/2009	Research Evaluation for Health Systems

A. Personal Statement

The goal of the proposal is to increase the pool of talented undergraduates who are well prepared academically and experienced in research as to be competitive for winning admission to top graduate programs and who are strongly motivated to earn the Ph.D. degree in neuroscience. In the proposed project I will serve as the External Evaluator Co-Director. I have experience in a wide range of topic areas including higher education training programs (STEM), mentoring, K-12 education; biomedical sciences program productivity, tracking and evaluation, substance abuse prevention and treatment, HIV/AIDS, blood donation and community engagement. Over my 6 years of career in program evaluation, I have provided evaluation and tracking, organizational learning, strategic planning, technical assistance, training, and workshops for nonprofit, government, healthcare organizations, and higher education institutions. Some of those initiatives include: Puerto Rico IDeA Networks of Biomedical Research Excellence (PR-INBRE), Neuroscience Research Opportunities to Increase Diversity (NeuroID), Research Infrastructure in Minority Institutions Program (RIMI), Minority Access to Research Career (MARC) Program, Partnership for Research and Education on Materials (PREM) Program, Ciencia Puerto Rico Pilot Project, Food Safety (DBMFS) Project and Puerto Rico Tobacco SYNAR Program. In summary, I have the expertise, leadership, and motivation necessary to successfully carry out the proposed evaluation.

B. Positions and Honors

Positions and Employment

2002-2005	Research Assistant, Department of Biology, University of Puerto Rico, Rio Piedras
2005-2006	Science Instructor, University of Puerto Rico, Upward Bound Program
2006-2008	Research Assistant, Center for Evaluation and Sociomedical Research
2008	Practicum Student, Behavioral Sciences Research Institute, UPR-MSC
2009-2010	Evaluator, Division of Community Services, Center for Evaluation and Sociomedical Research, UPR-MSC
2011-present	Senior Evaluator/Supervisor, Division of Community Services, Center for Evaluation and Sociomedical Research, UPR-MSC

Other Experience and Professional Memberships

Member, American Evaluation Association

Member, Caribbean Association of Research and Evaluation

Honors

2000	Top Hundred Student Award, University of Puerto Rico
2003-2005	Training Program in Science, Technology, Engineering and Mathematics (STEM) Award from Louis Stokes Alliances for Minority Participation
2009	Excellence Student Honor, School of Public Health, UPR-Medical Science Campus

C. Peer-reviewed Publications

1- González-Espada, W. J., Fortis-Santiago, Y., Guerrero-Medina, G., **Ortiz-Vega, N**., Colón-Ramos, D., and Feliú-Mójer, M. (2013). Suplementando el currículo de ciencias con contenido contextual y culturalmente relevante: Lecciones de la implementación del Proyecto Ciencia Boricua. Cuadernos de Investigación en la Educación. 28, 109-127.

2- Marqués Lespier, J., **Ortiz-Vega, N,** Sánchez, M., Torres, E. (2013). Knowledge and Attitudes Toward Organ Donation: A Survey Among Medical Students in Puerto Rico. Puerto Rico Health Sciences Journal.32 (4) 187-193.

3- González-Espada, W. J., Llerandi-Román, P. A., Fortis-Santiago, Y., Guerrero-Medina, G., **Ortiz-Vega, N**., Colón-Ramos, D., and Feliú-Mójer, M. (2014). Impact of a culturally relevant contextualized activities on elementary and middle school students' perception of science: An exploratory study. International Journal of Science Education, Part B: Communication and Public Engagement, DOI: 10.1080/21548455.2014.881579.

D. Research Support

Ongoing Research Support

[1R25GM097635] Vega (PI) 09/01/10-08/30/14
Evaluation of Neuroscience Research Opportunities to Increase Diversity (NeuroID), National Institutes of Health (NIH)

Services: The goal of this project is to design and implement a process and outcome evaluation of NeuroID. The evaluation team is working on the development of the program theory of change, mentoring strategies, evaluation instruments, data collection and analysis. The evaluators had implemented a pilot surveys and focus groups about students and mentor satisfaction with research experience, program support and resources.
Role: **Evaluation Team Leader**

[P20-RR016470] Rodríguez (PI) 09/01/09-08/30/14
Evaluation of Puerto Rico IDeA Networks of Biomedical Research Excellence (PR-INBRE), National Institutes of Health (NIH)

Services: The goal of this project is to design and implement a process and outcome evaluation of PR-INBRE. The evaluation team had been working focused on the development of a logic model, evaluation plan and tracking templates for the program. In addition, evaluators had implemented a pilot surveys about: users' satisfaction with facilities, resources and services supported by the PR-INBRE, satisfaction of the External Advisory Committee members with the meetings and personnel of the program, participants' satisfaction with the trainings and workshops sessions supported by the PR-INBRE, alumni, and current student's satisfaction and program impact.
Role: **Evaluation Team Leader**

Completed Research Support

Iniciativa Comunitaria 07/02/13-08/30/13
Programa Integral de Acceso a Tratamiento, Recuperación, e Integración Comunitaria (PITIRRE)

Services: Design and implementation of process evaluation to demonstrate that PITIRRE implementation has been as planned targeting its intended population and fulfilling most of the established goals.
Role: **Evaluation Consultant**

[2008-950226] 06/01/12 – 01/30/13
Synar Study, Office of Prevention and Mental Health Promotion of Mental Health and Anti-Addiction Services Administration (ASSMCA)

Services: Evaluation of access to cigarettes in commercial establishments in Puerto Rico for 2012-2013.The goal of this study is to evaluate the extent to which commercial establishments in Puerto Rico are selling tobacco products to minors.
Role: **Evaluation Team Leader**

[SP017398-03] Sanchez (PI) 09/01/10 – 09/30/12
Alliance for Life Coalition, Drug Free Communities Support Program (SAHMSA)

Services: The goal of this project is to design and implement a process and outcome evaluation of the Alliance for Life Coalition. The evaluation team also provided capacity building and technical assistance in the development of logic model, evaluation plan, strategic plan, Evidence Base Practice (EBP), the five steps of the Strategic Prevention Frame (SPF), sustainability of programs and social media campaigns.
Role: **Evaluation Team Leader**

Ciencia Puerto Rico 09/01/10 – 09/30/12
Ciencia Boricua: Contextualizando la Ciencia Mediante la Lectura, Investigación y la Tecnología

Services: Design and implementation of fidelity and process evaluation to demonstrate that *"Ciencia Boricua: Contextualizando la Ciencia Mediante la Investigación y la Tecnología*" implementation has been as planned targeting its intended population and fulfilling most of the established goals.
Role: **Evaluation Team Leader**

[ST-062-00035] Perez (PI) 08/01/11-07/01/12
Evaluation of Technology, Engineering and Mathematics' Scholars (DHS-STEM Scholars) at Universidad del Este (UNE), Department of Homeland Security Science

Services: Design and implementation of the process evaluation of the DHS-STEM. The evaluation team had been working focused on the development of a logic model and evaluation plan. A focus group with DHS-STEM students will also be implemented.
Role: **Evaluation Team Leader**

[PRE-2008-02119] Colon (PI) 08/01/08-07/01/11
Evaluation of Development of a Bilingual Minor in Food Safety (DBMFS) Project, Universidad del Este, Ana G. Mendez System
Services: Design and implementation of the process and outcome evaluation of the DBMFS. The evaluation team work focused on the development of a logic model, evaluation plan and a need assessment for the project. In addition, evaluators had implemented a pilot surveys about: student's general knowledge, perception and willingness to pursue a minor degree in food safety.
Role: **Evaluation Co-Leader**

[5T34GM008419-22] Chaparro (PI) 08/01/08-06/01/09
Evaluation of Minority Access to Research Career (MARC) Program, University of Puerto Rico Mayaguez Campus

Services: Design and implementation of the process and outcome evaluation of MARC U-STAR. The evaluation team worked on the assessment of three main components of the program: MARC U-STAR students, MARC U-STAR mentors and MARC U-STAR alumni. Six pilot surveys were developed and implemented to measure satisfaction and program impact. Implemented a student tracking, interviews, phone and online surveys.
Role: **Evaluator**

[2T34GM008419-21] Santiago (PI) 08/01/07-06/01/08
Evaluation of the Research Infrastructure in Minority Institutions (RIMI) Program, Universidad del Este, Ana G. Mendez System

Services: Design and implementation of the process evaluation of RIMI. The evaluation team worked on the development of a program Logic Model, an Evaluation Plan, and the pilot implementation of one main area of the evaluation plan (Faculty Core). The pilot focused on the evaluation of two RIMI sponsored training on research methods offered to faculty members in the “fast-track”. The pilot had two main objectives: (1) to evaluate knowledge acquisition and (2) the utility of training in skill development for submission of research proposals.
Role: **Evaluator**

[2006-DS-0708] Pattatucci (PI) 09/01/06- 07/01/07
Puerto Rico Department of Health
Evaluation Initiatives to Support Public Health Preparedness and Response in Puerto Rico.

Services: The goal of this study is to evaluate epidemiologic surveillance capacity in the Puerto Rico Department of Health. Additionally, the evaluation team assisted the Department of Health in designing evaluation exercises and drills.
Role: **Research Assistant**

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Marizaida Sánchez- Cesáreo	Associate Professor & Director of Division of Community Services, Center for Evaluation and Sociomedical Research
eRA COMMONS USER NAME (credential, e.g., agency login) MARISANCHEZ	

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
University of Puerto Rico San Juan, Puerto Rico	BA	05/1993	Psychology
DePaul University Chicago, Illinois	MA	06/1998	Clinical-Community Psychology
DePaul University Chicago, Illinois	PhD	06/2002	Clinical-Community Psychology

A. Personal Statement

In the proposed project I will serve as the Director of the external evaluation team. I have extensive expertise in program development, program evaluation, capacity building, technical assistance, community based research and evidence based interventions, which have prepared me to lead the evaluation team. Of most relevance is the completion of a community trial with an experimental design conducted to elevate a positive parenting intervention to evidence based. Additionally, I have expertise replication and adaptation of evidence based interventions in various areas of prevention and in working with youth in various settings including school based populations and post-secondary institutions. I have worked in several capacity building initiatives focused on: HIV/AIDS, youth violence prevention, positive youth development, substance abuse prevention and homelessness. Some of those initiatives include: Chicago HIV Prevention Evaluation Demonstration Project-AIDS Foundation of Chicago; Evaluation Resource Institute Training & Coaching Services, Illinois Violence Prevention Authority/Illinois Center for Violence Prevention; Diffusion of Effective Behavioral Interventions Project-Centers for Disease Control/American Psychological Association; Connect To Protect Project, Adolescent Trials Network-NICHD; Illinois SPF-SIG-Division of Community Health & Prevention, Illinois Department of Human Services and Puerto Rico SPF-SIG-Mental Health & Substance Abuse Services Administration. In summary, I have a demonstrated a record of successful and productive research projects in an area of high relevance for the project.

B. Positions & Honor

2012-Present Founder/ Lead Scientist, Puerto Rico Evidence Based Board
2012-Present Associate Professor, Department of Health Services Administration, Graduate School of Public Health, University of Puerto Rico.
2007-Present Director, Division of Community Services, Center for Evaluation and Sociomedical Research, Graduate School of Public Health, University of Puerto Rico.
2005-Present Adjunct Faculty, Psychology Department, DePaul University
1997-Present Founder/ Senior Consultant, Urban Network Associates
2011-2012 Psychologist of the Year Award from the Puerto Rico Psychology Association
2008-2012 Assistant Professor, Department of Health Services Administration, Graduate School of Public Health, University of Puerto Rico.
2009-2012 Faculty Development Committee, Graduate School of Public Health, University of Puerto Rico
2009-2012 Practicum Review Committee, Master in Evaluation Program, Graduate School of Public Health, University of Puerto Rico
2003-2005 Director of Technical Assistance, Connect To Protect, Adolescent Trial Network, Johns Hopkins University, Department of Pediatrics.

2001-2003 Youth Initiatives Director, Illinois Center for Violence Prevention
2000-2001 Evaluation Coach, Evaluation Resources Institute, Illinois Center for Violence Prevention
1997-1999 Instructor, Psychology Department, DePaul University
1995-1999 Youth Project Coordinator, Women's Counseling Center, Jane Adams Hull House Association
1993-1998 President Scholarship, University of Puerto Rico
1992 Golden Key Honor Association Award from the Golden Key International Honour Society
1992 Minority Undergraduate Student of Excellence Award from American Psychology Association
1991-1993 Honors Training Program in Biopsychosocial Research Award from Minority Access to Research Careers (MARC)
1989 Top Hundred Student Award, University of Puerto Rico

C. Professional Memberships

American Psychological Association, Division 27 (Community Psychology), American Evaluation Association, and Puerto Rico Psychology Association

D. Selected Peer-review Publications

1. Sánchez-Cesáreo, M., Acosta-Perez, E., Adams, M. & Bensinger, K. Evaluation of the Parenting Education Program: Promoting Positive Parenting Among Urban Parents. Interamerican Journal of Psychology. Under Review.
2. Sánchez-Cesáreo, M., Acosta-Perez, E., Adams, M. & Bensinger, K. From the bottomup: Community-Based Effectiveness study of the Parenting Education Program. Journal of Primary Prevention. Under Review.
3. Sanabria, J; Kelly, K; Toro, J; Santiago, B; and Sanchez Cesáreo M. Health Service Utilization by the Homeless Population in Puerto Rico. Ambito de Encuetros. Under Review.
4. Sánchez-Cesáreo, M., Acosta-Perez, E., Adams, M. & Bensinger, K. (2010). Evaluation of the Parenting Education Program: Promoting Positive Parenting Among Urban Parents. Cuaderno de Investigación en la Educacion (in press- December 2011).
5. Kelly, K.M., Santiago-Rodriguez, B., Sánchez-Cesáreo, M. (2009). The development of an innovative method to identify and disseminate evidence-based practices for the prevention of child maltreatment in Puerto Rico. The Community Psychologist, 42(1), 17-20.
6. Sánchez-Cesáreo, M., Harper, G. W., Neubauer, L., Cellar, D., Mimi Doll, M., Robles-Shrader, G., Johnson, J., Bangi, A. & Ellen, J. Building Bridges Between Organization Development and Community Psychology within the Context of a Multi-Site Community-Based Research Project. Interamerican Journal of Psychology, 2008 Vol.42, Num.2 pp. 1-10.
7. Anderson, J., Phields, M., Collins, B., Stallworth, J., Sánchez-Cesáreo, M, Ricker Kases, M., Moreno, C., Servin-Lopez S. Resource Guide for Adapting SISTA for Latinas. Produced by American Psychological Association Office on AIDS for the Centers for Disease Control and Prevention.2008.
8. Lugo, E., Sánchez-Cesáreo, M. & Harper, G. Training and Social Change in Latino/a Communities. The Community Psychologist, Volume 36, 1, Winter 2003.
9. Sánchez-Cesáreo, M. & Barton-Villagrana, H. Important Considerations in Evaluating Teen Dating Violence Prevention Programs. Evaluation Resource Institute Newsletter, Illinois Center for Violence Prevention, Volume 2, 2, Winter 2000.

E. Research Support

Current Evaluation Projects

2010-Present
Puerto Rico Abstinence and Contraception: State Personal Responsibility Education Program (PRAC), Puerto Rico Health Department, Division of Maternal, Child, and Adolescents (PRMCH)
Services: PRAC program will consist of four efforts: a) adaptation and implementation of ¡CUIDATE!, an effective evidence-based program scientifically proven to change high risk sexual behaviors of youth; b) adaptation and implementation of ¡CUIDALO!, a parent-child communication intervention program proven to improve parent-child communication and; c) a community engagement strategy which utilizes PhotoVoice methodology; and d) Comprehensive Service Referrals. Specific services will consist of co-training, co-

implementation, process adaptation, and evaluation of interventions. Evaluation will consist of quantitative (observation and survey) and qualitative (survey, interviews, observation and focus group) input from parents and youth, and technical assistance staff.
Role: Director of Evaluation Team

2010-Present 8U54MD007587-03
Puerto Rico Clinical and Translational Research Consortium (PRCTRC), National Institute on Minority Health and Health Disparities (NIMHD), National Institutes of Health (NIH)
Services: Evaluation of the entire project and offer the personnel and support needs for all the evaluation processes. The purpose of this effort are to evaluate the organizing activities of the PRCTRC in order to map the transformation of clinical and translational research at UPR-MSC, PMS&HS and UCC; document progress toward implementing goals of the key function areas; and assess institutional change, cooperation and collaboration among key functions and other program components.
Role: Director of Evaluation Team

2010- Present 1H28CE002205-01
National Sexual Violence Resource Center (NSVRC), Centers for Disease Control and Prevention
Services: Conducting a national needs assessment to determine the resource and technical assistance needs of professionals engaging in sexual violence prevention and intervention in Spanish-speaking communities.
Role: Director of Evaluation Team

2010-Present HRSA-12-156
Affordable Care Act (ACA) Maternal, Infant and Early Childhood Home Visiting Program, Puerto Rico Health Department, Division of Maternal, Child, and Adolescents (PRMCH), Health Resources and Services Administration (HRSA), U.S. Department of Health and Human Services
Services: CIES collaborated with PRMCH on the Puerto Rico needs assessment, selection of target municipalities, evidence based model of implementation, evidence based curriculum, and implementation process. Salud Integral de la Montaña (SIM) was selected to implement on the municipalities of Barranquitas and Orocovis the Growing Great Kids (GGK) evidence based curriculum using the Healthy Families of America implementation model. Currently, CIES serves as external evaluator and expert consultant to PRMCH and SIM in the implementation and evaluation of the ACA Maternal, Infant and Early Childhood Home Visiting Program for the municipalities of Barranquitas and Orocovis. The CIES' staff will work in collaboration with PRMCH's and SIM's staff to culturally adapt and implement the GGK curriculum. CIES will also design, implement and report on outcomes and quality improvement evaluation.
Role: Director of Evaluation Team

2009-Present 5U79SP015584-03
Strategic Prevention Framework – State Incentive Grant, Administración de Servicios de Salud Mental y Contra la Adicción (ASSMCA), Substance Abuse and Mental Health Services Administration's (SAMHSA)
Services: The Community Services Division serves as the scientific partner of the SPF-SIG project in Puerto Rico. Collaborates within the Evidence Based Workgroup (EBW), constitute the Capacity Building / Technical Assistance Team, staffs the Puerto Rico Epidemiological Workgroup (PREOW) and the Evaluation Team. The EBW provide guidance regarding the development of infrastructure to assist sub recipients in the implementation of policies, programs and practices that have been proven efficacious for the prevention of youth alcohol abuse. The Technical Assistance Team (TAT), under the direction of the EBW implements all training and TA for the PR SPF project both at the state and sub-recipient level. The PREOW serves as the surveillance unit which tracks all epidemiological data for the project. The Evaluation Team ensures the project meets all its goals and objectives and is effective.
Role: Director of Evaluation Team

2009-Present
Cumbres Project, Jóvenes de Puerto Rico en Riesgo, Inc.
Services: In order to design an effective study to elevate the program to an EBP, the evaluation process was carried out using a collaborative approach. This approach establishes a shared commitment and ensures open

communication between the scientific team and the JPRR staff. The results achieved collaboratively are the program logic model, a detailed evaluation plan, design of measuring instruments, and data collection. These efforts have taken JPPR and the Cumbres project to the level of a study of effectiveness. Through the university-community collaboration, it has been possible to advance the development of EBPs to meet the needs of the program and in turn of Puerto Rico.
Role: Director of Evaluation Team

2009-Present
Evaluation of Puerto Rico IDeA Networks of Biomedical Research Excellence (PR-INBRE), National Institutes of Health (NIH)
Services: The goal of this project is to design and implement a process and outcome evaluation of PR-INBRE. The evaluation team had been working focused on the development of a logic model, evaluation plan and tracking templates for the program. In addition, evaluators had implemented a pilot surveys about: users' satisfaction with facilities, resources and services supported by the PR-INBRE, satisfaction of the External Advisory Committee members with the meetings and personnel of the program, participants' satisfaction with the trainings and workshops sessions supported by the PR-INBRE, alumni, and current student's satisfaction and program impact.
Role: Director of Evaluation Team

2007-Present
Parent Education Program, Community Counseling Centers of Chicago
Services: Conducting an effectiveness study to confirm that the changes in knowledge and skills among participants are a direct result of the program and not due to external factors. Developed a Home Visiting Program for parents with children ages 0-3, and assisted in the manualizaton of the 0-3 educational curriculum. Created an Implementation and Training Manual for the 0-3 program; piloting this training and technical assistance to community based organization and social services entities interested in implementing the Parent Education Program.
Role: Director of Evaluation Team

Relevant Completed Evaluation Projects

2010-2012
Ciencia Boricua: Contextualizando la Ciencia Mediante la Lectura, Investigación y la Tecnología

2009-2011 HRSA-09-176
Unidos por la Niñez Temprana, Puerto Rico Health Department, Division of Maternal, Child, and Adolescents, Health Resources and Services Administration (HRSA), U.S. Department of Health and Human Services

2009
Office of Academic Enhancement, Chicago Public Schools (CPS)

2008-2011
Development of a Bilingual Minor in Food Safety Project, Universidad del Este, Ana G. Mendez System

2008-2009
Minority Access to Research Career (MARC) Program, University of Puerto Rico Mayaguez Campus (RUM)

2007-2008
Evaluation of the Research Infrastructure in Minority Institutions (RIMI) Program, Universidad del Este, Ana G. Mendez System

2006-2007
Ready by 21™ Initiative, Division of Community Health & Prevention, Illinois Department of Human Services

OMB Number: 4040-0001
Expiration Date: 06/30/2016

RESEARCH & RELATED BUDGET - SECTION A & B, Budget Period 1

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Enter name of Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2015 **End Date*:** 03-31-2016 **Budget Period: 1**

A. Senior/Key Person

	Prefix	First Name*	Middle Name	Last Name*	Suffix	Project Role*	Base Salary ($)	Calendar Months	Academic Months	Summer Months	Requested Salary ($)*	Fringe Benefits ($)*	Funds Requested ($)*
1 .		Irving		Vega	Ph.D	PD/PI	73,004.00		1.30	1.00	18,624.00	5,015.00	23,639.00
2 .		Migdalisel		Colon	PhD	Co-PD/PI	65,609.00		1.30		9,448.00	3,835.00	13,283.00

Total Funds Requested for all Senior Key Persons in the attached file

Additional Senior Key Persons: File Name:

Total Senior/Key Person **36,922.00**

B. Other Personnel

Number of Personnel*	Project Role*	Calendar Months	Academic Months	Summer Months	Requested Salary ($)*	Fringe Benefits*	Funds Requested ($)*
	Post Doctoral Associates						
	Graduate Students						
	Undergraduate Students						
1	Secretarial/Clerical	12.00			24,000.00	14,880.00	38,880.00
1	Administrative assistant	3.00			10,110.00	4,814.00	14,924.00
2	**Total Number Other Personnel**					**Total Other Personnel**	**53,804.00**
						Total Salary, Wages and Fringe Benefits (A+B)	**90,726.00**

RESEARCH & RELATED Budget {A-B} (Funds Requested)

Funding Opportunity Number: RFA-NS-14-010 . Received Date: 2014-05-23T16:13:35.000-04:00

RESEARCH & RELATED BUDGET - SECTION C, D, & E, Budget Period 1

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2015 **End Date*:** 03-31-2016 **Budget Period: 1**

C. Equipment Description	
List items and dollar amount for each item exceeding $5,000	
Equipment Item	**Funds Requested ($)***
Total funds requested for all equipment listed in the attached file	
Total Equipment	
Additional Equipment: File Name:	

D. Travel	**Funds Requested ($)***
1. Domestic Travel Costs (Incl. Canada, Mexico, and U.S. Possessions)	
2. Foreign Travel Costs	
Total Travel Cost	

E. Participant/Trainee Support Costs		**Funds Requested ($)***
1. Tuition/Fees/Health Insurance		
2. Stipends		192,000.00
3. Travel		56,000.00
4. Subsistence		
5. Other: Materials		40,000.00
16 Number of Participants/Trainees	**Total Participant Trainee Support Costs**	**288,000.00**

