PR-INBRE

20242025



# EVALUATION REPORT

Puerto Rico IDeA Network of Biomedical Research Excellence Annual Productivity Report July 2024 - June 2025

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## INTRODUCTION

PR-INBRE is a program whose efforts are to promote the continued development of biomedical research infrastructure in Puerto Rico. The PRINBRE is inspired by the National Institutes of Health Institutional Developmental Awards. The main goals of the Puerto Rico IDeA Network Biomedical Research Excellence (PRINBRE) proposal are to:

- 1. Enhance and strengthen the scientific infrastructure and research competitiveness of the Commonwealth in four specific research areas (Neuroscience & Behavior, Molecular Medicine & Cancer, Drug Discovery and Development, Bioinformatics) deemed to be key to advance Puerto Rico's biomedical and behavioral research capacity.
- 2. Elevate the productivity, competitiveness, and number of human resources needed to attract established investigators in those research areas.
- 3. Promote the development of research skills of talented junior investigators and gifted students.



## PROGRAM CORES

#### **Administrative Core**

The main goal of the Administrative Core (AC) is to improve the existing management structure of the PR-INBRE, building upon it to provide logistical support for the network and the External Advisory Committee (EAC), and developing programs to meet the training and mentoring

needs of the research faculty. The Administrative Core leadership manage and oversee the implementation of the proposed Program strategy at multiple levels, including planning, supervision, and evaluation in collaboration with the Program Coordinator(s), Core Directors, and Steering Committee, Evaluators, and the FAC.

#### **Centralized Research Instrumentation Core**

The Centralized Research Instrumentation (CRI) Cores impact the development of the PR-INBRE network by supporting further integration with existing as well as newly created infrastructure at mentoring institutions and other affiliated institutions and programs. The specific aims of the CRI are: (1) support research applications in metabolomics, genomics, proteomics, and protein structure for the INBRE network and (2) promote usage of Rico IDea Network of B.
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Puerto Rico IDeA Network of Biomedical Research

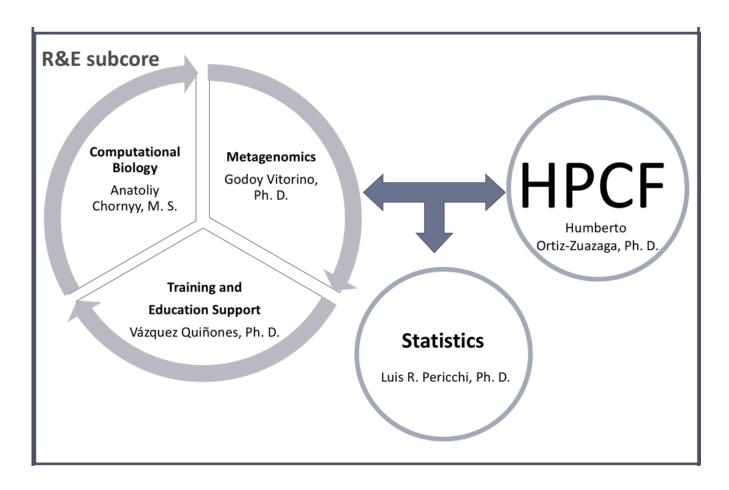
existing capabilities and specialized technologies to enable competitive studies by INBRE Investigators.

- ▶ Human Genetics and Genomics: Located at the UPR-MSC, the Human Genetics and Genomics Core supports projects that contribute to the understanding of genetic disorders affecting individuals of Puerto Rican ancestry, applying genomic technologies in the study of human diseases and/or use animal models of disease, or requiring applications in pharmacogenomics as well as gene regulation mechanisms. The Human Genetics and Genomics Lab provides services and expertise to INBRE investigators in Next Generation sequencing technologies (with the Ion Proton and Ion Torrent instruments), Affymetrix microarray applications, real-time qPCR for expression analysis and Taqman Genotyping assays (QuantStudio 6).
- The Metabolomics Research Sub-Core: Located at the UPR-MSC, the MRC is directed by Dr. Nataliya Chorna since its establishment as a part of the CRI in the fall of 2011.

#### Cont. CRI Core

- ▶ **Metabolomics Research Sub-Core:** In 2015, the MRC was integrated with the Human Genetics and Genomics Core at the UPR Medical Sciences Campus, thus providing complementing expertise and state-of-art modern technologies that enables support of research projects employing genomic and metabolomics in the areas of emphasis in the PRINBRE (i.e. Neuroscience, Molecular Medicine, Drug Development, Environmental and Behavioral Sciences).
- ▶ **Sequencing and Genomic Facility:** Located at the Molecular Science Research Center, the UPR Sequencing and Genomic Facility (SGF) is a Next-Generation Sequencing Facility that offers illumina's sequencing technology. With more than 12 years of continuous service, SGF are a leading facility in Sanger sequencing and NGS provider in PR with proven excellence in customer service and around 20 researchers among academics and others institutions, some of them outside the island.
- ▶ Chemtox Biotesting Facility: Located at UAGM Institution, the Chemtox is directed by Dr. Beatriz Zayas, Professor of Toxicology from the School of Science and Technology. The laboratory provides services for the screening of biological activity of novel chemical compounds, natural substances, or nanoparticles with potential therapeutic applications. Also, interested in environmental health and the toxicity of environmental contaminants. The goal of the Chemtox Biostesting Facility is to support scientists in their research of drug design and development as well as those interested in characterizing the mechanism of action of natural products or new materials. In addition to serving the scientific community, the facility is aligned with the academic and educational goals of the university, serving as a training site for undergraduate and graduate students or faculties in cell culture techniques, flowcytometry or mass spectrometry applications.
- Proteomics platform for biomarker discovery and protein identification and to interface between basic and clinical research conducted in Puerto Rico for the diagnosis and therapeutic monitoring of human diseases. The TPC is directed by Dr. Loyda Meléndez who also serves as the Proteomics Service (PS) Lead of the UPR-MSC RCMI Research Infrastructure Core. This facility provides resources and expertise in Proteomics to scientists in the two other RCMI programs in Puerto Rico (Ponce Medical School Foundation/Ponce Research Institute (PMSF-PRI) and Universidad Central del Caribe), partner institutions in the PRINBRE Program, and other campuses of the UPR System.

- ▶ Science and Technology Competency and Education Core: The overall goal of the STCE is to increase the research and technical skills of the biomedical workforce in Puerto Rico and encourage a greater number of undergraduate and graduate students and postdoctoral associates to pursue careers in science and technology. The STCE will achieve this goal by providing hands-on research opportunities for graduate and undergraduate students at network institutions to increase the numbers of undergraduate students that are competitive to enter graduate programs and compete for jobs in industry.
- ▶ **Bioinformatic Core:** The overall goal of the Bioinformatics Resources Core (BiRC) is to train faculty, students and postdoctoral associates who can apply bioinformatics skills in their research projects, develop new collaborative partnerships between PUI and lead investigators with