RESEARCH & RELATED Budget {C-E} (Funds Requested)

RESEARCH & RELATED BUDGET - SECTIONS F-K, Budget Period 1

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2015 **End Date*:** 03-31-2016 **Budget Period: 1**

F. Other Direct Costs	Funds Requested ($)*
1. Materials and Supplies	32,000.00
2. Publication Costs	5,000.00
3. Consultant Services	20,000.00
4. ADP/Computer Services	
5. Subawards/Consortium/Contractual Costs	
6. Equipment or Facility Rental/User Fees	
7. Alterations and Renovations	
8 . Workshops	55,000.00
Total Other Direct Costs	**112,000.00**

G. Direct Costs	Funds Requested ($)*
Total Direct Costs (A thru F)	**490,726.00**

H. Indirect Costs

Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base ($)	Funds Requested ($)*
1 . MTDC	8.00	202,724.00	16,218.00
		Total Indirect Costs	**16,218.00**

Cognizant Federal Agency DHHS
(Agency Name, POC Name, and POC Phone Number)

I. Total Direct and Indirect Costs	Funds Requested ($)*
Total Direct and Indirect Institutional Costs (G + H)	**506,944.00**

J. Fee	Funds Requested ($)*

K. Budget Justification* File Name: 1234-Budget justification.pdf
(Only attach one file.)

RESEARCH & RELATED Budget {F-K} (Funds Requested)

OMB Number: 4040-0001
Expiration Date: 06/30/2016

RESEARCH & RELATED BUDGET - SECTION A & B, Budget Period 2

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Enter name of Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-04-2016 **End Date*:** 03-31-2017 **Budget Period: 2**

A. Senior/Key Person

	Prefix	First Name*	Middle Name	Last Name*	Suffix	Project Role*	Base Salary ($)	Calendar Months	Academic Months	Summer Months	Requested Salary ($)*	Fringe Benefits ($)*	Funds Requested ($)*
1 .		Irving		Vega	Ph.D	PD/PI	76,508.00		1.30	1.00	19,517.00	5,265.00	24,782.00
2 .		Migdalisel		Colon	PhD	Co-PD/PI	68,758.00		1.30		9,901.00	4,036.00	13,937.00

Total Funds Requested for all Senior Key Persons in the attached file

Additional Senior Key Persons: File Name:

Total Senior/Key Person **38,719.00**

B. Other Personnel

Number of Personnel*	Project Role*	Calendar Months	Academic Months	Summer Months	Requested Salary ($)*	Fringe Benefits*	Funds Requested ($)*
	Post Doctoral Associates						
	Graduate Students						
	Undergraduate Students						
1	Secretarial/Clerical	12.00			25,740.00	16,278.00	42,018.00
1	Administrative assistant	3.00			10,545.00	5,223.00	15,768.00
2	**Total Number Other Personnel**					**Total Other Personnel**	**57,786.00**
						Total Salary, Wages and Fringe Benefits (A+B)	**96,505.00**

RESEARCH & RELATED Budget {A-B} (Funds Requested)

Funding Opportunity Number: RFA-NS-14-010 . Received Date: 2014-05-23T16:13:35.000-04:00

RESEARCH & RELATED BUDGET - SECTION C, D, & E, Budget Period 2

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-04-2016 **End Date*:** 03-31-2017 **Budget Period: 2**

C. Equipment Description	
List items and dollar amount for each item exceeding $5,000	
Equipment Item	**Funds Requested ($)***
Total funds requested for all equipment listed in the attached file	
Total Equipment	
Additional Equipment: File Name:	

D. Travel	**Funds Requested ($)***
1. Domestic Travel Costs (Incl. Canada, Mexico, and U.S. Possessions)	
2. Foreign Travel Costs	
Total Travel Cost	

E. Participant/Trainee Support Costs		**Funds Requested ($)***
1. Tuition/Fees/Health Insurance		
2. Stipends		192,000.00
3. Travel		56,000.00
4. Subsistence		
5. Other: Materials		40,000.00
16 Number of Participants/Trainees	**Total Participant Trainee Support Costs**	**288,000.00**

RESEARCH & RELATED Budget {C-E} (Funds Requested)

RESEARCH & RELATED BUDGET - SECTIONS F-K, Budget Period 2

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-04-2016 **End Date*:** 03-31-2017 **Budget Period: 2**

F. Other Direct Costs	Funds Requested ($)*
1. Materials and Supplies	32,000.00
2. Publication Costs	5,000.00
3. Consultant Services	20,000.00
4. ADP/Computer Services	
5. Subawards/Consortium/Contractual Costs	
6. Equipment or Facility Rental/User Fees	
7. Alterations and Renovations	
8 . Workshops	55,000.00
Total Other Direct Costs	**112,000.00**

G. Direct Costs	Funds Requested ($)*
Total Direct Costs (A thru F)	**496,505.00**

H. Indirect Costs

Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base ($)	Funds Requested ($)*
1 . MTDC	8.00	208,506.00	16,681.00
		Total Indirect Costs	**16,681.00**

Cognizant Federal Agency DHHS
(Agency Name, POC Name, and POC Phone Number)

I. Total Direct and Indirect Costs	Funds Requested ($)*
Total Direct and Indirect Institutional Costs (G + H)	**513,186.00**

J. Fee	Funds Requested ($)*

K. Budget Justification* File Name: 1234-Budget justification.pdf
(Only attach one file.)

RESEARCH & RELATED Budget {F-K} (Funds Requested)

OMB Number: 4040-0001
Expiration Date: 06/30/2016

RESEARCH & RELATED BUDGET - SECTION A & B, Budget Period 3

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Enter name of Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2017 **End Date*:** 03-31-2018 **Budget Period: 3**

A. Senior/Key Person

	Prefix	First Name*	Middle Name	Last Name*	Suffix	Project Role*	Base Salary ($)	Calendar Months	Academic Months	Summer Months	Requested Salary ($)*	Fringe Benefits ($)*	Funds Requested ($)*
1 .		Irving		Vega	Ph.D	PD/PI	80,180.00		1.30	1.00	20,454.00	5,524.00	25,978.00
2 .		Migdalisel		Colon	PhD	Co-PD/PI	72,059.00		1.30		10,376.00	4,244.00	14,620.00

Total Funds Requested for all Senior Key Persons in the attached file

Additional Senior Key Persons: File Name:

Total Senior/Key Person **40,598.00**

B. Other Personnel

Number of Personnel*	Project Role*	Calendar Months	Academic Months	Summer Months	Requested Salary ($)*	Fringe Benefits*	Funds Requested ($)*
	Post Doctoral Associates						
	Graduate Students						
	Undergraduate Students						
1	Secretarial/Clerical	12.00			27,480.00	17,328.00	44,808.00
1	Administrative Assistant	3.00			10,980.00	5,486.00	16,466.00
2	**Total Number Other Personnel**					**Total Other Personnel**	**61,274.00**
						Total Salary, Wages and Fringe Benefits (A+B)	**101,872.00**

RESEARCH & RELATED Budget {A-B} (Funds Requested)

Funding Opportunity Number: RFA-NS-14-010 . Received Date: 2014-05-23T16:13:35.000-04:00

RESEARCH & RELATED BUDGET - SECTION C, D, & E, Budget Period 3

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2017 **End Date*:** 03-31-2018 **Budget Period: 3**

C. Equipment Description	
List items and dollar amount for each item exceeding $5,000	
Equipment Item	**Funds Requested ($)***
Total funds requested for all equipment listed in the attached file	
Total Equipment	
Additional Equipment: File Name:	

D. Travel	**Funds Requested ($)***
1. Domestic Travel Costs (Incl. Canada, Mexico, and U.S. Possessions)	
2. Foreign Travel Costs	
Total Travel Cost	

E. Participant/Trainee Support Costs		**Funds Requested ($)***
1. Tuition/Fees/Health Insurance		
2. Stipends		192,000.00
3. Travel		56,000.00
4. Subsistence		
5. Other: Materials		40,000.00
16 Number of Participants/Trainees	**Total Participant Trainee Support Costs**	**288,000.00**

RESEARCH & RELATED Budget {C-E} (Funds Requested)

RESEARCH & RELATED BUDGET - SECTIONS F-K, Budget Period 3

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2017 **End Date*:** 03-31-2018 **Budget Period: 3**

F. Other Direct Costs	Funds Requested ($)*
1. Materials and Supplies	32,000.00
2. Publication Costs	5,000.00
3. Consultant Services	20,000.00
4. ADP/Computer Services	
5. Subawards/Consortium/Contractual Costs	
6. Equipment or Facility Rental/User Fees	
7. Alterations and Renovations	
8 . Workshops	55,000.00
Total Other Direct Costs	**112,000.00**

G. Direct Costs	Funds Requested ($)*
Total Direct Costs (A thru F)	**501,872.00**

H. Indirect Costs

Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base ($)	Funds Requested ($)*
1 . TMDC	8.00	213,872.00	17,110.00
		Total Indirect Costs	**17,110.00**

Cognizant Federal Agency DHHS
(Agency Name, POC Name, and POC Phone Number)

I. Total Direct and Indirect Costs	Funds Requested ($)*
Total Direct and Indirect Institutional Costs (G + H)	**518,982.00**

J. Fee	Funds Requested ($)*

K. Budget Justification* File Name: 1234-Budget justification.pdf
(Only attach one file.)

RESEARCH & RELATED Budget {F-K} (Funds Requested)

OMB Number: 4040-0001
Expiration Date: 06/30/2016

RESEARCH & RELATED BUDGET - SECTION A & B, Budget Period 4

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Enter name of Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2018 **End Date*:** 03-31-2019 **Budget Period: 4**

A. Senior/Key Person

	Prefix	First Name*	Middle Name	Last Name*	Suffix	Project Role*	Base Salary ($)	Calendar Months	Academic Months	Summer Months	Requested Salary ($)*	Fringe Benefits ($)*	Funds Requested ($)*
1 .		Irving		Vega	Ph.D	PD/PI	84,029.00		1.30	1.00	21,436.00	5,790.00	27,226.00
2 .		Migdalisel		Colon		Co-PD/PI	75,517.00		1.30		10,875.00	4,457.00	15,332.00

Total Funds Requested for all Senior Key Persons in the attached file

Additional Senior Key Persons: File Name:

Total Senior/Key Person **42,558.00**

B. Other Personnel

Number of Personnel*	Project Role*	Calendar Months	Academic Months	Summer Months	Requested Salary ($)*	Fringe Benefits*	Funds Requested ($)*
	Post Doctoral Associates						
	Graduate Students						
	Undergraduate Students						
1	Secretarial/Clerical	12.00			29,220.00	18,378.00	47,598.00
1	Administrative Assistant	3.00			11,415.00	5,748.00	17,163.00
2	**Total Number Other Personnel**					**Total Other Personnel**	**64,761.00**
						Total Salary, Wages and Fringe Benefits (A+B)	**107,319.00**

RESEARCH & RELATED Budget {A-B} (Funds Requested)

Funding Opportunity Number: RFA-NS-14-010 . Received Date: 2014-05-23T16:13:35.000-04:00

RESEARCH & RELATED BUDGET - SECTION C, D, & E, Budget Period 4

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2018 **End Date*:** 03-31-2019 **Budget Period: 4**

C. Equipment Description	
List items and dollar amount for each item exceeding $5,000	
Equipment Item	**Funds Requested ($)***
Total funds requested for all equipment listed in the attached file	
Total Equipment	
Additional Equipment: File Name:	

D. Travel	**Funds Requested ($)***
1. Domestic Travel Costs (Incl. Canada, Mexico, and U.S. Possessions)	
2. Foreign Travel Costs	
Total Travel Cost	

E. Participant/Trainee Support Costs		**Funds Requested ($)***
1. Tuition/Fees/Health Insurance		
2. Stipends		192,000.00
3. Travel		56,000.00
4. Subsistence		
5. Other: Materials		40,000.00
16 Number of Participants/Trainees	**Total Participant Trainee Support Costs**	**288,000.00**

RESEARCH & RELATED Budget {C-E} (Funds Requested)

RESEARCH & RELATED BUDGET - SECTIONS F-K, Budget Period 4

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2018 **End Date*:** 03-31-2019 **Budget Period: 4**

F. Other Direct Costs		Funds Requested ($)*
1. Materials and Supplies		32,000.00
2. Publication Costs		5,000.00
3. Consultant Services		20,000.00
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8 . Workshops		55,000.00
	Total Other Direct Costs	**112,000.00**

G. Direct Costs		Funds Requested ($)*
	Total Direct Costs (A thru F)	**507,319.00**

H. Indirect Costs

Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base ($)	Funds Requested ($)*
1 . MTDC	8.00	219,318.00	17,545.00
		Total Indirect Costs	**17,545.00**

Cognizant Federal Agency DHHS
(Agency Name, POC Name, and POC Phone Number)

I. Total Direct and Indirect Costs		Funds Requested ($)*
	Total Direct and Indirect Institutional Costs (G + H)	**524,864.00**

J. Fee	Funds Requested ($)*

K. Budget Justification* File Name: 1234-Budget justification.pdf
(Only attach one file.)

RESEARCH & RELATED Budget {F-K} (Funds Requested)

OMB Number: 4040-0001
Expiration Date: 06/30/2016

RESEARCH & RELATED BUDGET - SECTION A & B, Budget Period 5

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Enter name of Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2019 **End Date*:** 03-31-2020 **Budget Period: 5**

A. Senior/Key Person

	Prefix	First Name*	Middle Name	Last Name*	Suffix	Project Role*	Base Salary ($)	Calendar Months	Academic Months	Summer Months	Requested Salary ($)*	Fringe Benefits ($)*	Funds Requested ($)*
1 .		Irving		Vega	Ph.D	PD/PI	88,062.00		1.30	1.00	22,465.00	6,065.00	28,530.00
2 .		Migdalisel		Colon	PhD	Co-PD/PI	79,142.00		1.30		11,396.00	4,676.00	16,072.00

Total Funds Requested for all Senior Key Persons in the attached file

Additional Senior Key Persons: File Name:

Total Senior/Key Person **44,602.00**

B. Other Personnel

Number of Personnel*	Project Role*	Calendar Months	Academic Months	Summer Months	Requested Salary ($)*	Fringe Benefits*	Funds Requested ($)*
	Post Doctoral Associates						
	Graduate Students						
	Undergraduate Students						
1	Secretarial/Clerical	12.00			30,960.00	19,428.00	50,388.00
1	Administrative assistant	3.00			11,850.00	6,011.00	17,861.00
2	**Total Number Other Personnel**					**Total Other Personnel**	**68,249.00**
						Total Salary, Wages and Fringe Benefits (A+B)	**112,851.00**

RESEARCH & RELATED Budget {A-B} (Funds Requested)

Funding Opportunity Number: RFA-NS-14-010 . Received Date: 2014-05-23T16:13:35.000-04:00

RESEARCH & RELATED BUDGET - SECTION C, D, & E, Budget Period 5

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2019 **End Date*:** 03-31-2020 **Budget Period: 5**

C. Equipment Description	
List items and dollar amount for each item exceeding $5,000	
Equipment Item	**Funds Requested ($)***
Total funds requested for all equipment listed in the attached file	
Total Equipment	
Additional Equipment: File Name:	

D. Travel	**Funds Requested ($)***
1. Domestic Travel Costs (Incl. Canada, Mexico, and U.S. Possessions)	
2. Foreign Travel Costs	
Total Travel Cost	

E. Participant/Trainee Support Costs		**Funds Requested ($)***
1. Tuition/Fees/Health Insurance		
2. Stipends		192,000.00
3. Travel		56,000.00
4. Subsistence		
5. Other: Materials		40,000.00
16 Number of Participants/Trainees	**Total Participant Trainee Support Costs**	**288,000.00**

RESEARCH & RELATED Budget {C-E} (Funds Requested)

RESEARCH & RELATED BUDGET - SECTIONS F-K, Budget Period 5

ORGANIZATIONAL DUNS*: 1439601930000

Budget Type*: ● Project ❍ Subaward/Consortium

Organization: University of Puerto Rico, Rio Piedras Campus

Start Date*: 04-01-2019 **End Date*:** 03-31-2020 **Budget Period: 5**

F. Other Direct Costs	Funds Requested ($)*
1. Materials and Supplies	32,000.00
2. Publication Costs	5,000.00
3. Consultant Services	20,000.00
4. ADP/Computer Services	
5. Subawards/Consortium/Contractual Costs	
6. Equipment or Facility Rental/User Fees	
7. Alterations and Renovations	
8 . Workshops	55,000.00
Total Other Direct Costs	**112,000.00**

G. Direct Costs	Funds Requested ($)*
Total Direct Costs (A thru F)	**512,851.00**

H. Indirect Costs

Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base ($)	Funds Requested ($)*
1 . MTDC	8.00	224,851.00	17,988.00
		Total Indirect Costs	**17,988.00**

Cognizant Federal Agency DHHS
(Agency Name, POC Name, and POC Phone Number)

I. Total Direct and Indirect Costs	Funds Requested ($)*
Total Direct and Indirect Institutional Costs (G + H)	**530,839.00**

J. Fee	Funds Requested ($)*

K. Budget Justification* File Name: 1234-Budget justification.pdf
(Only attach one file.)

RESEARCH & RELATED Budget {F-K} (Funds Requested)

Budget Justification

Program Director, Dr. Irving E. Vega (1.3 pp AY, 1.0 Sum)

Dr. Vega will be in charge of the day-to-day supervision of all personnel and program activities. He will be the contact person with undergraduate institutions and with the research mentors both on the island and mainland institutions. He will coordinate the recruitment of students and oversee the selection process. He will provide advice and assistance to students in terms of external summer experiences and graduate programs. He will organize invited speakers for the seminars and monthly meetings. Finally, he will monitor the on-going status of all ex-trainees, assuring that the program is fulfilling its goal of increasing the number of minority neuroscientists. The PD will analyze the statistics and meet with the External Evaluator to discuss the formative assessment of all activities sponsored by the NeuroID program and determine the degree to which the objectives have been achieved and possible changes that may be necessary. He will prepare reports and implement those program changes deemed necessary.

Program Co-Director- Dr. Migdalisel Colon (1.3 pp AY)

Dr. Colon will participate in the overall management of the Program. Specifically, he will monitor students' academic performance and provide counseling as to upper level courses and advice the NeuroID students in their poster and oral presentations. He will be in charge with setting up the NeuroID Program website and use this site to maintain communication with current students and ex-trainees. Also, he will keep track of the research done by our trainees, each semester discussing their progress reports with them and when necessary with their research mentors, assuring that at the end of their appointed period they fulfill will all the requirements proposed on the research plan. He will keep all statistics related to promotional task, applications and evaluations of all candidates. The PD will analyze the statistics and meet with the External Evaluator to discuss the formative assessment of all activities sponsored by the NeuroID program and determine the degree to which the objectives have been achieved and possible changes that may be necessary. He will assist Dr. Vega on writing reports and implementing the changes necessary to achieve the proposed goals.

Administrative Officer: (2.4 pp CM)

Funds for a half full time salary for an Administrative Officer are requested. The administrative officer coordinates all administrative activities in order to process and assure the timeliness purchase orders, contracts, travel authorizations, and maintains the control over the approved budget and in charge of overseeing that expenses are according to NIH Policy Statement and Institutional Policy.

Administrative Secretary: (3 pp CM)

The Administrative Secretary will handle all students' appointment forms, prepare contracts, prepare and process the monthly student's payments, she/he will also maintain all office and program's files, attends telephone calls, visits by students and other personnel to the NeuroID program. He/She will coordinate travels for students and program directors; this includes ticket reservation and payment, hotel reservations, and perdiem. He/She will be the contact person for making arrangements with all the invited speakers, assuring that hotel reservations, travel orders and payment of travel expenses are in order.

Materials:

We are requesting funds for office materials to support student's promotional activities, specialized paper for printing posters, photocopies, office supplies, letterhead paper, lab-notebooks, etc.

Travel:

Funds for the PDs to attend the Society for Neuroscience meeting are requested. ($2,000/person). Funds are also requested for 4 seminar speakers ($8,000/year) as part of the neuroscience seminars to be available for NeuroID students.

Consultant External Evaluator:

Marizaida Sanchez, PhD, will serve as external evaluator for the NeuroID program. She is an assistant professor at the Center for Evaluation and Sociomedical Research in the Graduate School of Public Health. She will evaluate the progress and achievements of the proposed program according to objectives and goals. She has extensive expertise in program evaluation and will be in charge of both formative and summative evaluations. She has prepared the evaluation plan, summarized in the narrative. This plan clearly stated baselines and expected outcomes. She will prepare evaluation instruments for each activity and will prepare formative and summative reports.

Other Expenses:
Funds are requested for expenses related to computer maintenance, photocopier lease.

Participant Training Support Costs

Student Salaries
Salaries for 8 undergraduate students are requested during the first year of the project (This number will go up to 16 in the following 4 years). Salary request is at the current level of other undergraduate students supported on campus ($9,600/ per academic year and $2,500 for their first summer on-site). These students are expected to fully participate in a biomedical research experience, attend lab meetings, design and perform experiments, analyze results and present their findings at local and national scientific meetings.

Student Travel
Funds for trainees include student travel to off-site summer experiences and to the Society for Neurosciences meeting. These funds are not requested for the first year, but travel for 8 students for the SFN meeting and 8 students to off-site summer research are included from year 2-5 ($2,000 X 16 = $32,000). Central to our proposal is the participation of students in an off-site summer research experience in the mainland USA. We are requesting a lump sum of $6,000/student to be used toward lodging, per diem and stipend. These funds are not requested for the first year but will be used from year 2-5 ($6,000 x 8= $48,000).

Materials
We are requesting funds for laboratory supplies ($2,000/student/year) to help NeuroID students with the cost of their research work. Research mentors will not receive any funding, but nonetheless they are expected to train and supervise undergraduates, and then steer them towards graduate programs in neuroscience. The funds will help defray the cost of materials used by the undergraduate student in the mentor laboratory.

Workshops
Funds are requested to cover the workshop costs and fees of the personnel used as resources to enhance and strengthen the skills of the undergraduate in areas such as ethic issues oral and poster presentation lab safety and technical skills. One day workshops which include; conferences by invited faculties who have training in ethical issues in the sciences, discussions of case studies and the formation of discussion groups which are assigned specific case studies. Oral and Poster Presentation Workshop, this will be a one day workshop on the basics of a good and effective presentation of research result using the power point as a tool. Lab Safety workshop will include, rules governing laboratory safety, instruction on MSDS, handling of hazard chemicals, disposal of any type of reagents, etc.

Fringe Benefits
All fringe benefits are requested in accordance with the institution's policies.

RESEARCH & RELATED BUDGET - Cumulative Budget

	Totals ($)	
Section A, Senior/Key Person		**203,399.00**
Section B, Other Personnel		**305,874.00**
Total Number Other Personnel	10	
Total Salary, Wages and Fringe Benefits (A+B)		**509,273.00**
Section C, Equipment		
Section D, Travel		
1. Domestic		
2. Foreign		
Section E, Participant/Trainee Support Costs		**1,440,000.00**
1. Tuition/Fees/Health Insurance		
2. Stipends	960,000.00	
3. Travel	280,000.00	
4. Subsistence		
5. Other	200,000.00	
6. Number of Participants/Trainees	80	
Section F, Other Direct Costs		**560,000.00**
1. Materials and Supplies	160,000.00	
2. Publication Costs	25,000.00	
3. Consultant Services	100,000.00	
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8. Other 1	275,000.00	
9. Other 2		
10. Other 3		
Section G, Direct Costs (A thru F)		**2,509,273.00**
Section H, Indirect Costs		**85,542.00**
Section I, Total Direct and Indirect Costs (G + H)		**2,594,815.00**
Section J, Fee		

PHS 398 Cover Page Supplement

OMB Number: 0925-0001

1. Project Director / Principal Investigator (PD/PI)

Prefix:
First Name*: Irving
Middle Name:
Last Name*: Vega
Suffix: Ph.D

2. Human Subjects

Clinical Trial? ● No ○ Yes
Agency-Defined Phase III Clinical Trial?* ○ No ○ Yes

3. Permission Statement*

If this application does not result in an award, is the Government permitted to disclose the title of your proposed project, and the name, address, telephone number and e-mail address of the official signing for the applicant organization, to organizations that may be interested in contacting you for further information (e.g., possible collaborations, investment)?

○ Yes ● No

4. Program Income*

Is program income anticipated during the periods for which the grant support is requested? ○ Yes ● No

If you checked "yes" above (indicating that program income is anticipated), then use the format below to reflect the amount and source(s). Otherwise, leave this section blank.

Budget Period*	Anticipated Amount ($)*	Source(s)*

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5. Human Embryonic Stem Cells

Does the proposed project involve human embryonic stem cells?* ● No ❍ Yes

If the proposed project involves human embryonic stem cells, list below the registration number of the specific cell line(s) from the following list: http://grants.nih.gov/stem_cells/registry/current.htm. Or, if a specific stem cell line cannot be referenced at this time, please check the box indicating that one from the registry will be used:

Cell Line(s): Specific stem cell line cannot be referenced at this time. One from the registry will be used.

6. Inventions and Patents (For renewal applications only)

Inventions and Patents*: ❍ Yes ● No

If the answer is "Yes" then please answer the following:

Previously Reported*: ❍ Yes ❍ No

7. Change of Investigator / Change of Institution Questions

❑ Change of principal investigator / program director

Name of former principal investigator / program director:

Prefix:

First Name*:

Middle Name:

Last Name*:

Suffix:

❑ Change of Grantee Institution

Name of former institution*:

PHS 398 Research Plan

Please attach applicable sections of the research plan, below.

OMB Number: 0925-0001

1. Introduction to Application (for RESUBMISSION or REVISION only)	
2. Specific Aims	1248-Specific Aims.pdf
3. Research Strategy*	1249-RESEARCH STRATEGY.pdf
4. Progress Report Publication List	1250-PROGRESS REPORT PUBLICATION LIST.pdf
Human Subjects Sections	
5. Protection of Human Subjects	
6. Inclusion of Women and Minorities	
7. Inclusion of Children	
Other Research Plan Sections	
8. Vertebrate Animals	
9. Select Agent Research	
10. Multiple PD/PI Leadership Plan	
11. Consortium/Contractual Arrangements	
12. Letters of Support	1251-Letters of Support.pdf
13. Resource Sharing Plan(s)	
Appendix (if applicable)	
14. Appendix	1252-Appendix NEUROID Evaluation Instrument Description.pdf

Specific Aims

This is a renewal of the Neuroscience Research Opportunities to Increase Diversity (NeuroID) program. NeuroID aimed to contribute to increase diversity through the recruitment, training, and retaining of Hispanic undergraduate students (from different social status, gender, race and physical needs) in biomedical and behavioral sciences engaged in different areas of neuroscience research. The proposal focuses on undergraduate from the San Juan Metropolitan Area, in particular from the University of Puerto Rico Rio Piedras Campus, the Metropolitan University, Sacred Heart University and the Interamerican University of Puerto Rico Bayamon Campus. The proposed training program continue to tackle identified factors that contribute to the lack of participation and retention of students in graduate programs [Place and Woods (1999); Juliano and Oxford (2001); Barlow and Villarejo (2004); Villarejo et al. (2008)]. Lack of "career role-models" and mentorship, academic isolation or loneliness, economic situation, awareness of the social impact that a research career has, and lack of research skills proficiency at early stages in their academic career are elements that deviate the decision to pursue a research career among Hispanics [Nugent et al. (2004)]. **This proposal builds upon the experiences and information gathered during the current funding period to enhance and strengthen the mentoring and training activities of the NeuroID program. Specifically, the training activities are based on the original research-with-purpose philosophy with added emphasis in developing active-learning skills and strengthen emotional competence.** The three cornerstone of the NeuroID program are:

(1) **Research Experience** - The core of the project is an intense research experience during the academic year and summer, enhanced by technical workshops and biweekly journal club where NeuroID participants will present a paper related to their area of research. The students will participate in two summer research experience; first at the UPR and the second on in a laboratory at an institution in the mainland USA, such as Harvard, Yale, Univ. Colorado Denver, Univ. of Vermont, Northwestern University, Univ. of Utah, that have active T32 training grants in neuroscience and/or excellent track record in recruiting and training underrepresented minorities.

(2) **Academic training** - The NeuroID participants participate in seminars, workshops and selected courses to enhanced their knowledge in neurobiology, and understanding of a research career. During this new funding cycle we will also focus on providing the necessary knowledge and understating of tools used in quantitative and computational biology.

(3) **Student development activities** - NeuroID participants entered a mentoring program that includes community outreach activities, writing in science, oral presentations and other professional enhancement activities. In addition, we incorporate in this new funding cycle the Counseling Department for Student Development, a multidisciplinary unit dedicated to provide effective tools to manage the psychological underpinning of academic life stressors and career decision making. The collective experiences and mentorship program are designed to provide the best environment, training and competence to increase the number of Hispanic undergraduate students who successfully enter and complete PhD degree programs in neuroscience.

The main measurable goal of the NeuroID program is that 75% of the participating students will continue into doctoral degrees in Neuroscience.

RESEARCH STRATEGY

A. PROPOSED RESEARCH EDUCATION PROGRAM

This renewal application of the NeuroID program continues to respond to the need of increasing diversity in the neurosciences. Hispanics and other underrepresented ethnic groups continue to be lacking representation in STEM career despite more than 40 years of training program directed to increase diversity. In the original application we cited a statement from Dr. Bruce Alberts that says "I was taught that providing equal opportunities for everyone was a matter of social justice – part of the social contract in the United States. Now, I believe that it is also a matter of national survival." (Science 323:15; 2 January 2009). Crowley et al. (2004) emphasizes the necessity to "improve the climate in research and scientific training environments." Importantly, Crowley et al. (2004) indicated the importance of diversity of ideas and approaches to the advancement of knowledge. Recently, the results of a longitudinal study, commission by the National Institute of General Medical Sciences, were published. Shultz et al. (2011) studied the effect of the RISE program in 25 four-year institutions. Although the authors caution about generalizing the results, we extracted two important points from this study. First, undergraduate students that are part of the RISE training program identify themselves as scientists, which may explain why students in this program sustained their interest in science over the match group. Second, students participating in the RISE program have greater success (61%) in finishing their baccalaureate degree than students in the match group (45%). Then, the question is why we continue to observe less percentage of scientists from underrepresented ethnic groups in tenure-track positions (Hahm and Ommaya 2006, National Academy of Sciences Report)? The NeuroID program at the UPR-RP aims to serve as a foundation where the graduated students can build up throughout their research career.

As stated in our original proposal, the training of the new generation of scientists from underrepresented ethnic groups and students with disabilities must address the inherent characteristics and current status of a research career (i.e. interdisciplinary approach), have "role-model" support, mentorship programs and incorporate new training techniques that foster and nurture the interest in pursuing a research career. NeuroID's Research Education Program was originally based on a research-with-purpose philosophy designed to develop an interest in applied neuroscience, self-motivation skills, empathy and civil responsibility. Although we will continue with this training philosophy, the renewed plan includes an emphasis in developing active-learning skills and activities to provide the psychological and emotional tools to deal with the intertwined path of a research career.

Significance – The proposed project will specifically provide research opportunities in Neuroscience to up to 40 undergraduate students from diverse backgrounds, including race, gender, disadvantaged background and those with disabilities. The diversity of the selected students also emanate from the selection pool that includes the UPR-RP and other primary undergraduate institutions in the metropolitan area. The proposed Research Education Plan builds upon the success already obtained with two graduated cohorts and two cohorts in training. The NeuroID program will continue to entice and guide students toward graduate programs in Neurosciences by providing the necessary research and academic tools to achieve the utmost goal of enhancing diversity in the academic/scientific fields. NeuroID will achieve these goals by: first, supporting a high level neuroscience research experience throughout the academic year and summer; second, establish a comprehensive academic program that enhances their knowledge in neuroscience and quantitative capabilities; third, provide a mentorship network and counseling program directed to the development of self-motivation and active-learning skills as well as enhance their emotional intelligence. **Together, these activities will contribute to develop career-oriented students with the professional and personal skills necessary to attain a successful research career.**

Approach – Shultz et al. (2011) demonstrated that high level research experience plays a crucial role in the persistent to continue interested in science. The three cornerstones that serve as foundation of the NeuroID program are a research intensive experience, comprehensive academic program and skill-oriented student development activities. NeuroID participants are engaged in a yearlong research program that involves on- and off-campus laboratories. Participation in a research project at the undergraduate level is a crucial experience that provides knowledge on the use of scientific tools, exposed them to problem solving schemes and promote the development of team working skills. This is particularly true for Hispanic students in Puerto Rico who usually enter the University with a partial understanding of scientific careers due to the limited

number of role models and/or family pressures that direct them to careers in medicine, dentistry or medical technicians. The student population at UPR-RP is not exempted from these pressures due to social misconceptions about a scientific career, socioeconomics factors and lack of research experience, among others. The situation at other universities in the San Juan Metropolitan area is exacerbated by the small number of faculty involved in biomedical research and in particular by the lack of research opportunities in behavioral or neuroscience research.

Therefore, the core of this proposal is to provide a diverse group of students the necessary capabilities to engage in high level research experiences in neuroscience. These research experiences will take place during the semester in one of the UPR research laboratories and during the summer in one of our T32-Sponsored Pre-doctoral Program collaborators in the mainland USA. Parallel to these experiences, students will participate in other activities aimed at strengthening their scientific knowledge in neuroscience and quantitative biology skills, as well as participating in professional development activities to enhance their active-learning skills and emotional intelligence.

We believe that undergraduate research training programs need to include experiences that go beyond bench work and poster presentations in order to increase the number of students that enter and complete PhD degree programs. Hahm and Ommaya 2006 stated in their report that “those who belong to a group of interest are more likely to have a personal experience that will aid in the selection of testable hypotheses and methods appropriate to the population.” Engaging students in biomedical and behavioral research on neurobiological questions and diseases with high incidence in their communities can serve as the foundation to enhance their interest and sense of purpose to pursue a research career at the service of their communities. The integration of “research-with-purpose” philosophy could help undergraduate student to better appreciate a research career in neuroscience. The novel approach of incorporating service-learning and student-citizen teaching philosophy as a strategy to entice students to pursue a biomedical and behavioral research career is an important component of the NeuroID program.

In summary, the training of undergraduate students needs to integrate an active academic program with high level research experiences. Today, scientists face very complex question and problems that required the integration of different disciplines in order to gain knowledge and proposed possible solutions. The proposed training plan includes the integration of biomedical and behavioral research activities to expose students to different aspect of neuroscience research. The undergraduate students will be selected from Biology, Chemistry, General Sciences, Psychology and Computer Sciences, allowing the exchange of and exposure to diverse research topics and interests. In addition, a mentoring and counseling program that includes researchers at the UPR, “Hispanic Role Models” in mainland universities and student career development experts will provide the environment to develop the necessary skills and capabilities to succeed in this undergraduate training program and through their graduate studies. The integration of “role-models” at the UPR and mainland universities has been an important training instrument that also facilitated the establishment of a career network that will support the student when difficulties arise and help find answers to the questions encountered in the course of their training as researchers. The NeuroID program will continue using social media such as its Facebook group and the successful resource network CienciaPR (http://www.cienciapr.org/index.php) to increase participation and collaboration among Hispanic scientists particularly those in Puerto Rico or of PR origin (see letter of support from Dr. Daniel Colón-Ramos). All together, the NeuroID program will serve to develop and validate a combination of best practices and strategies to promote, enhance and strengthen the interest of underrepresented ethnic undergraduate students in neuroscience and provide the necessary abilities and competences to be successful in a research career.

Program Activities Overview – The main goal of the NeuroID program is to transform the interest of undergraduate students in neuroscience to a successful research career in neuroscience through the integration of formal courses, community outreach opportunities, and high level research experiences. The core of the program is an intense research experience over two years (junior and senior) where part of the research is under on-site mentors (UPR-RP, School of Medicine or Institute of Neurobiology) and summer research internships off-site with one of our collaborating institutions. The overall structure of the NeuroID program continues as originally proposed:

Students will be eligible to apply at the end of their sophomore year. Selected students will be paired with an on-site mentor based on the student's research interests. In order to facilitate the development of a research plan and integration of the student to the laboratory, it is required that the students participate in a summer research internship at the UPR-RP. During this first summer, the students will participate in several workshops that will facilitate their integration into an active research program. In their first year in the NeuroID program, the students will continue with the research projects and take the recommended courses as part of their credit requirement for graduation from their respective undergraduate program. The academic program is designed to provide the foundation toward increasing the student's knowledge in neurobiology and quantitative biology. Students will continue to do research under the on-site mentor supervision during their two years in the program. It is expected that this during this research experience, the students learn to explore the scientific literature, develop a research project, technically perform and troubleshoot experiments, and present their research in both oral and written formats. The NeuroID program also expects that during the fall semester the students apply to summer research internships at the partner institutions. In spring of their junior year, the students will continue their research and academic program. In addition, they will be preparing for their summer research internship and GRE test. During the summer following their junior year, students will participate in an intensive research experience at one of the collaborating institutions in the mainland. During their stay at this institution, students will meet with graduate students and faculty in the graduate program committee (as well as with the PI of the T32 program in those institutions) to explore his/her possible application to the graduate program.

During the fall semester of their senior year, students will continue with their research and academic program on-site and submit their application to graduate schools. Students are expected, during this semester, to present a poster at the Society for Neurosciences meeting and at the PR Neuroscience Society. At the beginning of the spring semester, the students will participate of mock interviews in order to be prepared for their graduate school interviews.

During their two year tenure in the NeuroID program students will participate in different workshops and meetings that will foster their career development. For example, we will continue with NeuroPizza Nights meetings, a once a month meeting where guest neuroscientists, in an informal setting, exchange their experiences surrounding a research career, from graduate school to a faculty position. Additionally, the students will participate in workshops to increase their active-learning skills and emotional intelligence. Importantly, the NeuroID program will host one expert guest in Ethics and Neuroethics per semester. The students will participate in a monthly journal club meeting, where a student will direct the discussion about a relevant article of their area of research. Finally, students will be informed of all Neuroscience related seminars offered in the San Juan Metro area and it is expected that students will attend at least 4 seminars/ academic year. All together, the students will be exposed to a comprehensive program based on two specific teaching philosophies: "research-with-purpose" and "student-citizen."

As indicated above, three training cornerstones form the foundation of the NeuroID program: research program, academic program and student development activities. We propose to continue with the same training activities originally described, but will highlight the modifications for the next funding cycle of the NeuroID program. ***Specifically, we will use training and teaching strategies that promote active learning. These include, 1) student involvement beyond mere listening; 2) more emphasis on the development of skills and less on transmittal of information; 3) student involvement in higher order thinking skills; 4) student involvement in activities, such as reading, discussing, writing; and 5) an emphasis on students' exploration of values and attitudes (Bonwell & Eison, 1991).***

a. RESEARCH PROGRAM: A high level research experience provides undergraduate students with knowledge, experience and appreciation for a scientific career in neuroscience. The student will select a mentor, with whom she/he will develop a research plan throughout the academic year. Although mentored-bench work is the most important activity on this program, the trainees will be also exposed to workshops, seminars and scientific reporting activities to provide the necessary tools to excel as researchers in neuroscience. Importantly, some workshops are redesigned to include active-learning activities that contribute to enhance collaborative learning in order to learn how to solve problems within diverse groups. The training activities are:

Activity	Description	Timetable
Training activities before the selected students are integrated to the research laboratory [The objectives of the proposed activities are to facilitate the integration of the selected students to a research laboratory and provide knowledge about ethical and responsible conduct in research. To enhance the impact of the NeuroID program, these activities are opened to all students registered in the course BIOL 4990 Introduction to Research, graduate students and students participating in the NSF-REU summer internship at the UPR-RP.]		
Lab-notebook in research	Dr. Vega gives a 2 hr ***workshop*** on documentation of protocols and data in a lab-notebook. The seminar illustrates the students the correct way of documenting protocols, data and observations in a lab-notebook. As instructional tools, Dr. Vega would use power point presentation, handouts ***and group-questions so that the students learn to identify common mistakes in the recording of information in a lab-notebook***. At the end of the seminar, a lab-notebook will be given to the students. The provided lab-notebook serves as evaluation tool of the student progress. ***During the current funding period, the student received a guide describing in detail the important components and rules for a lab-notebook. Dr. Vega prepared this guide.***	Juniors: 1st week 1st summer
Laboratory safety and "etiquette"	Dr. Vega in conjunction with the office of laboratory safety at the UPR-RP offer a 2 hrs seminar about general laboratory safety including correct chemical management and response to lab emergencies. An additional 1 hr **workshop** is given to discuss professional and responsible behavior in a research laboratory. ***Dr. Vega prepared an essay titled Laboratory etiquette: the good citizen rules, describing 25 rules for a healthy laboratory environment. The student will be exposed to different situations that they will judge and discuss corrective actions or how is the best way to react when confronted with a bad-citizen. The stimulated whole-class debate will serve to stimulate collective learning and enhance their skills in problem solving within a diverse group.***	Juniors: 1st week, 1st summer
"The art of reading a research article…!"	Dr. Vega offers a 3 hr workshop to introduce undergraduate students to research articles. The workshop is divided in two modules. The first module is a 1 hr lecture about the different sections of a research article. The components and importance of each section is discussed with the students. On the second module, the students are divided in small groups and a research paper will be presented to them. A series of questions are given to the groups and the students search the answers in a specific section. At the end, a representative of the group read the answer to the question. Through these activities, the students learn to locate valuable information in specific sections of a research article.	Juniors: 2nd week, 1st summer

Ethics	A one day workshop on ethics was developed as part of the training activities. This workshop is described in the section of Responsible Conduct for Research.	Juniors: 4th week 1st summer
Technical Workshops	**During the first summer, the students participated in a two days hand-on workshop in molecular biology and biochemistry. This is a collaborative training activity where the NeuroID students are matched with students participating in the UPR-RP NSF-REU program directed by Dr. Colón. The students work together in the production and purification of a recombinant protein. The workshop combines theory (the biological concepts involved in the activity) with teamwork activities. This training activity promotes the development of teamwork skills. Additionally, the UPR-RP NSF-REU selects students from universities around all Puerto Rico, Virgin Islands and mainland USA. Therefore, this activity allows the NeuroID students to acquired experience in working in a diverse environment, promoting the development of effective communication and social skills.**	Juniors: 1st summer
Scientific Oral Presentation	An important component of a research career is the capacity to communicate science. A successful scientific career relies on the effectiveness to convey research interests, goals and results in a concise, precise and effective manner. Although scientific writing is the most important component in scientific communication, this 2 hrs workshop focuses on scientific oral presentation. The workshop gives few tips on different strategies used to be an effective speaker and to answer specific questions from the students. ***The whole class evaluates different scenarios and strategies that are used to present scientific data clearly and effectively***. Dr. Vega has also given this seminar as part of the graduate course Colloquium in Biology (BIOL6001).	Juniors: 9th-10th week 1st summer
Research activities upon integration to the laboratory [The core of the NeuroID program is the bench-work research experience. The program intends to provide a comprehensive research experience that enhances the interest of undergraduate students to pursue a research career in neuroscience.]		
1st Summer Integration to Research experience	The proposed training program recognizes this first summer research experience as an integration phase. This first summer serves to promote the interaction between the student and his/her mentor. Since the students will not take any course work during this time, they are expected to spend his/her summer in the laboratory. At the end of the summer session, the student is required to submit a report describing the area of research and describing the experimental techniques used in the laboratory. The report will have an introduction describing the main interest of the research laboratory and the specific scientific question the student will be addressing. Also, the student will explain the main techniques used in the laboratory, specifically those that she/he will be using on her/his project. Then, they prepared a 15 minutes seminar that is presented and	Juniors: 1st summer

	evaluated by their peers.	
Lab research work	During the academic year, the trainees are involved in bench work in the selected laboratory, under the direct supervision of the principal investigator of that laboratory. At the end of each semester, the trainees are required to submit a progress report on the research work carried out. The report will be a 3 pages summary of the research experience, data obtained and future directions.	Juniors and seniors: academic semesters
Summer Research Experience	The mentor and mentee will discussed among the alternatives to participate on a summer research program. The mentee will be encouraged to participate in a summer research program at an institution that she/he is interesting in applying for graduate school. The NeuroID program has obtained letters of support from different universities (e.g. Harvard, MIT, UC Denver, Northwestern, Univ. of Utah) with active T32 training grants in neuroscience. ***The students are encouraged to select summer programs from these institutions. Through this exercise, the students need to evaluate their alternatives, prepare a personal statement, ask for letter of recommendations and request a copy of their academic record. This experience allows the students to experience an application process that is similar to applying to graduate school.*** Alternatively, the mentor and student could also decide to continue his/her research at the laboratory of the mentor's close collaborator. That will provide continuation to the ongoing research and stimulate the students to engage in collaborative work. However, the mentor and mentee could also evaluate the possibility of selecting a laboratory based on specific techniques that may need to be transferred for the benefit of the mentee's research project. The first week of February prior to the summer session, the students need to submit to the NeuroID program the decision reached about the summer research experience. This document needs to be signed by the student's mentor.	Seniors: summer session

Measurable Objectives – 8 students will take all the proposed seminars/workshops during the first summer in the program. 8 students will participate each year in on-site summer program. 8 students will participate in off-site summer programs. 8 students will present their work in research meetings. At the end of all research training activities, the students will have enhanced their research proficiency, understanding of a research career and increased their interest to pursue a research career in neuroscience. 75% of the students will develop active-learning skills such as organization, self-advocacy, accountability and collaborative learning.

b. ACADEMIC PROGRAM: NeuroID participants are asked to take specific courses that will provide fundamental knowledge in neurobiology and improve their quantitative skills. The academic curriculum already includes as required courses: Genetics, Molecular Biology, Biochemistry, Calculus and Statistics. The additional courses proposed here do not represent additional credit hours to their curriculum, since they are incorporated as electives. In addition to the proposed course work, we supplement the academic program with workshops and on-line courses in quantitative biology. The suggested courses for the trainees and the time at which they will take them are:

Course Name	Credits	Description	Timetable
Introduction to General Psychology (or equivalent) (PSIC3003)	3	An introductory course to provide general knowledge on perception, cognitive development, learning and memory, language and psychology impact on social and cultural organization	Junior year: 1st semester
Scientific Writing (ENGL3236)	3	The student will develop skills to write descriptive and analytical reports and theoretical assays [*This course received mix reviews in terms of its context and application. An on-line course is offered as an alternative*]	Junior year: 1st semester
Fundamentals of Computer Science (CCOM3030)	3	This course provides a general view of specific areas of computer sciences, such as data bases, operating systems, networks, artificial intelligence, and bioinformatics. It serves as foundation that allows appreciating the relevance as well as the interrelation among different subjects of computer science and provides the opportunity to develop problem solving skills.	Junior year: 2nd semester
Introduction to Molecular Bioinformatics (BIOL4360)	3	This course is directed to the analysis of databases and techniques used in genomics and proteomics studies.	Senior year: 1st Semester
Neurobiology (BIOL5548)	3	Study of the nervous system with emphasis on development, physiology, biochemistry and anatomy	Senior year: 1st Semester
Introduction to Research (BIOL4990)	6	Supervised research work opportunity [*The Department of Biology allows a maximum of 6 elective credits of BIOL4990. The student could take 1, 2 or 3 credit hours in a given semester.]*	Junior & senior year: academic year
On-line courses	**Credits**	**Description**	**Timetable**
Writing in the Sciences (https://class.coursera.org/scriwrite-2012-001)	8 wks 4-6 hrs/wk	Dr. Kristin Sinani, Assistant Professor at Stanford, develop this on-line course that teaches scientists to become more effective writers. She uses practical examples and exercises to teach principles of good writing, tricks for writing faster and with less anxiety, the format of a scientific manuscript, and issues in publication and peer review. This course supplements or substitutes the Scientific Writing Course.	Fall Semester
Quantitative Biology Workshop (https://www.edx.org/course/mitx/mitx-7-qbwx-quantitative-biology-1714#)	7 wks 4-8 hrs/wk	Faculty member from the Biology Department of MIT designed this on-line introductory course to give students exposure to the application of quantitative tools and encourages students to take more computational courses. The course provides an introduction to MATLAB, Python, and R.	First Summer

There are equivalent courses, for General Psychology, Scientific Writing and Introduction to research, at the other participating institutions in the metropolitan area. The selected students from these institutions would be requested to take these equivalent courses in coordination with our partners at the Sacred Heart, Metropolitan and Interamerican universities. However, when needed, the students from these institutions would register in the required courses at the UPR-RP campus as guest students. Importantly, the courses described will not constitute additional credit hours to the students' curriculum; instead the trainees will be directed toward specific courses to fulfill the advance and elective requirements. Students will also attend at least 4 neuroscience-related seminars during the academic year. This curriculum sequence will be available not only to the trainees but also to all undergraduate students of the Department of Biology at the UPR-RP.

Measurable Objectives – Every year, NeuroID students will take courses to enhance their understanding of neuroscience and improve their quantitative skills. The students will pass these courses with a grade equal or better than B and fulfill the requirements of the online courses. 90% of students will report to be satisfied or very satisfied with the academic curriculum and understand how the proposed course work will benefit their research and academic career. 75% of the students will develop active-learning skills such as organization, self-advocacy, risk-taking, accountability and collaborative learning.

c. STUDENT DEVELOPMENT ACTIVITIES: In addition to the academic and research program, students will be exposed to a series of extracurricular activities to better prepare them for a research career in neuroscience. These training activities will provide the necessary proficiency to successfully apply to a graduate program, understand the requirements to pursue a biomedical and clinical research career and, importantly, relate a research career to community service. The latter is a crucial and novel component of this program since it presents the students with the opportunity to use the acquired scientific knowledge for the benefit of his or her community. As the author Elizabeth L. Hollander stated: "A generation that acquires knowledge without ever understanding how that knowledge benefits the community is a generation that is not learning what it means to be citizens in a democracy." The identification of health problems within their community may influence the students' decision to pursue a biomedical research career in which they may then feel more personally invested; **this is the basis of the research-with-purpose training philosophy.**

The research-with-purpose philosophy is based on the interrelation between research and community outreach activity seeks to enhance important aspects such as empathy and social responsibility. Empathy is an important emotion that emanate from people with emotional competence. The emotional competence of an individual is based on his/her emotional intelligence; emotional skills are crucial to academic performance. In this new funding cycle of the NeuroID program, we will emphasize in enhancing the students' emotional intelligence and psychological attitude. Instead of aiming to teach emotional intelligence, our main goal is to increase awareness of the importance of emotional competence for a successful professional career and provide tools that they can use to achieve it.

The extracurricular activities will be divided in three major categories: workshops, career development and community outreach. The activities in each category are described as follows:

Activity	Description	Timetable
Workshops [The described activities will be open to a limited number of undergraduate students, with priority for NeuroID participants. The objective of these activities is to enhance the students' research capabilities and increase their knowledge about funding opportunities ascribed to graduate students and through a research career.]		
Graduate School Fellowships	Trainees will be instructed on fellowship mechanisms that they can apply for as graduate students (F31). The personnel at NIH-NIGMS, specifically the MBRS branch and NSF will be contacted to provide a seminar about pre-doctoral fellowship opportunities and strategies to write a successful proposal. Drs. Vega and Colón successfully applied to pre-doctoral and post-doctoral fellowship and Dr. Vega currently served in a study section (MNG) at NIH. Thus, they will be in charge of coordinating this activity and	Junior and Senior year

	seek for external resources as well. For example, during the current funding cycle, Dr. Nancy E. Street, Associate Dean, UT Southwestern Graduate School of Biomedical Sciences and member of the study section of NSF-GRFP share with the students hints to prepare a competitive application.	
Technical workshops	2-days hand-on Molecular Biology and Biochemistry workshop was developed in conjunction with the UPR-RP NSF-REU program that Dr. Colón direct. Additionally, workshops on new techniques in neuroscience will be developed during this new funding cycle. Dr. Vega will be in charge of organizing and coordinating these workshops.	Junior and Senior year
Quantitative Biology Workshop (https://biology.mit.edu/outreach_initiatives/quantitative_biology_workshop)	MIT and Harvard designed a one-week introductory workshop as part of their community outreach program for students at other universities. NeuroID students have participated at the MIT workshop, evaluating it as an excellent course. The host institutions cover, partially or completely, the cost of the workshop that takes places at their facilities in Boston or Cambridge.	January
Career Development [The objectives of the proposed activities are: 1) enhance the students' understanding of the graduate school selection process, 2) establish a mentoring network that supports their research career in neuroscience and 3) promote the development of emotional competence. Additionally, at these meetings, up-to-date topics in neuroscience and neuroethics will be discussed.]		
Admission Committee: "mock-interview"	The trainees are asked to prepare mock applications to a graduate program. Trainees are interviewed for graduate school by an assigned mentorship committee. After the mock interview, the committee discusses each student's performance, noting strengths and weaknesses. Results are discussed with the student with suggestions on ways to address any weaknesses. Dr. Vega organizes and coordinates this activity.	Senior year: 2nd semester
A biomedical research career: "Role-model in Neuroscience"	NeuroPizza Nights: Once per month, a faculty member at UPR-RP or abroad will discuss his/her experiences in a biomedical research career. Other issues addressed include how the scientist managed family/personal life with career, dealt with gender, age, or racial stereotypes or biases in his/her career, and managed research-related stress or disappointment. The program will incorporate the participation of neuroscientists of Puerto Rican, Hispanic and Latino descent that are faculty members at universities in mainland USA. Most of these neuroscientists obtained their BS from universities in Puerto Rico. Thus, the students can relate to these neuroscientists and see them as "role-models." These neuroscientists give an informal presentation about their career path, decision making and graduate programs at their respective institutions. Dr. Colón will organize and coordinate this activity.	Junior & Senior year: academic year
Counseling and Student Development	The Counseling Department for Student Development will carry out three workshops per semester on the following topics: efficient time management, balancing personal and academic life, strategies for handling stress and anxiety, emotional intelligence, career planning and preparing to apply to graduate schools. Additionally, the students can	Junior & Senior year: academic year

	suggest other topics based on their needs (see Dr. Jimenez letter of support). These workshops are designed to develop four important areas of emotional intelligence: self-awareness, self-management, interpersonal expertise and relationship management.	
Community Outreach [The programmed activities will facilitate the integration of "research-with-purpose" and "student citizen" philosophies to an undergraduate student training research program. The main objectives are: (1) to enhance the understanding of the social impact of science; (2) to stimulate students to transmit the acquired scientific knowledge to the general population; (3) to confront students to unanswered neuroscience questions relevant to neuronal development, behavioral and neurological diseases, among others in the general population.]		
Transmitting Scientific Knowledge to the Community	Trainees are asked to summarize a scientific paper on neurobiology or neurological disorders in a 300 word paragraph using lay-language in Spanish and English. Trainees sent the summary to Dr. Vega for evaluation before recording the summary as a podcast. Recorded scientific news are posted as a podcast file in Radio Casa Pueblo (a radio station in Puerto Rico) and CienciaPR. Additionally, the essay will be posted on the cienciapr.org website to convey the latest news to the Hispanic community subscribed to these networking tools (see Dr. Daniel Colón support letter). All students are required to prepare one summarized article before the end of their participation in the NeuroID program.	Junior & Senior year
Community Service	NeuroID students are required to organize and be involved in community outreach activities. The community outreach requirement could be fulfilled serving as volunteers of a non-profit organization as the Puerto Rico Alzheimer, or any other organization related to a neurological or neurodevelopmental disease. Alternatively, the students organized activities for "Brain awareness week" at the College of Natural Sciences in the UPR-RP, other university campuses or at schools. The students visited elementary, middle and high schools with activities to illustrate the structure of the brain and its function. Dr. Vega will serve as advisor in the preparation for this activity. NeuroID program participants have to complete one community service activity per semester. These activities could be organized in groups or individually.	Senior year: 1st semester

Measurable Objectives – Every year, 16 students will participate in the proposed workshops. Each student will produce one summary of a scientific article and record it as podcasts during their participation in the NeuroID program. The students will organize one community outreach activity per semester. At the end of the program, the students are required to participate in, at least, one community outreach activity. 75% of the students will indicate that the community outreach activities increased their interest to pursue a research career. 75% of the students will report awareness of the importance of emotional competence for a successful professional career.

End-of-Program requirements:
At the end of the NeuroID program, trainees will be required to have fulfilled a series of requirements:
a. Oral presentation at the Puerto Rico Interdisciplinary Scientific Meeting (PRISM) – The PRSIM is an annual forum for undergraduate science, technology, engineering and mathematics students to present their research work to faculty member and peer students. The students present their respective work in a 15 min

oral presentation with 5 min question section format. PRSIM takes place on the second weekend of March. NeuroID participants will present their respective research work the spring semester of their second year.

b. Poster presentation at the Annual Puerto Rico Neuroscience meeting – The PR Neuroscience meeting is an annual meeting that takes place the first weekend of December. The objective of this meeting is to promote networking and collaboration among neuroscientists in Puerto Rico. The students will prepare a poster presentation on the research work done. The student's mentor will supervise the preparation of the presentation. The student will present at this meeting during the fall semester of their second year in the program.

c. Poster presentation at Society for Neuroscience – The students will prepare a scientific poster and present their data at the annual Society for Neuroscience meeting, considered the most attended retreat of neuroscientists from around the world where the latest advancement in neuroscience are presented and discussed. The meeting will provide the students with the opportunity to experience the vast amount of research topics that encompasses the field of neuroscience. The student will present at this meeting during the fall semester of their second year in the program.

d. Undergraduate dissertation on accomplished research work – Scientific writing is an intrinsic part of a research career. The students will develop a manuscript about their research work following a format established by the Mentorship Committee. The students will have one month after completion of the program to submit the manuscript for review by the Mentorship Committee. Authorship in a peer-reviewed publication during the course of the student participation on the NeuroID program will substitute for this requirement, if the corresponding author certifies that the student contributed to the writing and editing of the manuscript.

Overall Program Measurable Objective – 75% of students that participate in the NeuroID program will enter Ph.D. graduate programs upon graduation. 90% of the participants will show an enhance understanding of neuroscience research, writing skills, oral presentation skills, social impact of science and emotional competence. Finally, the program directors expect that 100% of the students will demonstrate a vast understanding on responsible conduct in research and neuroethics.

B. PROGRAM DIRECTOR/PRINCIPAL INVESTIGATOR

Program Director – Dr. Irving E. Vega is the Program Director of the NeuroID program since it was funded by NIH BP-ENDURE in September 2010. Briefly, he obtained a B.S. from the UPR-Mayagüez Campus, where he was a fellow of NIGMS-Minority Access for Research Career (MARC) Program. Dr. Vega earned a Ph.D. in Cell Biology and Neuroscience in 2002 at Rutgers University. During graduate school, he obtained a MARC-Predoctoral Fellowship funded by NIH-NIGMS (F31GM020274). As a post-doctoral fellow, Dr. Vega trained in the laboratory of Dr. Shu-Hui Yen in the Department of Neuroscience at Mayo Clinic Jacksonville. During this time, Dr. Vega successfully applied to a Smith Fellowship (private foundation) and NIH-NRSA Postdoctoral Fellowship that supported most of his postdoctoral training (F32NS047930). Dr. Vega became an assistant professor at UPR-RP in 2005 and was promoted as tenured associate professor in 2010. His research focuses on neurodegeneration and the aggregation of the microtubule-associated protein tau, a key protein associated with the pathobiology of Alzheimer's disease. Over the past eight years, Dr. Vega has sustained a funded and productive research program obtaining several grants from NIH and publishing over 16 peer-reviewed articles. Based on his own career development, Dr. Vega understands the importance and value of empowering undergraduate and graduate students to pursue a biomedical research career. Dr. Vega has trained more than 20 undergraduate students, 7 graduate students, and 1 post-doctoral fellow. Both undergraduate and graduate students figured as author in published peer-reviewed articles. Alumni from Dr. Vega's laboratory have gone to continue their graduate studies at universities in the mainland (such as UT Southwestern, UPENN, Scripps, University of Chicago, Washington University and MIT), while others continued their studies at medical schools in Puerto Rico and abroad.

In addition to Dr. Vega's commitment to neuroscience research, he is active in the academia, playing a role in several courses at both undergraduate and graduate program levels. Additionally, Dr. Vega served as Assistant Dean for Research in the Office of the Dean for Graduate Studies and Research at the UPR and

President of the Puerto Rico chapter of the Society for Neuroscience. These administrative, academic and research experiences capacitate Dr. Vega to continue directing the NeuroID program.

Co-Program Director – Dr. Migdalisel Colón is an associate professor in the Department of Biology. Dr. Colón obtained her B.S. in Industrial Microbiology at the UPR. As undergraduate student, she was a NIH-MARC fellow and her research contribution granted her a co-authorship in a peer-reviewed articles. Then, continued her graduate studies at Rutgers University where she successfully applied for a NIH-NRSA F31 Pre-doctoral fellowship. Dr. Colón did her post-doctoral research in cancer biology at the Mayo Clinic Jacksonville and then joined the Department of Biology at the UPR-RP. Dr. Colón has collaborated in research projects in the areas of proteomics and does research in science education. Her research focuses in the integration of different teaching techniques to increase the quantitative skills in biology undergraduate students. Dr. Colón also has experience managing and organizing an undergraduate research program. She is the director of NSF-REU summer research program that recruit students from principally undergraduate institutions in Puerto Rico and the US Virgin Islands. In NeuroID, Dr. Colón will play an important role in the Academic Program and Evaluation Plan. Her expertise in educational assessment, integration of different teaching techniques (e.g. active learning, flipped classroom) and student-centered approach will contribute to boost the training experience of NeuroID participants and convert the collected assessment results into manuscripts that will share the best practices in training undergraduate students to increase diversity.

In this proposal, the directors will employ successful approaches from their own research training experiences and teaching skills to incorporate into the NeuroID program active-learning and emotional competence, recognizing them as important factors in academic and career performance. The combination of a neuroscientist (Dr. Vega) and a science education researcher (Dr. Colón) creates the necessary coherence that this comprehensive training program needs. Additionally, the directors have obtained support from T32-Sponsored Programs at different academic institutions and neuroscientists in the mainland USA, who pledged their continued support to the NeuroID program (see support letters). The achievements of the NeuroID program over the past four years demonstrate that fostering the interconnection between a comprehensive academic program (designed to enhance scientific proficiency and quantitative skills) and high level research experience will encourage the recruitment, development and retention of undergraduate students interested in pursuing a research career in neuroscience.

C. PROGRAM FACULTY

Neuroscience is one of the scientific disciplines more represented in the island of Puerto Rico. Since the renowned neuroscientist, Dr. Jose del Castillo, founded the Institute of Neurobiology by 1967, a community of neuroscientists has been developed in Puerto Rico. Faculty members with ongoing neuroscience research in the San Juan Metropolitan area will be the local mentors of NeuroID students. These investigators are in the top research universities in PR, namely the University of Puerto Rico, Rio Piedras Campus, the UPR Medical School Campus and the Institute of Neurobiology. The investigators comprise a group that includes senior as well as junior investigators, funded by grants from NIH, NSF or other federal agencies. It is important to mention that most faculty members in teaching and research positions at the four participating institutions are from underrepresented ethnic groups in STEM, with above average female representation. Brief descriptions of the research activities are shown below:

On-Site Mentors and ongoing research

Agosto, Jose Luis, PhD – *Molecular mechanisms underlying sleep in Drosophila*

Off-site collaborators- Leslie Griffith (Brandeis), Axelrod (UT Austin)

Evidence from human sleep disorders and sleep pharmacotherapies indicate that the initiation and maintenance of sleep are differentially regulated. However, the mechanism underlying this regulation remains unknown. Recently, using a pharmacogenetics approach, Dr. Agosto and colleagues showed that altering the desensitization kinetics of a Drosophila GABAA receptor subunit called Resistant to diledrin (RDL) specifically affect sleep initiation without altering sleep maintenance. In addition, they found that carbamazepine (CBZ), a widely used drug in the treatment of multiple neurological disorders, blocks sleep initiation by increasing the kinetics of RDL desensitization but inhibits sleep maintenance by an unknown mechanism. Their main hypothesis is that sleep initiation and sleep maintenance are controlled by different but overlapping circuits and that CBZ interacts with both of these circuits through different mechanisms. The goals of the laboratory are: 1)

to perform genome-wide behavioral screen for mutants resistant to CBZ actions on sleep maintenance; 2) to develop a strategy to genetically manipulate CBZ sensitivity in subsets of RDL neurons an: 3) to validate the use of long-term CBZ administration to flies as a model for chronic insomnia and its associated deficits in daytime functioning. These studies not only could bring insights into the genetic bases of sleep regulation but also may provide the basis for the development of more specific drugs for the treatment of sleep disorders such as sleep onset and sleep maintenance insomnia. There are several lines of evidence suggesting that nicotinic acetylcholine receptors (nAChRs) are potential candidates for CBZ actions on sleep maintenance. To test this hypothesis, a summer student could examine if nAChR mutants have defective sleep/wake pattern and/or CBZ sensitivity.
[Funding- U54NS039405]

Barreto, Jennifer, PhD – *Cellular and Molecular Substrates of Anabolic Steroids Behavioral Effects*
Reproductive-related behaviors, anxiety, cognition and addiction are known to be modulated by androgens. Besides hormone regulation of behavior, it is well known that neurotransmitters and neuropeptides are molecules underlying behavioral characteristics that are also under the influence of peripheral hormones. The long-term goal of the research program is focused in understanding the neurochemical substrates responsible for behavioral changes after exposure to synthetic androgens. Given that anabolic androgenic steroids (AAS) misuse is associated with multiple psychiatric symptoms and endocrine disruption, this study will provides critical data of the biochemical aspects of behavioral changes after androgen exposure, particularly in adolescents, where an increase misuse has been reported. We used pubertal rodents as animal models to determine the effect of chronic exposure to AAS in neurotransmitter and neuropeptide modulation in brain regions involved in anxiety, emotional learning, reproductive-related behaviors, and addiction and dependence. The brain regions currently under study are: nucleus accumbens, medial pre-optic area (mPOA), arcuate nucleus, ventromedial nucleus of the hypothalamus (VMH) and the amygdala. Preliminary data using real-time PCR and in vivo microdyalisis show that anabolic steroids modulate neuropeptide Y (NPY) receptors in the hypothalamus and glutamate levels in the amygdala. These molecules might be important substrates regulated by AAS to attain altered sexual behaviors and anxiety. In fact, we have found increased sexual motivation after AAS exposure during puberty in male rats. Other studies will use proteomics technology to determine proteins that are differentially expressed in the nucleus accumbens of AAS versus vehicle- treated animals. Since the nucleus accumbens is a key player in the mesolimbic circuitry of reward, the obtained results will be essential to find out the particular proteins associated with AAS misuse and dependence. Comparison with classical drugs of abuse will be also highlighted.
[Funding- NCRR-NIH P20RR016470]

Bernal-Martinez, Guillermo – *Psycotherapeutic intervention for depressed latino youth*
Despite progress in treating mental disorders in youth, little is known about these interventions with Latinos who are now the largest minority group in the United States. Dr. Bernal examines the impact of enhancing effective interventions through the involvement of parents in an 8 session of a psycho education intervention (PPI). This PPI is incorporated into the 12-session CBT, a Cognitive Behavioral treatment method that has already been shown effective for the treatment of adolescent depression. The study focuses on Puerto Rican adolescents and their parents. The study addresses both the efficacy and effectiveness of the intervention and treatments. Patient functional outcomes include general functioning status, family functioning, school attendance, and attrition rates. The relative value of CBT with and without the adjunctive parent intervention for improved parent functioning regarding psychiatric distress and symptoms, burden of patient illness, and work attendance is also examined. Dr. Bernal also examines the contribution of hypothesized treatment-specific change mechanisms to mediate the short-term outcome and predict long-term relapse over one year. Finnally, Dr. Bernal is also interested in identifying genetics and/or molecular biomarkers that contribute to the presentation of depression in the Latino community.
[Funding- U79SM060519]

Garcia-Arrarás, Jose E. – *Gene Profiling of Nervous Regeneration Processes*
Off-site collaborators- Andrew Cameron (Caltech)
Dr. Garcia-Arrarás has pioneered the use of the echinoderm Holothuria glaberrima to study the process of regeneration and organogenesis. His research focuses on the molecular aspects of nervous system regeneration, specifically on the genes that are important for the regeneration process to occur. His lab is

generating an expressed sequence tag (EST) database for H. glaberrima sequences obtained from three cDNA libraries, of normal radial nerve cord, and two from regenerating (5-7-days and 12-14-days after nerve cord transection). Their work is aimed at finding different profiles of gene expression and at determining the function of specific genes during the process of regeneration. Students will be involved in bioinformatics analyses to determine gene sequences, structural domains and gene characterization. In addition, the evolution of particular genes will be targeted. Finally, benchwork experiments using PCR, Northerns and Westerns applied to the nervous system regeneration will be done to fully characterize the gene's expression profile.
[Funding: NIH-1R03NS065275-01, NSF-IOS-0842870, NIH- R15NS081686]

Giray, Tugrul, **Ph.D**. – *Mechanisms of Plasticity in Honeybee Social Behavior*
Off-site collaborators-Gene Robinson (Univ. of Illinois Urbana-Champaign)
Honeybees live in a society composed of tens of thousands of almost sterile workers, a reproductive female, the queen, and hundreds of males. Studies on behavioral development of honeybee workers, queens, and males revealed a rich and expanding repertoire under neuroendocrine regulation with evolutionary roots in the solitary reproductive cycle of insects. In addition to developmental plasticity, there also is a short-term plasticity in behavior of honeybee workers under regulation of biogenic amines, under natural conditions. Dr. Giray's lab uses classic and new learning assays to study honeybee social behavior, both in the field and in the laboratory. With these, they probe the neural and molecular bases of plasticity in a mini brain. Simple questions, such as if colony conditions influence behavioral development as measured by flight muscle protein expression are important within this research program and has been answered by undergraduate research students. More recently, the lab has focused on the expression of candidate genes involved in aversive learning in the honeybee brain combining behavioral, bioinformatics, and molecular techniques. This combination of experimentally accessible social behavior and techniques to probe underlying molecular mechanisms make this research program especially suitable for undergraduate research experience.
[Funding- NIFA Competitive Start-up, NASA-IDEAS-ER-08]

Jimenez, Carlos, PhD – Central norepinephrine's (NE) system in cocaine addiction and epilepsy
My laboratory is interested in the role of the central norepinephrine's (NE) system in cocaine addiction and epilepsy. Our recent work investigates the role of the NE system in the development of cocaine sensitization, a progressive and lasting enhancement in the motor stimulant effect induced by a subsequent drug challenge. Experiments include the use of animal models, western blots, systemic and iontophoretic administration of NE agonists and antagonists together with in vivo electrophysiological recordings. Whole cell patch clamp neurophysiologic recording techniques in in vitro brain slices are also employed to understand the basic biophysical mechanisms of cocaine addiction. The completion of these investigations will provide important information of whether a dysfunction of NE's modulatory properties is an important factor in the development of cocaine addiction and could suggest possible avenues for therapeutic pharmacological interventions.
[Funding - SC1GM084854]

Koutis, Ioannis, PhD – Segmentation of neurons in 3D images
The goal is to reconstruct the global dendritic and axonal branching topology of an individual neuron. The project will study algorithms for the efficient computation of these special graphs, by essentially modifying the spectrum of an input graph without significantly altering its cuts. Then, the combination of spectral modification and classical spectral algorithms will yield fast algorithms with enhanced approximation guarantees. The project will draw from connections of spectral graph theory with graph decompositions discovered in the context of oblivious routing algorithms. In turn, it is expected that the project will have an impact on routing problems too. In later stages the project will study the theoretical limits of spectral modification. It will also examine the descriptive quality of the developed theory in the performance of algorithms and other phenomena on interesting classes of graphs, such as social or biological networks.
[Funding – NSF-CAREER, Award Number:1149048]

Lasalde-Dominicci, Jose., PhD – **Structure-Function Studies of the Nicotinic Receptor**
Off-site collaborators-Chris Gomez (Univ. Chicago)
The focus of the research in this Dr. Lasalde-Dominicci's lab is on ion channel structure, ion-channel lipid interactions and ion-channel related disorders. Their long range goals are focused on: (1) the structure function

relationships of nicotinic receptors, (2), the role of lipid-protein interaction on acetylcholine receptor function, (3) the question of how genetically abnormal ion channels give rise to neurodegeneration, (4) the regulation of neuronal nicotinic receptor assembly and oligomerization and (5) studies towards a high-resolution structure of the Torpedo AChR. These efforts might identify potential therapeutic targets, or channel-blocking agents that might benefit a broader range of neurodegenerative disorders. To accomplish these goals a wide array of techniques are employed, including: bioinformatics, protein chemistry, as well as molecular biological and electrophysiological techniques.
[Funding- NIH-R01GM098343, P20GM103642]

Maldonado-Vlaar, Carmen, PhD – *Neurobiology of Addiction*
The ongoing work in the lab has three goals. The first goal is aimed at characterizing the behavioral and molecular effects of spatial novelty on the acquisition of intravenous cocaine self-administration (SA). The second goal of the present proposal is to focus on the functional role of CREB phosphorylation within the NAc and limbic-related structures in novelty-elicited acquisition of cocaine SA. This aim includes using antisense oligonucleotide technology to examine the role of newly synthesized CREB in recognition of spatial novelty prior to cocaine SA. Findings from these proposed experiments will provide new data on the involvement of CREB regulation within Nac in eliciting novelty-induced behaviors related to cocaine reward. Finally, the last goal of the present proposal is to characterize the role of the protein kinase C (PKC) within the Nac in the phosphorylation of CREB elicited by spatial novelty effects on cocaine SA in rats. Experimental results from this goal will also contribute to establishing the specific role of protein kinase C (PKC) within the NAc in regulating CREB phosphorylation in novelty-elicited acquisition of cocaine SA. To accomplish these goals, direct brain drug microinfusions will be used in conjunction with cocaine intravenous SA and novelty protocols in rats. Protein analysis of CREB phosphorylation will be conducted in all studies
[Funding- Institutional Grant]

Melendez, Loyda, PhD – *Neuroimmunology of HIV Asociated Dementia*
Off-site collaborators- Howard Gendelmann (Univ. Nebraska)
To define the roles of the proteins affected by their interactions in the progression to CI in the presence of HAART, we studied the proteome of blood-derived monocytes obtained from Hispanic women with the most severe form of HIV-associated neurocognitive disorder—HIV-associated dementia (HAD) (Kraft-Terry et al, in revision). These experiments were performed in direct collaboration with members of Dr. Gendelman's laboratory. Underway are experiments that would employ isobaric tag for relative and absolute quantitation (ITRAQ) for expanding the analysis of the macrophage proteome in the setting of HIV-1 infection. These are also planned in collaboration with Dr. Gendelman's group. These novel techniques can be learned by undergraduate students and applied to proteomics studies in Puerto Rico for further development of quantitative proteomics in projects related to neuropathogenesis. The student will also learn about HIV cultures, ELISA, Western blots, flow cytometry analyses and 2D- DIGE.
[Funding- NIH- R01MH083516]

Miller, Mark, **PhD** – *Central Pattern Generators and the Control of Motor Behavior*
Repetitive movements, such as locomotion, feeding, and breathing are controlled by neural circuits known as central pattern generators (CPGs). Dr. Miller's lab investigates the structure and function of CPG circuits in simpler model systems, where individual neurons and their synaptic interactions can be directly examined. Their studies focus on specific neurotransmitters and modulators, such as dopamine and GABA, that control repetitive motor activity in all nervous systems, including our own. These studies will therefore disclose principles that are broadly applicable to adaptive motor activity and to the dysfunctional conditions associated with presently incurable movement disorders, such as Parkinson's Disease and Huntington's Disease.

Quirk, Gregory J., PhD – *Neural mechanisms of fear extinction*
Off-site collaborators- Suzanne Haber (Univ Rochester)
Dr. Quirk directs the Laboratory of Fear Learning at the UPR School of Medicine. Dr. Quirk's work focuses on the neural mechanism of fear inhibition, using extinction of conditioned fear in rats as a model. Over the past 10 years, work from his laboratory has defined a circuit of fear inhibition in which the medial prefrontal cortex (mPFC) inhibits the expression of fear memories stored in the amygdala. Techniques used in the Quirk laboratory include single-unit recording in behaving rats, immunocytochemistry, deep brain stimulation, and

targeted microinfusion. In addition to rodent studies, the Laboratory of Fear Learning investigates fear responses in humans and non-human primates. Dr. Quirk directs two R01-funded projects and is a site in a P50 NIMH Conte Center. His lab offers a rich and competitive environment for UPR undergraduates interested in translational and behavioral neuroscience.
[Funding- R01 MH081975, R37MH058883]

Rosa-Molinar, Eduardo, PhD – *Connectomics of the Vertebrate Spinal Cord*
In the last decade, a host of cellular mechanisms guiding synapse development, specification, and remodeling have been identified. In Dr. Rosa-Molinar's lab, a major driving force in synapses research is the development of new technologies that will assist in answering two fundamental biological questions about mixed synapses: how do they form and how are they remodeled? Work in the laboratory prepares trainees to conduct contemporary circuitry neuroscience research that will advance understanding of the relationship of synapses, single neurons, microcircuits and motor behavior. By employing neuroanatomical and imaging technologies to reveal neural circuitry and to identify emergent properties, they have identified five different neural cell types in the spinal cord of the Western Mosquitofish, Gambusia affinis that work together in a distinct rapid copulatory neural circuit. However, the neurons within this sexually dimorphic rapid copulatory spinal neural circuit are intermingled, and even neighboring neurons of the same type differ in connectivity and function. Without access to a "wiring diagram (i.e. connectome)"—a map of the neuronal connections— attempting to grasp how the spinal cord controls this rapid complex sexually dimorphic copulatory behavior is, as someone said, "akin to trying to discern how a computer chip works simply by looking at it."
[Funding- U54-NS39405]

Rosenthal, Joshua, PhD – *RNA editing of neuronal excitability proteins*
All modern biology is based on the principle that information is stored in genes and realized in proteins. It would be logical to assume that the number of genes in an organism's genome should scale with the organism's complexity. Recent genome sequencing projects do not support this hypothesis. For example, humans, flies and worms, carry a more or less common set of genes. What then is the genetic basis for complexity? RNA editing, a process that changes and increases genetic information, could play an important role. My lab focuses on a form of editing mediated by the hydrolytic deamination of adenosine residues in mRNAs. By changing adenosine to inosine, which is read by the ribosome as guanosine, codons can be mutated and protein structure and function changed. Although adenosine deamination occurs in the nervous system of all metazoans, its biological significance is poorly understood. Projects in Rosenthal's lab focus on different aspects of RNA editing, and use both squid and mammals as models. Squid are used because they edit their RNAs at an exceedingly high level and mammals are used because of their relevance to human disease. For one group of projects the interest lies in how editing regulates the function of proteins important for excitability, specifically voltage-dependent K+ channels and the Na+/K+ pump. For another the focus is on the biochemistry of the editing process. Finally, a new line of research in the lab tries to direct the editing process. The ultimate goal of this strategy is to hijack the natural RNA editing process and direct it towards correcting mutations that underlie human disease.
[Funding- 1R01NS064259]

Segarra, Annabell, PhD – *Estradiol and opioid system interactions in drug abuse*
Off-site collaborators- Marcelo Febo (University of Florida)
The research in Dr. Segarra's laboratory focuses on the interactions between sex steroids, glucocorticoids and the opioid system in modulating motivated behaviors such as drug abuse. The long term goal is to elucidate the mechanisms by which alterations in brain neurochemistry and/or synaptic connectivity result in dysfunctional motivational and reward circuits. Since many of these motivated behaviors are sexually dimorphic, the experiments focus on the developmental window when this dimorphism is established and the factors involved. Current research efforts are concentrated in studying the interactions between estradiol and the opioid system in modulating the behavioral response to cocaine. By studying the interaction between limbic brain neurochemistry and plasma steroids in normal and aberrant motivated behaviors, our laboratory can obtain physiologically relevant information that may contribute to elucidate the mechanisms involved in many psychiatric disorders, and to identify gender bias. A better understanding of the factors that lead to differential sensitivity to drugs of abuse is crucial for the development of pharmacotherapy that is equally effective in males and females.

[Funding- U54-NS39405, U01-NS063555-01]

Szeto, Ada, PhD – *Modulation of neuronal nicotinic receptors*
Off-site collaborators- Marina Picciotto (Yale Univ)
Characterization of sub-type specific modulators of neuronal nicotinic receptors (nAChR) and their effects on intracellular signaling. Dr. Szeto is interested in elucidating the downstream signaling pathways initiated by activation of different subtypes of neuronal acetylcholine receptors (nAChR), in particular alpha4beta2 and alpha7 nAChRs. Previous studies in other laboratories have shown that these receptors are involved with enhancing cognitive functions, neuroprotection, drug addiction, the inflammatory response, and loss of these receptors have been associated with neurodegenerative diseases. A collection of cell lines stably expressing nAChRs will be used to assess modulators of these receptors and primary cultures of neuronal cells will be used to determine the signaling pathways activated by nAChR agonists. The undergraduate student will be sent to Dr. Marina Picciotto during to the summer to extend this work into the in vivo animal model.
[Funding- P 20 RR16470, 2 U54-NS39408]

Vega, Irving E., PhD – Epiproteomics Changes Underlying Neurodegeneration
Off-site collaborator – Steven Arnold, PhD (UPENN)
The microtubule associated protein tau plays a central role in neurodegeneration and has been considered a pathological hallmark in Alzheimer's disease. However, the molecular mechanisms underlying tau-mediated neurodegeneration are poorly understood. Studies in Dr. Vega's lab are aimed at identifying and characterizing proteome changes underlying tau-mediated neurodegeneration. In combination with genetic and/or epigenetic phenomena that may promote a predisposition to develop tauopathy, changes in proteome dynamics may exert a rapid response to environmental cues or insults. Proteome dynamics could be defined as transient changes in post-translational modification, interactions, function and/or subcellular localization. However, if these epiproteomic changes are sustained, by environmental conditions or insults, they could lead to cellular transformation or disease state. Taking this concept as a research approach the lab has identified specific post-translational modifications, protein-protein interactions and protein level changes associated to tau-mediated neurodegeneration. The characterization of the identified epiproteomic changes paves the way to a better understanding of the mechanism associated to neural death in tauopathies.
[Funding: 1R15NS081593, 1R25 NS080687]

Off-Site Collaborators at Mainland Universities
During the past four years, we have strengthened and expanded the collaborations established with neuroscientists and T32-Sponsored program directors. This has been possible due to the excellent performance of NeuroID students during off-sire summer research experiences at these institutions. The letters of support of neuroscientists that form part of a network accessible to the NeuroID students as included in the Appendix. As described above, there are three types of summer research mentors: 1) summer internships in the laboratories of T32 associated scholars, 2) Hispanic (mainly Puerto Rican) researchers in mainland universities that can serve as mentors for summer students and 3) off-site researchers that are actively collaborating with the on-site research mentors. These neuroscientists will also offer career mentoring to the selected students and they have agreed to participate in our NeuroPizza nights as guest scientists.

Off-site research collaborators and mentors

RESEARCH COLLABORATORS		
University	Mentor	On-site collaboration
Brandeis Univ	Press, J	Agosto, JL
Brandeis Univ	Griffith, L	Agosto, JL
Caltech	Cameron, A	Garcia-Arraras, JE
UPENN	Arnold, S	Vega, I
Univ Texas, Austin	Atkinson, N	Agosto, JL
Univ. Massachusetts	Lemos, J	Treistman, S
Univ. Nebraska	Gendelman, HE	Melendez, L
Univ. Rochester	Haber, SN	Quirk, G

Yale Univ	Picciotto, M	Szeto,AC
Univ. of Illinois	Robinson, E	Giray, T
T32-PROGRAMS		
Univ	P.I.	
Harvard Univ.	Born, RT	
UPENN	Lucki, I	
Univ Colorado	Restrepo, D	
Northwestern Univ	McBride, D	
Univ Utah	Keefe, K	
Scripps	Eastmond, D	
MIT	Sassanfar, M	
HISPANIC ROLE MODELS		
Univ	Mentor	
Yale Univ	Colon-Ramos, D	
Univ Vermont	Vigoreaux, J	
Tufts Univ	Rios, M	
Univ Florida	Febo, M	
UC Davis	Navedo, M	

D. PROGRAM PARTICIPANTS

Participating Institutions

Undergraduate students will be recruited from four institutions in the San Juan metropolitan area: UPR-RP, Interamerican University, Metropolitan University and Sacred Heart University. The University of Puerto Rico, Rio Piedras Campus is the main site of the NeuroID program and from where most of the students have been recruited (70%). Students from the other three primarily undergraduate institutions have been also recruited during the first four years of the NeuroID program (30%). Although these four institutions provide a very large pool of students, our plan is to extend the program in the following years to include students from other undergraduate institutions in the San Juan Metropolitan Area, in order to channel more students interested in the Neurosciences into graduate degrees. A brief description of these institutions is provided below.

The University of Puerto Rico-Rio Piedras Campus (UPR-RP) - The Rio Piedras Campus (UPR-RP) of the University of Puerto Rico was established in 1903 as Puerto Rico's first public institution of higher education. UPR-RP is the largest and multidisciplinary campus of the UPR system, featuring the most extensive research and library resources. Located in the metropolitan area of San Juan, it is recognized as the top-rated center for higher education in Puerto Rico. The programs offered include Bachelors degrees in 74 majors, Masters degrees in 46 areas, PhDs in 14 subjects, and 8 certification and professional degrees. The Campus is ranked as an RU/H Institution (Research University with high research activity; CFAT 2006). The 2013 NSF National Center for Science and Engineering Statistics reported that the UPR-RP occupied the second position (closely preceded by the UPR-Mayaguez Campus) in the list of baccalaureate institutions from where Hispanics that obtained a PhD graduated from, out-ranking universities such as UCLA, UCSD, UC-Berkeley, Univ of Florida and Univ of Texas.

Currently, the student body at UPR-RP represents over 40 percent of the system's total enrollment. The College of Natural Sciences (CNS) of UPR-RP enrolls about 2700 undergraduates pursuing degrees in Biology, Chemistry, Environmental Sciences, General Sciences, Mathematics, Physics and Computer Science, and transfer programs (to the Medical Sciences Campus). About 300 graduate students pursue Master's degrees in Biology, Math, Physics, and Chemistry and Ph.D. degrees in Biology, Chemical Physics, and Chemistry, Mathematics, and Computer Science and Engineering. The number of research faculty in the Biology and Chemistry departments is 45. The Biology Department is comprised of 27 research faculty. Thirteen of these research faculty members are supported by funds from federal agencies such as NSF and/or NIH. Eight research faculty members have active research projects in neuroscience that range from social

behavior, addiction, circadian rhythm, cognition, neural development, neurochemistry and neurological disorders. The Department of Psychology is under the College of Social Sciences. Today, this department is composed of 35 faculty members and enrollment of 749 undergraduate students. The Department of Psychology offers Masters Degrees since 1966. A Ph.D. program was established in 1986. The research interests of the faculty are very diverse and ranges from the history of psychology, counseling and social/risk behavior to biomedical areas such as cognition, addiction and depression. The collaboration between the Departments of Psychology and Biology has been increasing due to the interdisciplinary approaches directed to answering behavioral, cognitive and psychosocial scientific questions from the communities to cellular/molecular component.

Inter American University of Puerto Rico at Bayamón Campus (IAUPRBC) - is a private, non-profit Hispanic-serving higher education institution that offers 35 undergraduate programs and master degrees in Science and Technology. The campus, located in north-central Puerto Rico, was founded in 1956 as a liberal arts college and today has a student body of over 5,300 students. The Natural Science department has over 14% of the campus' student enrollment. Recently, the IAUPRBC obtained approval from the Puerto Rico Council on Higher Education to offer BS degrees in Biotechnology, Bioinformatics, and Environmental Sciences. These programs currently represent 10% of the enrollment in the Natural Sciences department. Ninety-nine percent (99%) of the students attending at IAUPRBC are Hispanic, 84% come from the Bayamón area, and **many are members of low-income families**.

In 1997, IAUPRBC moved to its current locale: a campus designed and equipped to incorporate new technologies in both the curricula and the learning processes. These facilities significantly empower IAUPRBC to accomplish its mission. Inherent to the focus and mission of this Campus was the development of a thriving research community that would perform novel research using the latest technologies. Although the IAUPRBC has primarily been an Undergraduate Teaching Institution, this status is being radically changed by the development of new policies that facilitate and institutionalize research as a core value of the Institution. The new policies have facilitated the hiring of new investigators, the preparation of research laboratory spaces, and have provided faculty with release time from teaching to perform research and write proposals. These efforts are already reaping results. The IAUPRC has federally funded opportunities for undergraduate research through grants such as the Alliance for Minority Participation (AMP) from NSF, and funds for science projects, from agencies such as NASA-Puerto Rico Space Grant Consortium, NSF, DoD, and NIH.

Metropolitan University (UMET) - is a dynamic private university located in the metropolitan area of San Juan, Puerto Rico. UMET is part of the Ana G. Mendez University System (AGMUS) which is composed of four universities (Universidad del Turabo, Universidad del Este, Universidad Virtual Ana G. Mendez and UMET) and a PBS television channel. All its campuses are distributed throughout Puerto Rico, Florida and Maryland. UMET has approximately 14,000 students distributed throughout its main campus and university centers located in Bayamon, Jayuya, Comerío and Aguadilla. It has five academic units, School of Environmental Affairs, School of Education, School of Business Administration, School of Humanities, Social Sciences and Communications, and the School of Science and Technology.

The School of Science and Technology (SST) has been in existence since the birth of UMET in 1980. Since its instalment, it has been offering two bachelor degrees, one in biology and another in computer science. It also offers undergraduate science programs in the areas of biology, cellular and molecular biology, chemistry, environmental science, computer science and bio mathematics. Students complement their academic education through undergraduate research experiences of various kinds to support their training until graduation. UMET faculty members provide research opportunities for the students at all levels. These experiences deliver students with opportunities to apply their content knowledge, to analyze real life problems, learn about the importance of excellent communication skills as well as team work. The students involved in research train other students in basic laboratory techniques and serve as role models to their peers. Students also participate in competitive summer research experiences through different sponsored programs in Puerto Rico and the Mainland United States. The students participate in these experiences and present their research projects at local and national meetings; most students participate in the SACNAS Annual Meeting and in the ABRCMS each year.

Sacred Heart University of Puerto Rico (SHUPR) - is a private and selective university, with small classes, engaged professors, and an active campus life. SHUPR was **founded in 1880**and in 1907 moved to its present location, in what was then a suburban neighborhood of large homes and rolling grounds. Since then, San Juan has grown around the University's well-shaded 33-acre campus, and the University has grown into the city through its rich cultural program, service projects, and the senior-year capstone experience. SHUPR offers both associate and bachelor's degrees, in fields ranging from nursing to theatre, from accounting to public relations, and a number of combined programs that allow you to earn both a bachelor's and a master's degree (or higher) in a single program. The Department of Natural Sciences combines liberal arts experiences with those of science and technology, providing knowledge for students in the Department and in other fields. The Department encourages critical and creative thinking, the development of communication skills, team work and the active participation by faculty and students in the academic process. The program educates professionals in the field of Natural Sciences to address current demands of our society, to work effectively in their fields, to be involved in research activities, to use critical judgment in decision making and to continue advanced studies. The program offers a Bachelor's Degree in Sciences with Majors in Biology, Biotechnology, Computer Science, General Natural Sciences, Nursing, Chemistry and a Bachelor of Arts and Sciences Degree in WEB Technology. The Department has modern facilities and equipment, such as an Artificial Intelligence Laboratory, Informatics Laboratory, Chemistry Laboratory, Laboratory of Cellular and Molecular Biology and Culture Room, a Resource Center for the Learning of Biology, a Science and Mathematics Resource Center, and a Nursing Laboratory General Natural Sciences.

Student Participants

The NeuroID program selects undergraduate students at the end of their sophomore year from any of the four participating institutions. However, other students can also apply, as long as they still have at least two more years of academic work toward their bachelor degree. The combination of these four institutions provides a very diverse pool of students, in terms of gender, race (e.g. white and black Hispanics), social status and those with disabilities. Additionally, undergraduate students are selected from different academic backgrounds, such as Biology, Chemistry, General Sciences and Psychology. Students from the Computer Science Department will be incorporated to the NeuroID program during the next funding cycle. Application form was developed in which the students answer three different questions: career goals, understanding of a research career, interests in neuroscience. The application form is available on-line for easy access to all interested students [http://neuroid.uprrp.edu/applicationform.htm]. The students should have a GPA greater than 3.2 (4.0 scale), and summit, at least, two letters of recommendations. It is expected that students are "true" sophomore; therefore, the academic transcript is evaluated against their respective curriculum sequence. After the evaluation of the academic credentials, letters of recommendation and answer to the questions the students, the pre-selected students are invited for an interview. The selection of the students is decided based on their performance in the interview process.

E. Institutional Environment and Commitment

Research Facilities

The research resources and facilities available are described in detail in the *Facilities & Other Resources* section. Briefly, the research training will be carried out at three different facilities of the UPR system, namely UPR-RP, UPR-Medical Sciences and Institute of Neurobiology. The laboratories are equipped with the necessary instrumentation to support the corresponding research activities. The research endeavor at the UPR is also supported by state-of-the-art core facilities in the area of genomics, proteomics and imaging. Research personnel at these core facilities provide training to all users and help in the experimental designing, analysis and validation of the results obtained. Mentors of the NeuroID participants will coordinate the use of the corresponding instrumentation with the directors and personnel at the core facilities, as required. For example, Dr. Vega, as director of the Proteomics Facility, developed a service request form that allows the potential user to describe his/her research expectations. That initiates a conversation that goes from sample preparation to experimental strategies for the validation of results obtained. Both program directors have great collaborative relationships with directors and personnel at all the core facilities available. In addition to the research mentor, we serve as liaisons to coordinate the use of the instrumentation available.

Administrative Support

Every institution has its own administrative "culture." Dr. Vega, as Assistant Dean for Research, contributed to develop a new Researcher Support Center, where accounting, human resources, finance and finance-auditor are located at the Office of Sponsored Programs in the Deanship of Graduate Studies and Research (DGSR). The centralization of these campus-level personnel simplify the administrative communication between the unit (e.g. Department of Biology), College Dean's Office (e.g. College of Natural Sciences) and the Office of Sponsored Programs (e.g. DGSR). Understanding the administrative "culture" at the UPR-RP, Dr. Vega has an effective communication with the different components that constitute our administration. Due to Dr. Vega's management skills and interpersonal expertise, and thanks to the support obtained from Mrs. Coral Cintron (grant administrator) and clerical work from different part-time personnel, the NeuroID program has run on schedule and on budget. Therefore, in the next funding period we would like to sustain the same administrative budget.

Importantly, the institutional leaders, at different administrative levels, involved or responsible for the proper management of external funds at the UPR-RP have pledge to continue the support provided for the past four years to the NeuroID program. Their support is certified in attached letters (see letters of support). These administrative officials are:

Department of Biology – Dr. Carmen Maldonado-Vlaar, Chair of the Department of Biology, pledged to continue "providing the infrastructure, resources and personnel within the laboratories and the academic settings to allow an effective training of these students. In addition, we will provide clerical and technical assistance in the coordination of training activities as well as the organization of seminars and workshops related to these activities."

College of Natural Sciences – Dr. Rafael Arce, Dean of the College of Natural Sciences, pledged to continue the administrative support and will cover the cost of food given at the NeuroPizza Nights (estimated at $1,000/academic year).

Deanship of Graduate Studies and Research – Dr. Aurora Lauzardo, Dean, Deanship of Graduate Studies and Research, stated: "Sponsored Program Unit, at the Deanship of Graduate Studies and Research, will continue supporting the NeuroID program during this second funding cycle. The support consists of clerical, administrative and finance personnel dedicated to enhance the efficient use of external funds and support the principal investigators to be in compliance with the rules and regulations established by the federal agencies. We will work together to facilitate the contract of students and personnel required to enhance the success already achieved by the NeuroID training program."

University of Puerto Rico-Central Administration – Dr. José Lasalde, Vice President of Research at the UPR; "as principal investigator and Vice President of Research of the University of Puerto Rico, I pledge to continue supporting the administration of the NeuroID program and hosting student in my laboratory during the new funding cycle. The University of Puerto Rico is committed to provide the infrastructure and resources required to fulfill all the goals established by successful programs such as NeuroID."

F. Diversity Recruitment and Retention Plan

Diversity Recruitment

1) **Student Pool and Demographics** – as explained above, students are selected from four different university campuses, the UPR-RP, Interamerican University, Sacred Heart University and Metropolitan University. The advertisement strategies are discussed below in the ***Dissemination*** section. The targeted students were those in the departments of biology, chemistry, general science, biotechnology and psychology. However, in the current funding period a student from Forensic Sciences was selected. Yvis Ortiz is in the 2013 cohort and will do her off-site summer research internship at Northwestern University, where she will continue developing her skills in neuropathology. She wants to purse a degree in Forensic Neurosciences and we have a manuscript about a case study that will be submitted this coming summer. In addition, during this new funding cycle, we will recruit students from the Computer Science Department. As the table below illustrates, we have a large pool of students to select from every year.

During the current funding period, we built a very diverse group. In addition to coming from different disciplines, the selection from different universities in the metropolitan San Juan provides another dimension of diversity since they bring their differential "institutional idiosyncrasy." The socio-economical differences are also illustrated in the table below. 32% of the selected students come from the public school system, usually representing lower-income families. We got students from wealthy families and others that are the first member of their family to reach university level. Importantly, 62% of the selected students were women, which is representative of the current undergraduate student population. In terms of race, the students selected include black-Hispanics and white-Hispanics. At present time, a student with disabilities has not applied to the program. Nevertheless, we can select from a very diverse student pool.

Student Pool and Recruitment to the NeuroID Program

	Total Students	Sophomores	Applied	Selected	Success Rate
University of Puerto Rico- Rio Piedras					
Biology	1293	363	45	16	36%
Chemistry	481	107	11	2	18%
General Sciences	592	134	0	0	-
Psychology	749	169	29	8	28%
Computer Sciences	115	29		N/A	
Interamerican University			N/A		
Natural Sciences	530	189	10	4	40%
Metropolitan University					
Science and Techonology	442	153	3	1	33%
Sacred Heart University					
Natural Sciences	550	165	6	3	50%
STUDENT POOL	4,752	1,309	104	34	-

Selected Students Demographic information			
	Male	Female	
Gender	38%	62%	
	Private	Public	
High School attended	62%	38%	

2) Selection – the selection criteria is based on two major aspects, academic performance and aptitude toward a research career in neurosciences. Specifically, the applying students are expected to have at least a 3.2 GPA based on an official transcripts, two letters of recommendations and an essay on future career goals and interest in neuroscience. A list of researchers associated to the NeuroID program would be provided to the applicants. The applicants will need to specify three research laboratories from a list of designed mentors, with whom they are interested in performing their research work, indicating their preference in order of interest. While some prior research experience is preferred, this will not be used as exclusion criteria. Applications are due on March 15th, the spring semester of the applicant's sophomore year. The selected students start their first summer internship on-site the following first Monday of the month of June.

The Admissions Committee will be composed by Dr. Vega (PD), Dr. Colón (Co-PD) and the members of the Student Recruitment and Retention Advisory Committee (see Advisory Committee) that is formed by representation from the partner institutions. The applications will receive a score based on the following criteria: GPA (10 pts.), strength of letters of recommendations (10 pts) and candidate's assay on his/her future career goals and interest in neuroscience (10 pts). The maximum score that the applicant can obtain is 30 points. The applicants who place in the top 16 will be invited for personal interviews with the program directors, senior students of the NeuroID program and the researcher that the applicant indicated in his/her

application as the prefer research topic. ***We have also used this interview process as training tool for the senior NeuroID students in order to have experience from the interviewer point of view, which help them better identify common mistakes in an interview. This activity was evaluated as excellent.*** The top eight (8) students will receive invitations, to join the NeuroID program, within a week of their interviews.

Retention Plan

The NeuroID Program reports a 70.6% retention rate; 12 out of 17 in the first two cohorts graduated from the program. Three of the five students that did not finish the NeuroID program were for reasons associated to career choices; medical school, pharmacy and veterinary. However, two of these five students were drop-outs due to personal issues. As program directors, we believe that these two students could be retained if they develop emotional competence. Dr. María Jimenez is an additional resource that the NeuroID program provides to the selected students (see Advisory Committee). Dr. Jimenez will be in charge of developing workshops and seminars on techniques to manage stress and anxiety at the personal and professional level. In addition to the seminars and workshops, Dr. Jimenez will provide counseling and psychological support to all students in the NeuroID program (see letter of support). In conjunction with Dr. Jimenez, our collaborators at the partner institutions are crucial to provide the academic (curriculum) guidance that the students need.

The NeuroID program has also integrated strategies to create a sense of group identity and team work among the students. For example, the NeuroID program has an official polo shirt that we used at the ENDURE meetings during SfN and at local activities. Since then, each cohort designed every year different t-shirts for the “Brain awareness week.” Team work is very important in retention due to the peer-mentoring that naturally develops. The students exchange personal statements and reports to provide feedback to each other. They also take courses together so that they can study as a group (collaborative learning). We also separate the last NeuroPizza Night of the semester for us. At this NeuroPizza, we talk about pending deadlines, the anxiety of the application process and the different training activities.

G. Plan for Instruction in the Responsible Conduct of Research

We plan to continue with the established wide-ranging training plan in Responsible Conduct of Research that includes on-line resources, on-site and off-site workshops and invited expert speakers. The UPR-RP licensed the Collaborative Institutional Training Initiative (CITI) to establish an on-line curriculum in Responsible Conduct of Research. This on-line curriculum includes institutional required and elective modules in topics such as Research Misconduct, Responsible Conduct of Research, Data Management, Authorship, Using animal subject in research, research involving human subjects and more. NeuroID students are required to complete all the (8) required modules and present the certificate of completion.

During the first summer research internship on-site, the students are required to complete the on-line course requirement and receive an ethic seminar during the first day that includes responsible conduct in research, with emphasis on values in science, plagiarism, experimental techniques and the treatment of data, error and negligence in science; concepts in neuroethics are also introduced. In addition, the office of Research Ethics and Compliance at the Deanship for Graduate Studies and Research (http://graduados.uprrp.edu/nsf-eese/default.html) coordinates ethic seminars and workshops throughout the academic year. This office dedicates federal and institutional funds to provide seminars, workshops and symposiums about research ethics and responsible conduct in research. Although this workshop will be opened to all students and faculty members, it is required for NeuroID’s participants to participate in one seminar per year in the program. Additionally, the NeuroID students participate at the annual Society for Neuroscience (SfN) meeting during their two year tenure in the program. The students are required to include in their SfN meeting agenda two ethics seminars or workshops, usually we participate as a group.

Lastly, the NeuroID program invited experts in ethics such as Dr. Stephanie Bird. Dr. Bird is internationally-known speaker and co-editor of Science and Engineering Ethics, a journal that explore ethical issues in science and engineering. Her work focusses on the development of educational programs in ethics for scientists and engineers. During her four-day visit, Dr. Bird gave several seminars to undergraduate and graduate students, faculty members and other research personnel. Recently, we had Inge Auerbacher as our distinguished guest. Inge is a holocaust survivor that tells her life story in the popular acclaimed book titled *I am a star: Child of the Holocaust*. She also presented a documentary about her book titled *Finding Dr. Schatz:*

The Discovery of Streptomycin and a Life It Saved. After the documentary, we had a roundtable discussion about mentoring, mentor-mentee relationship, authorship and research involving human subjects. The NeuroID students rated both activities as excellent.

H. Evaluation Plan

The Center for Evaluation and Sociomedical Research (CIES, by its initials in Spanish), Division of Community Services-Graduate (CIES-DSC) School of Public Health, University of Puerto Rico, serves as the external evaluator of the NeuroID program. CIES-DSC has conducted evaluation and research projects funded by government agencies on the mainland and the island, as well as by private human service organizations seeking to use the evaluation in order to improve their policies or programs. Since 2010, the CIES-DSC has served as the external independent evaluator of NeuroID. The evaluation activities completed during 2010-2014 have place the NeuroID in an advantageous position, as we already developed the logic model, evaluation plan and most of the evaluation instruments, including baseline metrics obtained before the selected students are exposed to NeuroID training activities. Moreover, the NeuroID students' research experiences, collaborations and productivity have been successfully documented. The evaluation data has demonstrated that the NeuroID Program has been implemented as planned, targeting its intended population and fulfilling most of the established goals. There is evidence of objectives accomplished, activities performed, support provided, to whom and when they were delivered. According to the evaluation data, the program has a high level of acceptance and satisfaction among its participants. Outcome evaluation showed that instruction derived from academic activities as well as the intensive research training contributed to develop and strengthen participants´ research skills and knowledge as evidenced by program activities assessment and participant opinions. Moreover, the Program has strongly influenced most of the NeuroID trainees' decision on pursue a career in neurosciences.

The main goal of this evaluation is to determine NeuroID program effectiveness in terms of the implementation of the activities planned to increase diversity in the neurosciences. The program evaluation results will provide input in order to assess the following indicators: NeuroID trainees' research experience, scientific productivity (e.g. authorship in publication; oral and poster presentations), career development and progression (e.g. application/enrollment in graduate program, completion of PhD degree) and employment in the neuroscience field. The NeuroID logic model has been developed to support the overall goal of the program. A logic model is a systematic and visual way to present and share program understanding of the relationships among the resources (inputs) that the program has to operate, planned activities (outputs), and the desirable short, medium and long term outcomes (Kellogg, 2004). Effective projects evaluation does more than collect, analyze, and provide data; it makes it possible for the NeuroID leadership to gather and use information, strategic planning and tracking processes; and continuous quality improvement.

The DSC-CIES evaluators will use mixed-methods (qualitative and quantitative) to collect data. Data collection strategies will include the design and development of students tracking templates; review of program documentation, self-administered surveys, focus groups, and observations. Overall, the evaluation instruments will focus in measure satisfaction, utility, relevance, impact, and benefits obtained through participation in the program. As well as identify program strengths and areas for improvement. Most of the evaluation instruments have been developed in the current grant cycle and will continue to be implemented. The data collected from the evaluation instruments will be organized and analyzed using Excel, SPSS Statistics 18 software package, and Surveymonkey.com software. As an important part of quality assurance, is expected that collected data shall help in sharpening the focus of the project goals and objectives.

An evaluation plan was also developed in collaboration with the program directors to track and measure the NeuroID goals. The evaluation plan outlines the main goal, specific objectives, indicators and instruments that would be used in the process and outcome evaluation for the new NeuroID program proposal. In collaboration with the NeuroID leadership this plan will be reviewed annually to ensure the inclusion of indicators, measures, sources of data and timeliness. The DSC-CIES evaluators will meet periodically with the program leadership to discuss program accomplishments, identify weakness and areas for improvement.

1) Research Skill: Determine the appropriate laboratory protocols to conduct experiments, identification of gap-in-knowledge, and development of plausible hypothesis, manipulate the laboratory instruments and equipment properly, and prepare reports about the investigation work.

2) Scientific Competencies: Demonstrate capacity to carry out experiments with a minimum of supervision, demonstrate ability to handle laboratory instruments, adopt the scientific method to carry out a research project, demonstrate ability to networking and establish collaborative research work, and demonstrate proficiency in communicating research results within the scientific community and general community.

3) Milestones: Understand the process of mentor selection, understand the process of applying for a pre-doctoral fellowship, demonstrate proficiency in scientific writing, demonstrate proficiency in oral presentations and demonstrate emotional competence.

I. Dissemination Plan

The NeuroID program established a website (neuroid.uprrp.edu) and developed a group in the social network Facebook (https://www.facebook.com/groups/282332801800473/). Both served to effectively communicate with NeuroID members and general public. The Facebook group is the most used source of communication by the NeuroID members, where they post photos of their community outreach activities, share relevant news and scientific articles and coordinate activities. Drs. Vega and Colón use this social network tool to post relevant articles, communicate with students, advertise NeuroID sponsored activities and for recruitment purposes. The NeuroID students mainly use the website to download official documents. However, this website also serves as a recruitment tool for the broad spectrum of universities involved in the NeuroID program. The NeuroID program will be also announced via the CienciaPR website (http://www.cienciapr.org/). CienciaPR is an internet tool that unites (mostly) Puerto Rican Scientists around the world, sharing news about publications, funding opportunities, awards and information about training activities. Its founder, Dr. Daniel Colón (see letter of support), is a collaborator of the NeuroID program. In addition, flyers with information on the program will be prepared and distributed in the participating institutions. In particular, courses with large freshman and sophomore student population will be targeted. We will also establish direct communication with the Office of Students with Disabilities to promote the NeuroID program and identify potential candidates. Although we expect that applications mainly originate from sophomores in their spring semester, advertising to freshmen will hopefully increase their interest in the program for the coming years.

Our liaisons at the primarily undergraduate institutions (see letters of support) will themselves help promote and advertise the program among their student population. The current NeuroID participants carried out recruitment seminars at their respective campuses, serving as ambassadors of the NeuroID program. All students evaluated these recruitment seminars as important or very important for the NeuroID prorgam. Dr. Vega participated at these recruitment seminars.

The results obtained from the established Evaluation Plan will be submitted for publication at peer-reviewed journals. Dr. Colón will work together with the external evaluators to gather the results and write the manuscripts. This new funding cycle will contribute to increase the n-value and evaluate the long-lasting effect of the NeuroID program while the students are in graduate school.

PROGRESS REPORT PUBLICATION LIST

Published articles (NeuroID participants in bold)

Ferrer-Acosta Y, Rodriguez-Cruz EN, Orange F, De Jesus-Cortes H, Madera B, **Vaquer-Alicea J**, Ballester J, Guinel M JF, Bloom GS, Vega IE (2013) EFhd2 is a novel amyloid protein associated to pathological tau in Alzheimer's disease. J. Neurochem. 125:921-931.

Chorna NE, Santos-Soto IJ, Carballeira NM, Morales JL, de la Nuez J, **Cátala-Valentin A**, Chornyy AP, Vázquez-Montes A, De Ortiz SP (2013) Fatty acid synthase as a factor required for exercise-induced cognitive enhancement and dentate gyrus cellular proliferation. PLoS One 8(11):e77845.

Nogueras-Ortiz CJ, De Jesús-Cortes HJ, **Vaquer-Alicea J**, Vega IE. (2014) Novel autoimmune response in a tauopathy mouse model. Front Neurosci. 10;7:277.

Raio CM, Brignoni-Perez E, Goldman R, Phelps EA (2014) Acute stress impairs the retrieval of extinction memory in humans. Neurobiology of Learning and Memory, Feb. 4 http://dx.doi.org/10.1016/j.nlm.2014.01.015

Ortiz-Rosario A, **Berrios-Torres I**, Adelib H, Buford JA (2014) Combined corticospinal and reticulospinal effects on upper limb muscles Neurosci Lett. 561:30-34.

Submitted articles (NeuroID participants in bold)

Bravo-Rivera, C., Roman-Ortiz, C., **Brignoni-Perez, E.,** Sotres-Bayon, F. and Quirk, G. Neural structures mediating expression and extinction of platform-mediated avoidance. *J.Neuroscience* (2014), (under peer review).

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National Science Foundation, National Center for Science and Engineering Statistics. (2013) Women, minorities and persons with disabilities in Science and Engineering: 2013. Special Report NSF 13-304.

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Place AW & Wood GS (1999) *A case study of traditionally underrepresented individuals' experiences in a doctoral program*. Journal for a Just and Caring Education 5: 442-455.

Schultz PW, PW, Hernandez PR, Woodcock A, Estrada M, Chance RC, Aguilar M and Serpe RT (2011) Patching the pipeline: Reducing Educational Disparities in the Sciences Through Minority Training Programs. Educational Evaluation and Policy Analysis 33: 95-114.

Villarejo, M., Barlow, A.E.L., Kogan, D., Veazey, B.D. & Sweeny, J.K. (2008). *Encouraging minority undergraduates to choose science careers: career paths survey results*. CBE—Life Sciences Education 7: 394–409.

Institutional Support and Commitment

Dr. Carmen Maldonado-Vlaar, Chair of the Department of Biology

Dr. Rafael Arce Nazario, Chair of the Computer Science Department

Dr. Rafael Arce Quintero, Dean of the College of Natural Sciences

Dr. Aurora Lauzardo, Dean of the Deanship of Graduate Studies and Research

Dr. José Lasalde, Vice President of Research, UPR Central Administration

UNIVERSIDAD DE PUERTO RICO
Recinto de Rio Piedras
Facultad de Ciencias Naturales
Departamento de Biología
PO Box 23360
San Juan, Puerto Rico 00931-3360

UNIVERSITY OF PUERTO RICO
Rio Piedras Campus
Faculty of Natural Sciences
Department of Biology
PO Box 23330
San Juan, Puerto Rico 00931-3360

May 12, 2014

Dr. Irving Vega
Associate Professor
Department of Biology
University of Puerto Rico
Rio Piedras Campus

Dear Dr. Vega:

It is my great pleasure to write this letter in support of your competitive renewal of the Neuroscience Research Opportunities to Increase Diversity (NeuroID) to the NIH ENDURE Program. During these last four years, NeuroID program has become a successful and model program for undergraduate Neuroscience research in our institution and beyond. The work and dedication of its project directors, staff, mentors and students have been outstanding. For example, one hundred percent (100%) of NeuroID fellows on each cohort have successfully achieved placements in summer research internships in *Research One* institutions in a wide range of neuroscience topics. In addition, almost sixty percent (60%) of the NeuroID fellows have been accepted to Neuroscience graduate programs at MIT, The Scripps Research Institute, University of Utah, Washington University, Georgetown University, Baylor College of Medicine and UMASS-Amherst. Moreover, the NeuroID program has achieved a very high retention rate of seventy five percent (75%) throughout this initial funding cycle. These programmatic achievements resonate to other academic institutions within our UPR system by engaging students from other campuses to participate in the program.

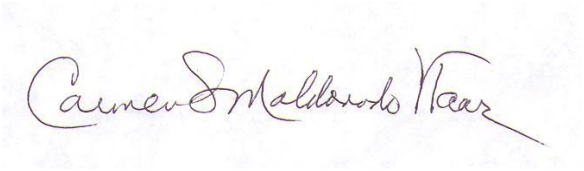
As a mentor of two NeuroID students, I have witnessed first hand how the students enrolled in the program develop to a highly trained and motivated young neuroscientist. Both my mentees have received excellent scientific training, acquired survival skills for scientists, participated in seminars of innovative topics in Neuroscience, received training in Bioethics and proper scientific conduct, got involved in community and outreach initiatives and developed a strong sense of partnership among NeuroID fellows. In my opinion, all these formative experiences are instrumental in shaping well-rounded and highly trained undergraduate scientists that are committed to the advancement of neuroscience and advocate for innovation and change within the science community.

Over a period of 25 years our Department of Biology has been committed to the training of undergraduate and graduate students in the field of Neuroscience. We continue to develop strong and productive research agendas aimed at further studying Neuroscience questions such as the neurobiology of drug addiction, circadian rhythms, regeneration of the nervous system, Alzheimer's Disease, learning and memory processes, neurodevelopment and biophysics of cholinergic receptors. If renewed, the present proposal will continue to strengthen our ongoing efforts to increase and develop the training of future Puerto Rican neuroscientists. The Department's support

to this second funding cycle will once again consist primarily in providing the infrastructure, resources and personnel within the laboratories and the academic settings to allow an effective training of these students. In addition, we will provide clerical and technical assistance in the coordination of training activities as well as the organization of seminars and workshops related to these activities. Also, we look forward to the implementation of the proposed research and curricular approaches in the field of quantitative and computational biology. The proposed collaboration between our Biology Department and the Computer Sciences Department in creating new-shared coursework will significantly promote synergism between faculty and students from both departments.

As a neuroscientist myself and mentor of dozens of undergraduate students, I am confident that this competitive renewal of NeuroID is a step forward to empower and motivate our undergraduate students in pursuing a careers in Neuroscience. It is important to note that NeuroID is being emulated elsewhere as a successful research-training program that thrives to enhance the diversity within the Neuroscience community worldwide. I am certain that given the opportunity and funds this great initiative will continue to provide our young neuroscientists with a scientific and academic venue to excel in their field of interest and become role models to future generations.

I enthusiastically support this proposal without any reservation.



Carmen S. Maldonado-Vlaar, PhD
Professor and Chair
Department of Biology

DEPARTMENT OF COMPUTER SCIENCE
College of Natural Sciences
University of Puerto Rico
Río Piedras Campus
http://ccom.uprrp.edu

May 20, 2014

Dr. Irving Vega
Associate Professor
Department of Biology
University of Puerto Rico
Rio Piedras Campus

Dear Dr. Vega:

I am pleased to write this letter of support for the *Neuroscience Research Opportunities to Increase Diversity (NeuroID)* undergraduate training program. I am aware of the success NeuroID has had over the past four years, training undergraduate students and placing them in top tier neuroscience graduate programs at US universities. Your invitation to establish a collaboration in which students from the Computer Science (CS) Department can benefit from the NeuroID program coincides with our interests to expand and strengthen our Department's interdisciplinary scope. In addition to the research training the NeuroID provides, this collaboration provides us the opportunity to work together developing courses that will improve the Biology and CS curricula.

Per our conversations, the NeuroID academic program will have an emphasis in quantitative biology during this new funding cycle. The CS Department comprises 9 faculty members, working in a range of research topics from bioinformatics to reconfigurable computing. More than 50% of our students from second year on are involved in undergraduate research and/or software development projects, some of them with interdisciplinary teams. We expect that your training program will create additional challenging and significant research opportunities for our students. There are introductory courses such as CCOM3030 Fundamentals of CS, CCOM3033 Introduction to problem solving using programming and CCOM3034 Data Structures, that we recommend to students from Biology, Chemistry and Psychology to take in order to improve their computational and quantitative skills. In addition, I support the initiatives that Dr. Patricia Ordóñez (from our Department) and you are developing to join students from the Biology and CS programs in a new project-based course.

I look forward to collaborating with you in this training endeavor that will benefit our undergraduate students and catalyze interdisciplinary research work among faculty members in the College of Natural Sciences

Sincerely,

Rafael Arce Nazario, Ph.D.
Interim Chair

PO BOX 70377 , SAN JUAN PR 00936-8377 • TEL. 787-764-0000 / 4758, 4759 • FAX 787-773-1717

UNIVERSITY OF PUERTO RICO
COLLEGE OF NATURAL SCIENCES
Río Piedras Campus

Office of the Dean

May 19, 2014

Dr. Irving E. Vega
Program Director
Neuroscience Research Opportunities
to Increase Diversity (Neuro ID)
Department of Biology
College of Natural Sciences
University of Puerto Rico
Río Piedras Campus

Dear Dr. Vega:

As Interim Dean of the College of Natural Sciences at the University of Puerto Rico-Río Piedras Campus, I would like to state my enthusiastic support for the renewal application of the Proposal: Neuroscience Research Opportunities to Increase Diversity (Neuro ID). As member of our Biology Department and during this first cycle, you have successfully impacted the training of undergraduate students and provided excellent opportunities to pursue research careers in neurosciences to students of several universities in Puerto Rico. Seven of the twelve students that have completed this training are pursuing graduate studies in top research intensive universities and all the participants have had summer research experiences in the USA.

In addition to the administrative support that NeuroID receives and as part of our continuous commitment, the College of Natural Sciences will cover the costs for the monthly Pizza Nights (estimated at $1,000.00 per year) that will be held to help build a community among the participating students and faculty. As dean, I will also serve on the Advisory Committee for the Program.

Cordially,

Rafael Arce Quintero
Interim Dean

PO Box 70377, San Juan, Puerto Rico 00936-8377 • Tel. (787)764-0000 Exts. 2236, 2240 • Fax (787)772-1413

Universidad de
Puerto Rico

May 13, 2014

Dr. Irving Vega
Associate Professor
Department of Biology
University of Puerto Rico
Rio Piedras Campus

Recinto de
Río Piedras

Dear Dr. Vega:

I am pleased to write this letter of support for the competitive renewal of the Neuroscience Research Opportunities to Increase Diversity (NeuroID) undergraduate training program. For the past four years, this grant has contributed to increase the training of undergraduate students in the important field of neurosciences. This excellent academic and research training has contributed to situate the NeuroID program as a model to follow for career training of our undergraduate student. Testimony of the success achieved is the acceptance of NeuroID participants in top tier neuroscience programs at universities such as Scripps Research Institute, Washington University, Massachusetts Institute of Technology, University of Pennsylvania, Georgetown University, Baylor University and University of Utah.

The Sponsored Program Unit, at the Office of the Dean of Graduate Studies and Research, will continue supporting the NeuroID program during this second funding cycle. The support consists of clerical, administrative and finance personnel dedicated to enhance the efficient use of external funds and support the principal investigators to be in compliance with the rules and regulations established by the federal agencies. We will work together to facilitate the contract of students and personnel required to enhance the success already achieved by the NeuroID training program.

I look forward to continuing to work closely with you.

Sincerely,

Aurora Lauzardo, PhD
Interim Dean

Decanato de
Estudios Graduados
e Investigación

PO Box 21790
San Juan PR
00931-1790

Tel. 787-764-0000
Exts. 86700/3617
Fax 787-763-6011

Correo electrónico:
degi@uprrp.edu

Página electrónica:
http://graduados.uprrp.edu

Central
Administration
University of
Puerto Rico

May 13, 2014

Dr. Irving Vega
Associate Professor
Department of Biology
University of Puerto Rico
Rio Piedras Campus

Dear Dr. Vega:

I enthusiastically write this letter of support for the competitive renewal of the Neuroscience Research Opportunities to Increase Diversity (NeuroID) undergraduate training program. For the past four years, I witnessed the development and success of this training grant as Vice President of Research at the UPR and principal investigator. In my laboratory, I have had three students from the NeuroID program. The academic and research training that these students received, contributed to their acceptance at top tier graduate programs at universities such as Scripps Research Institute, Washington University and Massachusetts Institute of Technology.

Vice Presidency
for Research
and Technology

As principal investigator and Vice President of Research of the University of Puerto Rico, I pledge to continue supporting the administration of the NeuroID program and hosting student in my laboratory during the new funding cycle. The University of Puerto Rico is committed to provide the infrastructure and resources required to fulfill all the goals established by successful programs such as NeuroID.

Please do not hesitate to contact me if you or any administrative aspect of the NeuroID program requires my assistance. I look forward to continuing to work closely with you.

Sincerely,

Jose A. Lasalde Dominicci, Ph.D.
Vice President

sdr

Jardín Botánico Sur
1187 Calle Flamboyán
San Juan, Puerto Rico
00926-1117

Tel. (787) 765-8767
Fax. (787) 751-7378

Faculty Advisory Committee

Dr. José E. García-Arrarás, Department of Biology

Dr. Kenira Thompson, Dean for Research, Ponce School of Medicine

Dr. Guillermo Bernal, Department of Psychology

UNIVERSIDAD DE PUERTO RICO
Recinto de Río Piedras
Facultad de Ciencias Naturales
Departamento de Biología
PO BOX 23360
San Juan PR 00931-3360

UNIVERSITY OF PUERTO RICO
Río Piedras Campus
Faculty of Natural Sciences
Department of Biology
PO BOX 23360
San Juan PR 00931-3360

May 14, 2014

Dr. Irving Vega
Assistant Professor
Department of Biology
University of Puerto Rico
Rio Piedras Campus

Dear Irving:

It is with great enthusiasm that I write this letter of support for the continuation of the NeuroID (ENDURE) proposal. Since we started this Program 4 years ago, you have been pivotal to its success, therefore, I know that you can continue this successful trend in the next Program cycle. This Program has been extraordinary in setting up rigorous training in Neuroscience that has helped many of its graduates to enter some of the top institutions in the mainland. With its series of activities, visiting faculty and intensive laboratory experiences for undergraduates, the Programt has also greatly contributes to advance the Institutional research agenda

Thus, I accept with great pleasure the invitation to be in the Internal Advisory Committee of the NeuroID renewal and in this way help in the continuation of this great Program. In addition, I am available to continue mentoring some of the students and to participate in other program activities as you deem necessary.

Sincerely,

Jose E. Garcia-Arraras
Professor

Ponce School of Medicine & Health Sciences

P.O. Box 7004, Ponce, PR 00732-7004

Deanship of Research

Tel: (787) 840-2575 Ext. 2158
Fax: (787)841-1040
kthompson@psm.edu

May 16, 2014

Dr. Irving E. Vega
Associate Professor
Program Director
Department of Biology
UPR Rio Piedras Campus
Rio Piedras, PR

RE: Neuroscience Research Opportunities to Increase Divertiy (NeuroID) BP-ENDURE (R25)

Dear Dr. Vega:

I am happy to support the proposed Neuro ID Program. I am willing to serve as a Hispanic Role Model and a member of the Advisory Committee. I am very impressed with the success that your Program has had in the past. I am particularly pleased to serve as a female role model to young neuroscience students. As part of the Advisory Committee I will be happy to provide input as well as evaluation of all components of the proposed Program.

We would like to emphasize that you have put together a very exciting and well-written application, which will provide extremely useful opportunities for students in neuroscience. I am confident that you are fully qualified to carry out the proposed project, and possess the necessary physical and human infrastructure on campus to excel. The **Neuro ID Program** Proposal presents an innovative and creative way to further expand our current pipeline of students interested in neuroscience research areas.

You can be assured that I am unconditionally committed to your efforts and will provide the necessary support for this initiative to be successful.

Cordially,

Kenira Thompson

Kenira Thompson, PhD
Interim Dean for Research

UPR
Recinto de Río Piedras

Insitute for Psychological Research – IPsi

Social Sciences College

May 20, 2014

Dr. Irving E. Vega
Associate Professor
Department of Biology
University of Puerto Rico
Río Piedras Campus

Dear doctor Vega:

I write in strong and enthusiastic support of your R25 proposal titled "Neuroscience Research Opportunities to Increase Diversity (NeuroID)". As per our conversations, you know of my interest in contributing to the integration of research initiatives between the Institute for Psychological Research, Department of Psychology and of Biology. As you know, I was the Program Director of a T34 training grant in Career Opportunities for Research (COR) funded by NIMH for 23 years. The Department is focused on research training with undergraduate students majoring in psychology, biology, sociology, and anthropology in the areas of biopsychosocial research. To do so, we have support from the Vice-President's Office for continuing that program for mayors in Psychology.

During the past two years I've served as a mentor for two of your scholar in the Neuro ID program. I've found your trainees to be a model student, who are deeply and creatively involved in behavioral and neurological research. I've had the privilege to work closely with several of your trainees who are committed to excellence in research. I would be pleased to continue to serve as a mentor to students participating in the Neuro ID undergraduate research training program. At our Institute for Psychological Research our team will continue to collaborate in disseminating the information about this training opportunity in the Department of Psychology to ensure the maximum participation from our students.

I am convinced that the robustness and comprehensiveness of your proposed training program will contribute to enhance the number of students that pursue a research career in neuroscience. I am looking forward to this new opportunity to work with your students who will represent a new generation of Hispanics scientists and to serve as part of the faculty advisory committee.

Best wishes,

Guillermo Bernal, Ph.D.
Professor and Director
Institute for Psychological Research

PO Box 23174, San Juan, PR 00931-3174

Tel. (787) 764-0000 Ext. 4179
Fax: (787) 764-2615

Student Recruitment and Retention Advisory Committee
Partner Institutions

Dr. Armando Rodriguez, Interamerican University

Dr. Karen Gonzalez, Metropolitan University

Agda E. Cordero, MS, Sacred Heart University

Dr. María Jimenez, Counseling Department for Student Development

Inter American University of Puerto Rico
Bayamón Campus

May 14, 2014

Irving E. Vega, PhD
NeuroID Program Director
Department of Biology
University of Puerto Rico
Río Piedras Campus

Dear Dr. Vega,

I am extremely pleased to support your proposal to NIH on Neuroscience Research Opportunities to Increase Diversity (NeuroID). As Dean of Research at the Inter American University I will serve as your contact person in order to advertise the program and channel students from our University.

Studies in the Neurosciences are in the forefront of biological research and few students, if any, at our University currently have opportunities to be trained in these areas. As you are well aware, our students have previously participated in some of your undergraduate programs with excellent results. We expect that collaborations such as these will continue to strengthen in the future.

I hope your proposal is awarded. I am confident that the experiences the students will have at UPR will provide valuable knowledge and research skills. Please keep me posted on the outcome.

Cordially,

Dr. Armando Rodríguez-Durán
Dean for Research

500. Road Dr. John Will Harris · Bayamón, PR 00957 · Tel. (787) 279-1912 · FAX 279-2205
http://bayamon.inter.edu

Universidad Metropolitana
Escuela de Ciencias y Tecnología

Tel. 787 766-1717
Ext. 6406, 6456
Fax. 6329

PO Box 21150
San Juan, PR 00928-1150

www.suagm.edu/umet

May 20, 2014

Dr. Irving Vega
Program Director
NeuroID
University of Puerto Rico-Rio Piedras
San Juan, Puerto Rico

Dear Doctor Vega;

It is a pleasure to support the "competitive renewal" for the Neuroscience Research Opportunities to Increase Diversity (NeuroID) project that you direct. Universidad Metropolitana's (UMET) participation in this project has led to the successful placement of our student Pablo Maldonado in graduate school. Pablo was accepted to the doctoral program in neuroscience at the University of Utah. Pablo was very pleased with the experience and we will certainly like to have more of our students in the program. This is an excellent collaboration between UMET and University of Puerto Rico to provide UMET students with experiences in neuroscience, a topic that students find fascinating but we do not support.

NeuroID has had a tremendous success having 100% of participants placed in summer internships and placing 58% of these students in graduate school. These activities are very much in sync with the goals of UMET to expose science students to undergraduate research experiences and to place students in graduate programs.

UMET is looking forward to the successful approval of this competitive renewal. We are excited to send more of our students to the program and to continue the collaborations we have had through the years.

Sincerely,

Karen Gonzalez, PhD
Dean

UNIVERSIDAD DEL SAGRADO CORAZON

May 22nd, 2014

Irving E. Vega, PhD
Program Director
Neuroscience Research Opportunities to Increase Diversity (NeuroID)

Dear Dr. Vega

It is my pleasure to write a letter in support of the NeuroID program, whose proposal is centered at the University of Puerto Rico, Rio Piedras Campus. During the first cycle of the grant, three students from my institution, the Universidad del Sagrado Corazón, participated in the NeuroID program as fellows. These are Rigo G. Cintrón-Colón (Natural Sciences, NeuroID class of 2012), Pablo A. Pagán (Psychology, NeuroID class of 2013) and Carolina Santiago (Natural Sciences, NeuroID class of 2014). I recognize this program has been essential in their development as future neuroscientists. For example, Mr. Cintrón will be conducting his PhD education at The Scripps Research Institute, and Mr. Pagán will be attending MIT for his summer internship. I know that NeuroID exposes their fellows to unique experiences in order to prepare them for graduate school.

We at Universidad del Sagrado Corazón fully support your efforts as well as those of Dr. Migdalisel Colón-Berlingeri as you seek to win renewal of this proposal for another cycle. As a training program, NeuroID provides Hispanic students with opportunities to participate in research, enhancing their scientific knowledge, research capabilities and social responsibility.

Sincerely

Agda Cordero

Prof. Agda Cordero, Director
Department of Natural Sciences

PO BOX 12383 • SAN JUAN PUERTO RICO 00914-0383 • TEL. (787) 728-1515

UNIVERSITY OF PUERTO RICO
RÍO PIEDRAS CAMPUS
COUNSELING DEPARTMENT FOR STUDENT DEVELOPMENT
DEANSHIP OF STUDENT AFFAIRS

May 14, 2014

Dr. Irving E. Vega
Associate Professor
Department of Biology
NeuroID-Program Director
University of Puerto Rico
Río Piedras Campus

Dear doctor Vega:

This letter is to inform you of our willingness to support and collaborate with the *Neuroscience Research Opportunities to Increase Diversity (NeuroID) Program.* As Director of the Counseling Department for Student Development (CDSD) at the University of Puerto Rico, Rio Piedras Campus (UPR-RP), I can serve as consultant to your Program. CDSD offers individual and group psychological and counseling services to students enrolled in the UPR-RP. The CDSD's main mission is to provide professional services to help students achieve their personal, academic, and vocational goals. Our goal is for each student to develop their full potential and, in the future, join the workforce as a productive citizen who is satisfied with his or her profession. We strive to foster the student's holistic development through early intervention, prevention, and remedial services.

As a consultant, I can coordinate psychological screenings and referrals for students in the Program who present emotional difficulties that may be affecting their academic performance. In addition, in order to promote retention and success for students in the NeuroID program I can coordinate three workshops per semester on the following topics: efficient time management, balancing personal and academic life, strategies for handling stress and anxiety, emotional intelligence, how providing community service can make you a better scientist and researcher, career planning, and preparing to apply to graduate schools, and other topics as requested by students.

We are well aware of the need to increase diversity in the neurosciences as well as prepare future researchers in this field. We are very pleased with your efforts to recruit and encourage students to select this field of study and look forward to collaborating with your Program.

Sincerely,

María I. Jiménez Chafey, Psy.D.
Director

PO Box 23137, San Juan PR 00931-3137 . Phone (787) 764-0000 Exts. 56800-56801 . Fax (787) 763-4885

External Evaluation Advisory Committee

Dr. Maizaida Sanchez and Nicole M. Ortiz, MS
Center for Evaluation and Sociomedical Research

CIES

Centro de Investigación y Evaluación Sociomédica
Escuela de Salud Pública
Universidad de PuertoRico
Recinto de Ciensas Médicas

Center for Evaluation and Sociomedical Research
School of Public Health
University of Puerto Rico
Medical Sciences Campus

May 14, 2014

Dr. Irving Vega
Associate Professor
Biology Department
University of Puerto Rico, Rio Piedras Campus
Julio Garcia Diaz Bldg. #120
San Juan, PR 00931

Dear Review Committee,

It is with great enthusiasm that the Center of Evaluation and Sociomedical Research-Division of Community Services (CIES-DSC, for its name in Spanish) of the Graduate School of Public Health at the University of Puerto Rico presents this letter of support and collaboration to Dr. Vega for the proposal entitled ***"Neuroscience Research Opportunities to Increase Diversity"*.** This project is been submitted in response to the Blueprint Program for Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences (R25)**.** The CIES will serve as the external evaluator of the project.

Founded in 1982, CIES specializes in the evaluation of social programs, applied research on human service organizations, basic research on public health issues, and the development of methods to measure program success. CIES has conducted evaluation and research projects funded by government agencies in the United States and Puerto Rico, as well as by private human service organizations seeking to respond to evaluation questions of importance to improve their policies or programs.

During the last 6 years the CIES staff has served as the external evaluators of several university based training initiatives in Puerto Rico funded by the National Institutes of Health, the National Science Foundation and the USDA-National Institute of Food and Agriculture. These initiatives have included the Alliance for the Advancement of Biomedical Research Excellence (AABRE), Minority Access to Research Careers (MARC U*STAR), the Partnership for Research and Educational Materials (PREM) and the Bilingual Minor in Food Safety Project (DBMFS). These initiatives focus on the development of students (graduate and undergraduate), faculty and research infrastructure of the sponsoring universities.

Centro de Investigación y Evaluación Sociomédica
Escuela de Salud Pública Universidad de PuertoRico Recinto de Ciensas Médicas
Center for Evaluation and Sociomedical Research
School of Public Health University of Puerto Rico Medical Sciences Campus

It is important to highlight the relationship that CIES-DSC has established with NeuroID. Since 2010, the CIES-DSC has served as the external independent evaluator of NeuroID.

CIES-DSC collaboration with Dr. Vega will be led by Nicole M. Ortiz Vega, Project Director and Marizaida Sanchez Cesareo, Director of the Division of Community Services at the CIES. The CIES staff will work in collaboration with Dr. Vega's staff and faculty to develop and implement the process and outcome evaluation of the project.

Sincerely,

Marizaida Sánchez Cesáreo, PhD
Assistant Professor & Director
Division of Community Services
Center for Evaluation & Sociomedical Research (CIES)
Graduate School of Public Health
University of Puerto Rico, Medical Sciences Campus
PO BOX 365067
San Juan. Puerto Rico
00936.5067
787.522-9026 xt.1608,1702
marizaida.sanchez@upr.edu

Alumni Advisory Committee

Jaime Vaquer, BS, Washington University

Pablo Maldonado, BS, University of Utah

Edith Brignoni, BA, Georgetown University

Washington University in St. Louis

May 21, 2014

Irving E. Vega PhD
Associate Professor
Department of Biology
University of Puerto Rico - Río Piedras Campus
Julio Garcia Diaz Bldg. #120
San Juan, PR 00931

Dear Dr. Vega:

As alumni of the NeuroID program, I am happy to write this letter of support for the competitive renewal application. The training and mentoring received via this program played a crucial role in my decision to pursue graduate studies in neuroscience and be prepared for the intrinsic challenges of graduate school. Therefore, I am committed to contribute to the continuing success of the NeuroID program.

Recently, I was invited to participate at the NeuroPizza Night meeting. During my visit, I had the opportunity to interact with current students of the NeuroID program and talk about my experiences, including, but not limited to, applying to graduate school and my first year as graduate student. I firmly believe that this peer-mentoring activity is very important for NeuroID participants since they can see fellow members of this program achieving their respective academic goals.

I am willing to continue contributing to the NeuroID program as member of the Student Advisory Committee. I will share with you all training activities that are helping at graduate school and recommend different activities that I think should be added to the program. Additionally, I will be available to talk to students that are in the process of applying to graduate school or individual fellowships. Moreover, I will make myself available to any student that may need advice from a peer that is just a few steps ahead.

I look forward to contributing to the NeuroID program as peer-mentor and member of the Student Advisory Committee.

Sincerely yours,

Jaime III Vaquer-Alicea
Neuroscience Graduate Student
Washington University
Division of Biology and
Biomedical Sciences
Campus Box 8226
660 S. Euclid Ave.
St. Louis, MO 63110-1093

THE UNIVERSITY OF UTAH®

May 21st, 2014

Irving E. Vega, PhD
Program Director - NeuroID
Associate Professor
Department of Biology
University of Puerto Rico - Rio Piedras

Dear Dr. Vega,

As alumni of the NeuroID program, I am happy to write this letter of support for the competitive renewal application. The training and mentoring received in this program played a crucial role in my decision to pursue graduate studies in neuroscience and helped prepare me for the challenges of graduate school. Therefore, I am committed to contribute to the continuing success of the NeuroID program.

Recently, I was invited to participate at the NeuroPizza Night meeting. During my visit, I had the opportunity to interact with current students of the NeuroID program and talk about my experiences from applying to graduate school to my first year as graduate student. This peer-mentoring activity is very important for NeuroID participants since they can see fellow members of this program achieving their respective academic goals.

I am willing to continue contributing to the NeuroID program as member of the Student Advisory Committee. I believe this is a great attempt to help and guide current students of the program by receiving mentoring and advice from students that have previously gone through the steps necessary to be in graduate school. I will share with you all training activities that are helping at graduate school and recommend different activities that I think should be added to the program. Additionally, I will be available to talk to students that are in the process of applying to graduate school or any student that may need advice from a peer student few steps ahead.

I am looking forward to contributing to the NeuroID program as peer-mentor and member of the Student Advisory Committee.

Sincerely,

Pablo J Maldonado
Graduate Student
Interdepartmental Program in Neuroscience
University of Utah

External Advisory Committee
T32 Program Collaborators

Dr. Richard Born, T32 Program Director, Harvard

Dr. Irwin Lucki, T32 Program Director, UPENN

Dr. Diego Restrepo, T32 Program Director, Univ. Colorado-Denver

Dr. Kristen A. Keefe, T32 Program Director, University of Utah

Dr. Dwight A. McBride, Dean of the Graduate School, Northwestern University

Dr. Mandana Sassanfar, Director of Diversity and Outreach, MIT

Dr. Dawn Eastmond, Director of Graduate Studies, Scripps Research Institute

HARVARD MEDICAL SCHOOL

DEPARTMENT OF NEUROBIOLOGY

220 LONGWOOD AVENUE
BOSTON, MASSACHUSETTS
02115

May 7, 2014

Irving E. Vega, Ph.D., Principal Investigator
University of Puerto Rico, Rio Piedras Campus

Dear Dr. Vega,

As Director of "PhD Training in Neuroscience," an NIH-funded T32 training program, I am writing this letter in support of your NIH R25 grant application entitled "NeuroID: Neuroscience Research Opportunities to Increase Diversity" from the University of Puerto Rico Rio Piedras Campus, which aims to increase the opportunities available for undergraduate students in the area of neurosciences by fostering a network that joins undergraduate students, island investigators and their collaborators in mainland institutions. Our PhD program is also committed to recruitment and retention of students from underrepresented groups in the neurosciences, and your project providing an intensive research and education program for students from Puerto Rico is consistent with our goals. Thus we are pleased to serve as a potential summer research experience site for students to be funded under your program.

Indeed, during your previous funding cycle we have made great steps towards making this relationship concrete. Perhaps most importantly, you and I, working together with Dr. Sheila Thomas, have come up with a simple mechanism to allow your students to take advantage of summer research opportunities at Harvard through the "Summer Honors Undergraduate Research Program" (SHURP). This creates a single portal through which students apply and by which they are matched with suitable research mentors. In addition, SHURP provides summer students with the full support of an existing program, including housing, a curriculum on career development and attendance at the "Leadership Alliance National Symposium" (LANS) at which they present posters on their summer projects. Two of your students, Jaime Vaquer (2012) and Monica Quinones (2013) have already participated in SHURP, and we anticipate more in the coming years. Based on my discussions with Jaime and Monica both here at HMS and during my visit to UPR in September of 2012, I am convinced that this was a very positive experience.

As mentioned above, I visited UPR-Rio Piedras from September 19-21 of 2012 and had the opportunity to meet with many of your students both individually and in an informal setting during your famous "NeuroPizza Night." During these discussions, I was able to answer many of the students' questions and to convey to them what our Program in Neuroscience has to offer and what kinds of academic background and research experience we find desirable. It was also a

great opportunity to discuss a wide range of issues from work-life balance to my favorite topic, the visual system! I must say that my visit left me most impressed with the intelligence, passion and commitment of your students—thanks to you and the programs you have created, they clearly "get it" concerning careers in basic and translational neuroscience research. And they have also taken advantage of the opportunities provided by your R25 to stretch themselves and explore research opportunities at major research institutions across the country.

Finally, I would also like to point out that our interaction has directly benefitted me and my efforts to improve the quantitative training of students in the life sciences. This past January, my co-PI, Mike Springer, and I submitted an R25 proposal in response to PA-11-351 (Short Courses on Mathematical, Statistical, and Computational Tools for Studying Biological Systems). One of the specific aims of our proposal, entitled "Teaching quantitative skills to undergraduates in the life sciences," is to target under-represented students from diverse undergraduate institutions. Our proposed strategy for accomplishing this was two-fold. First, we proposed to piggy-back on existing programs, such as SHURP, which have a sustained record of attracting and mentoring such students. Second, we proposed to bring in and support a small number of faculty members from undergraduate institutions with whom we have already established working relationships—such as you. The idea is that folks like yourself will help us to better tailor our short course to your student populations, and, by participating in the course, will help to disseminate our materials and methods at your home institution. While we are still awaiting the study section's review of our proposal, your support and advice have already been extremely helpful.

Good luck with your competing renewal! If you have any questions, please feel free to contact me. I look forward to continuing to work closely with you and your outstanding group of students.

Sincerely yours,

Richard T. Born, MD
Professor of Neurobiology
Director, PhD Program in Neuroscience

Department of Neurobiology
Harvard Medical School
220 Longwood Avenue
Boston, MA 02115-5701

rborn@hms.harvard.edu
tel. 617-432-1307
fax. 617-734-7557

Perelman School of Medicine
University of Pennsylvania

Department of Psychiatry

Irwin Lucki, Ph.D.
Professor
Director, Behavioral Psychopharmacology

May 7, 2014

Irving E. Vega, Ph.D.
Department of Biology
University of Puerto Rico – Rio Piedras Campus
Julio Garcia Diaz Bldg. #120
San Juan, PR 00931

Dear Irving,

I am writing to affirm my support for your application: *Neuroscience Research Opportunities to Increase Diversity (NeuroID)*, submitted under RFA –NS-14-010, Blueprint Program for Enhancing Neuroscience Diversity through Undergraduate Research Education. We have had many exciting and productive associations, including a visit to the University of Puerto Rico where I had the opportunity to discuss future career options with your students. My visit attracted applications to Penn and enhanced consideration of one of your students for graduate school. Although she was accepted, she chose to matriculate elsewhere. It was also a pleasure to host a student from UPR, Edith Brignoni-Perez, in the PREP program at Penn to conduct research with Dr. Ted Brodkin, a mentor on my T32 program, on the neurobiology of social behavior. This experience aided her applications to graduate school and she plans to matriculate in Neuroscience at Georgetown University in the fall. We are grateful to receive applications from students from UPR for our summer research program at Penn every year and they contribute greatly to the success of our program.

I would be glad to continue supporting your program as a T32-Sponsored Program and make available to you my experience in training students from diverse backgrounds. As you know, I am Director of the Training Program in Neuropsychopharmacology at the University of Pennsylvania that has been supported by the NIMH for 37 years (T32-MH14654). Our Training Program coordinates the efforts of 30 faculty members to support predoctoral and postdoctoral research in the area of pharmacological treatments associated with the treatment of psychiatric disorders. As part of the activities of this Training Program and as a member of Penn Biomedical Postdoctoral Council, I have been dedicated to support national efforts to increase diversity in the training of scientists in our field. As a Laboratory Director, I have personally been involved with recruiting, teaching and training scientists at the undergraduate, predoctoral and postdoctoral levels.

One of the most important things that we can do as scientists is to work to train the next generation of researchers, particularly those from diverse backgrounds. I pledge my full support for your exciting program.

Sincerely,

Irwin Lucki

Irwin Lucki, Ph.D.
Professor and Director
Training Program in Neuropsychopharmacology

TRL 125 SOUTH 31ST STREET SUITE 2200 | PHILADELPHIA, PA 19104-3403 | Tel: 215.573.3305 | Fax: 215.573.2041
lucki@mail.med.upenn.edu

University of Colorado Anschutz Medical Campus
School of Medicine

Diego Restrepo, Ph.D.
Professor, Department of Cell & Developmental Biology
And Director, University of Colorado School of Medicine Center for NeuroScience (CNS)

Department of Cell & Developmental Biology
University of Colorado
Anschutz Medical Campus
Mail Stop 8108
P.O.Box 6511
Aurora, CO 80045
Phone (303) 724-3405
FAX: (303) 724-3420
E-Mail: Diego.Restrepo@ucdenver.edu

May 15, 2014

Dr. Irving E. Vega
Associate Professor
Department of Biology
University of Puerto Rico
San Juan, Puerto Rico

Dear Dr. Vega,

As you know I am the Principal Investigator in our Jointly Sponsored Neuroscience Training Grant for first and second year Neuroscience Ph.D. students (T32 HD041697). In addition I lead our ENDURE BRAiN training program and I am Director of our Center for NeuroScience (CNS). Particularly relevant to your application for the R25 is the fact that your ENDURE-NeuroID program and our BRAiN program have interacted solidly because we both feel strongly about the need to increase diversity in Neuroscience. Particularly relevant is the fact that I was invited and participated in your NeuroPizza Night in 2013. My interaction with your students and faculty was positive. Specifically I was very pleased about the interaction with the students who wanted to find out what it is like to become faculty in Neuroscience. What do you learn in the Ph.D.? How can you become a faculty person? How do you lead personal life while becoming a strong Neuroscientist? In addition, in the meeting in Puerto Rico you and I had a thorough interaction on how to improve training of undergraduate students. In particular I am pleased of our interest in both campuses to strengthen the training of students in quantitative studies in Neuroscience that we are strengthening by teaching our students MATLAB approaches to neuroscience research.

I will be glad to coordinate summer research experiences for undergraduate students in your R25 program ENDURE-NeuroID with our T32 training grant mentors and to continue a strong communication for our ENDURE programs.

Sincerely,

Diego Restrepo, PhD
Professor of Cell and Developmental Biology
Director, Center for NeuroScience (CNS)

Kristen A. Keefe, Ph.D.
Director, Program in Neuroscience
30 South 2000 East, Rm 201
Salt Lake City, UT 84112
(801) 585-7989
FAX (801) 585-5111
k.keefe@utah.edu

Irving E. Vega, PhD
Associate Professor
Department of Biology
University of Puerto Rico - Río Piedras Campus
Julio Garcia Diaz Bldg. #120
San Juan, PR 00931

Dear Dr. Vega,

I enthusiastically support your R25 application entitled "Neuroscience Research Opportunities to Increase Diversity (NeuroID)" for your training program at the University of Puerto Rico. We are excited to formally establish a partnership with you to enhance participation of underrepresented minorities (URM) in Neuroscience. The objectives of your proposal are timely and synergize with the aims of our T32 to diversify Neuroscience. Your program will engage minority students from Puerto Rico in Neuroscience education through experiential learning and encourage them to pursue Neuroscience careers. The program will certainly help in addressing the need of diversifying our National biomedical workforce.

I am the PI of our NINDS T32 grant entitled "Predoctoral Interdepartmental Training Program in Neuroscience" (NS076067). We will be happy to provide summer internship opportunities for students in your program. The student interns will work in the labs of members of our training faculty and also participate in a number of activities coordinated with our other Bioscience Undergraduate Summer Research Programs, including a seminar series, preparation of a research proposal and an oral presentation, and a poster session. Students also will receive a session on applying to graduate school during their time on campus. Finally, students will participate in group social events with students in the other summer programs to allow them to establish relationships with others at a similar state of career development and to introduce them to and facilitate exploration of the unique Utah landscape. As you are well aware, one of your former NeuroID students, Pablo Maldonado, has just completed his first year as a graduate student in our Interdepartmental Program in Neuroscience. We have been delighted to have Pablo as an excellent, engaged member of our first-year class, and it's been a joy to watch him settle into Utah and embrace not only the science, but also the winter sports! I am glad to hear that he will be returning to your program next semester to present at your NeuroPizza Night. I am sure that Pablo will serve as an exceptional mentor to your more junior program participants and can help them appreciate what our program, as well as the career in general, has to offer.

We look forward to working with you on this exciting program.

Sincerely,

Kristen A. Keefe
Professor
Predoctoral Interdepartmental Training Program in Neuroscience

The Graduate School 633 Clark Street
Rebecca Crown Center, 1-502
Evanston, Illinois 60208-1113

Dwight A. McBride, PhD
Dean of The Graduate School
Associate Provost for Graduate Education

tgsdean@northwestern.edu
Phone 847-491-8502
Fax 847-467-7600
www.tgs.northwestern.edu

NORTHWESTERN UNIVERSITY

May 10, 2014

Irving E. Vega, PhD
Associate Professor
Department of Biology
University of Puerto Rico - Río Piedras Campus
Julio Garcia Diaz Bldg. #120
San Juan, PR 00931

RE: Neuroscience Research Opportunity to Increase Diversity (NIH R25)

Dear Irving,

The Graduate School (TGS) at Northwestern University enthusiastically supports your proposal to the NIH for the renewal of the Neuroscience Research Opportunity to Increase Diversity (NeuroID) program.

The Graduate School is committed to enhancing multi-disciplinary training activities and providing opportunities for our students to excel at cutting-edge research in neuroscience. We are particularly impressed with how our partnerships with your students and faculty have expanded over the past several years. Since 2012, The Graduate School has been leading annual visits to University of Puerto Rico campuses to engage students, faculty and administration. We are committed to supporting research and professional development opportunities for students at UPR- Río Piedras. Additionally we have hosted your faculty and students on our campus. These visits have led to developing stronger relationships between UPR- Río Piedras and Northwestern faculty members. We will continue to recruit and lead visits by our faculty and students to your campus, and we will be a leader in recruiting the members of our graduate faculty to participate as summer research mentors for the NeuroID students who attend our Summer Research Opportunities Program (SROP). Furthermore, The Graduate School is pleased to provide to your faculty and students the support services of the Office for Student Life and Multicultural Affairs and the Training Grant Support Office.

As you are aware, one of my strategic initiatives is increasing diversity among the graduate student population. TGS is committed to the training of scholars and thought leaders that reflect and respond to the increasing diversity of the nation. To meet this commitment, I have made diversity the centerpiece of the TGS Strategic Plan and I have adopted an array of measures aimed at improving the prospective pipeline of underrepresented minority (URM) students, increasing their percentages in the TGS population, and raising their retention and graduation rates. It is my fervent belief that any truly excellent environment for the training of scholars and thought leaders must include a diverse population, with diverse intellectual interests and perspectives. I look forward to partnering with the NeuroID program and connecting you with the Northwestern University Interdepartmental Neuroscience PhD program and its constituent departments to increase enrollees from underrepresented groups.

I look forward to continuing our partnership with UPR-Río Piedras faculty and students to increase the number of underrepresented students enrolling in PhD programs at Northwestern and beyond.

Sincerely,

Dwight A. McBride, PhD
Dean of The Graduate School & Associate Provost for Graduate Education
Daniel Hale Williams Professor of African American Studies, English, & Performance Studies

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF BIOLOGY
DEPARTMENT OF BRAIN AND COGNITIVE SCIENCES
Bldg. 68-270a, Cambridge, MA 02139-4307

Mandana Sassanfar, Ph.D.
Department of Biology
mandana@mit.edu

617-452-4371 (tel)
617-258-9329 (fax)

May 15, 2014

Irving E. Vega, PhD
Associate Professor
Department of Biology
University of Puerto Rico - Río Piedras Campus
Julio Garcia Diaz Bldg. #120
San Juan, PR 00931

Dear Dr. Vega,

It is with great pleasure that I write this letter in support of your competitive NIH grant renewal for the BP-ENDURE NeuroID program. We share a common goal in our effort to increase the number of URMs pursuing PhDs in Neuroscience, and I am very much looking to continue and expand our productive relationship which started in 2009. I will continue to meet with students in the NeuroID program during my annual visit to the University of Puerto Rico, as well as at the Annual Puerto Rico Neuroscience Conference .

As you know we have hosted a number of NeuroID undergraduates in our summer research internship program and in the 6-day intensive workshop on MATLAB and other quantitative and computational tools that are routinely used in Neuroscience research. In fact one of your NeuroID student Mónica Quiñones-Frías will be joining our Graduate Biology program this fall. In addition Nicole Aponte an alum of the MARC program at Rio Piedras and one of your students has just completed her first year in the MIT Biology PhD program and has chosen to do her thesis research in neuroscience.

Our interactions and relationship has so far been very productive and I am looking forward to expanding this relationship. I hope that you will be able to continue sending students to our summer program and the Quantitative Biology workshop for training, and I plan to meet the students in the Neuro ID program when I visit next October. In addition our recently NSF-funded Center for Brain, Minds and Machines (CBMM) provides additional opportunities to expand both in breath and in depth our efforts to train the next generation of neuroscientists and I have no

doubt that the University of Puerto Rico will be a very valuable partner in our efforts to increase the number of Unrepresented minorities in Neuroscience.

I wish you the best and hope to see you again soon.

Mandana Sassanfar
Lecturer in Biology
Director of Diversity and Outreach

Hispanic Role Model

Dr. Daniel Colon-Ramos, Associate Professor, Yale Univ

Dr. Jim Vigoreaux, Professor, Univ Vermont

Dr. Maribel Rios, Associate Professor, Tufts Univ

Dr. Marcelo Febo, Associate Professor, Univ of Florida

Dr. Manuel Navedo, Associate Professor, UC Davis

Yale University

Daniel A. Colón-Ramos, Associate Professor
Department of Cell Biology
Program in Cellular Neuroscience, Neurodegeneration and Repair (CNNR)
Yale University School of Medicine
295 Congress Avenue
BCMM 436B
New Haven, Connecticut 06510

Telephone: 203 737-3438
Email: daniel.colon-ramos@yale.edu

Dear Irving E. Vega, PhD
University of Puerto Rico, Rio Piedras Campus

Dear Dr. Vega,

This is a letter to express my most enthusiastic support of your NIH R25 grant entitled "Neuroscience Research Opportunities to Increase Diversity" (NeuroID). The goal of the grant is to increase the opportunities available for undergraduate students in Puerto Rico in the area of neurosciences. As a fellow Puerto Rican researcher and as an Associate Professor at Yale University School of Medicine, I am aware of the roadblocks that have prevented underrepresented groups from fully participating in the research enterprise. During the past few years I have witnessed the superb job you have done as PI of this program on both mentoring, training and placing these students in competitive research experiences and graduate schools around the country. I am impressed, and fully supportive of the training philosophy you have successfully implemented.

I thank you for giving me the opportunity of directly participating in the NeuroPizza Night and interacting with the NeuroID participants. I enjoyed sharing my career path and experiences on how to manage personal and professional goals. Based on the feedback I received from them after the NeuroPizza Night, I think the students valued meeting a fellow Hispanic scientist and related to my career trajectory. They seemed to have particularly enjoyed the demystification of the process (and challenges) associated with becoming a Principal Investigator. Some of them have continued to communicate with me via e-mail, seeking mentorship and advice, and sharing with me their aspirations to become independent

investigators. I am looking forward to continuing this interaction with the new crop of NeuroID students!

As you also know, besides being faculty at Yale, I am also the President of a not-for-profit organization, Ciencia Puerto Rico. This not-for-profit is focused on promoting scientific research and education in Puerto Rico. We have created a cybernetic platform that promotes interactions between students and mentors (http://www.cienciapr.org). The CienciaPR community has over 6,500 members, which makes it one of the largest and most dynamic cybernetic scientific communities on the internet.

Through CienciaPR, we have been collaborating with you and your students to generate scientific podcasts, which are then broadcasted by 5 different radio stations in Puerto Rico and can be listened to and downloaded over the internet. We are enthusiastic and supportive of the fact that this continues to be an innovative component of your R25 application and look forward to continuing this collaboration.

As I have mentioned to you during our previous collaborations, you have our fullest support and can count on all of the resources available in our CienciaPR.org page. Moreover, both as director of CienciaPR and faculty at Yale, you can count on my personal commitment to see this program continue developing the next generation of Puerto Rican neuroscientists. I am here to avail you of any help I might offer.

Sincerely,

Daniel Colón-Ramos
Associate Professor,
Department of Cell Biology
Cellular Neuroscience Program
Yale University

The University of Vermont

May 14, 2012

Irving E. Vega, PhD
Associate Professor
Department of Biology
University of Puerto Rico –Rio Piedras Campus
Julio Garcia Diaz Bldg. #120
San Juan, PR 00931

Dear Dr. Vega,

I write to enthusiastically endorse the renewal of your project for Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences. I have greatly enjoyed participating in the NeuroPizza and interacting with your students. I am very impressed by their enthusiasm for science and I remain committed to working with you in expanding mentoring and research opportunities to undergraduate students from Puerto Rico. As we have in the past, we will continue to encourage your students to apply to our summer REU program in neuroscience. In addition to ten weeks of laboratory experience, the program offers a series of lectures providing an overview of modern neuroscience and the research conducted at the University of Vermont (UVM), as well as small group meetings to discuss research projects and relevant scientific articles. Your students will be welcomed with open arms and I will personally introduce them to my broad network of scientists from underrepresented backgrounds to ensure they get the proper research and professional mentorship and guidance. The UVM REU program has served as a gateway to graduate school for many students and I'm encouraged by our strong record of attracting highly qualified students from underrepresented backgrounds.

Lastly, I want to personally thank you for your commitment to undergraduate research and mentoring. The NeuroID program is proving highly successful and for that I commend you. It is a great honor to be part of this initiative.

Sincerely,

Jim O. Vigoreaux

JIM O. VIGOREAUX
Breazzano Family Green & Gold Professor and Chair Joint Professor of Molecular Physiology & Biophysics

DEPARTMENT OF BIOLOGY
Marsh Life Science Building • Burlington, VT 05405-0086 USA
(802) 656-2922 • fax: (802) 656-2914 • jim.vigoreaux@uvm.edu

Tufts UNIVERSITY

SCHOOL OF MEDICINE

Department of Neuroscience

Maribel Rios, Ph.D.
Associate Professor
Department of Neuroscience
136 Harrison Avenue
Boston, MA 02111
maribel.rios@tufts.edu
617-636-2748

May 14, 2014

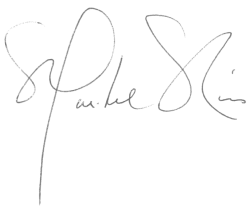
Dr. Irving Vega
Dept. of Biology
University of Puerto Rico-Rio Piedras Campus
San Juan, PR

Dear Irving,

I am writing to confirm that I am delighted to serve in your undergraduate training program "Neuroscience Research Opportunity to Increase Diversity" in the capacity of mentor. I am a member of the Neuroscience and the Cellular and Molecular Physiology Graduate training programs at the Sackler School of Graduate Biomedical Sciences at Tufts University School of Medicine, where I have served in the capacity of Admissions Director, course director, curriculum director, lecturer, thesis mentor and in thesis and qualifying exam committees. My training record includes 7 Ph.D. students (4 graduated, 3 in training), 4 Postdoctoral fellows and 3 Summer Undergraduate Research Interns. I actively participate in two training programs geared towards underrepresented minorities at Tufts: The Summer Research Program for Undergraduates and the Post Baccalaureate Research Experience Program (PREP), where I have served as trainee advisor for the last 11 years. My laboratory studies the role of brain-derived neurotrophic factor (BDNF) in the regulation of energy balance and anxiety-like behavior in mice. We employ molecular, biochemical, electrophysiological, behavioral and genetic tools to define neural circuits and molecular mechanisms in the brain modulated by BDNF to control appetite and anxiety-related behaviors.

As you know, I am a native of Puerto Rico and came to Boston to embark on my undergraduate (Boston University), graduate (Tufts University) and post doctoral (MIT) training. I have been very fortunate to lead a successful research program, continuously funded since my initial appointment as Assistant Professor here at Tufts in 2002. Considering my background, I believe I can be an effective mentor for promising young scientists from Puerto Rico. I look forward to serving in this very important training program.

Yours truly,



Maribel Rios, Ph.D.

College of Medicine
Department of Psychiatry

McKnight Brain Institute, Suite L4-100
PO Box 100256
Gainesville, FL 32611
Phone: 352/294-4911 (office)
352/294-4955 (laboratory)
Departmental Fax: 352/392-9887

May 7, 2014

Dr. Irving E. Vega, PhD
Director, NeuroID Program
Associate Professor of Biology
University of Puerto Rico, Rio Piedras

Re: University of Puerto Rico (UPR) NeuroID

Dear Dr. Vega:

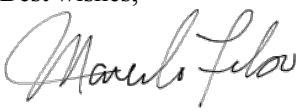
It is with enormous pleasure that I write the present letter of support for the "Neuroscience Research Opportunities to Increase Diversity (NeuroID)" program, which you head. Furthermore, I want to convey my excitement about the progress of the program and provide my written commitment to support it through the coming years, as the first round of students advance through their PhD careers and the new ones come on board the program. The numbers you are reporting on the success are absolutely wonderful and, to an extent unheard of in many other comparable programs. It has truly been successful.

I had the great privilege to receive over the summer of 2012 an undergraduate student from your Chemistry program, Andrea Silva-Gotay. Andrea exceeded all expectations for the summer research she carried out. She is smart, well prepared, very driven and motivated, and demonstrated leadership that made completing her summer project possible. The results were presented at the Puerto Rico Neuroscience conference and will be submitted for publication. Andrea recently contacted me, several months ago, requesting a letter of recommendation to enter graduate school. Of course I said yes and sent her a strong letter supporting her application for graduate school. I am very pleased to report that she entered the Neuroscience Program at the University of Massachusetts, Amherst. I have no doubt she will be an excellent student coming out of their program thanks to the NeuroID program.

It is important to indicate that this is not the only venue in which students that are a part of the program develop the contacts, training and skills to become of future scientist. Participation of a group of your students at the Society for Neuroscience conference in 2012 was also excellent in terms of their presentations and their enthusiasm for networking with potential mentors. This is where I met Ioanniselys Berrios from your program. Ioanniselys presented her work to me at the SfN conference and since then maintained a line of communication asking for advice on entering graduate programs in neuroscience in the continental U.S., including University of Florida. I was very pleased to find out from Ioanniselys herself that she was accepted to Baylor College of Medicine. These are just two examples of many that I am sure have benefited from this outstanding program. I am happy to recommend it without reservations and to support it and its students during the coming years.

Please feel free to contact me for any further questions. I am also available to answer any questions that reviewers or program officials may have regarding the NeuroID program. This was a great experience for the students and myself.

Best wishes,



Marcelo Febo, PhD
Assistant Professor, Psychiatry and Neuroscience;
Program Director of Translational Research Imaging, McKnight Brain Institute

UNIVERSITY OF CALIFORNIA DAVIS

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SANTA BARBARA • SANTA CRUZ

Department of Pharmacology
University of California, Davis
School of Medicine
Tupper Hall Rm 2419A
451 E. Health Sciences Dr.
Davis, CA 95616-8636

www.ucdmc.ucdavis.edu/pharmacology/

Manuel F. Navedo, Ph.D.
Assistant Professor
Phone: 530-752-6880
Fax: 530-752-7710
mfnavedo@ucdavis.edu

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Dr. Irving E. Vega
Associate Professor
Department of Biology
University of Puerto Rico, Rio Piedras
San Juan, PR 00931

Dear Irving,

I am writing you to expressed my strongest support to the UPR NeuroID programs that you have run so efficiently during the last years. I am extremely impressed with the statistics for the program in its first cycle, which shows that the program is having a meaningful impact in the future of many students. As you know, the UPR is my *Alma Mater*. I did my BS and PhD in the Department of Biology at UPR Rio Piedras. I strongly believe that part of my success as an Assistant Professor in the Department of Pharmacology at the University of California, Davis is due, in part, to the access and effectiveness of programs like the NeuroID. Indeed, as a graduate student participating in similar programs, I was able to interact with and received useful advise from many scientists from the mainland. Moreover, I was able to start building a professional network of collaborators that was extremely important when I first started applying for postdoctoral and faculty positions. Today, I am running my own lab, and I am helping train the next generation of scientists. Thus, programs such as the UPR NeuroID are effectively investing in the future of our Nation's scientific legacy.

I also want to state that it will be my great pleasure to continue my role as "Hispanic Role Model" and advisor for the program. As you know, I have participated in several NeuroPizza activities, and have had several interactions with students seeking information about research programs at UC Davis and about life as an academic. I also believe that our partnership could represent an excellent opportunity for students seeking to perform graduate work or have a summer research experience. Indeed, my Department is running a NIH-funded Pharmacology Training Program that provides support for graduate students, and that has a strong commitment with promoting the scientific development of students from Underrepresented Minority Groups. In addition, we are developing a summer research program where students could come for 2 months to train with world-class scientists in different techniques and approaches. I will be pleased to advise students on all these opportunities and to serve as their link with UC Davis. I look forward to collaborating with you in this exciting project for many years to come.

Sincerely,

Manuel F. Navedo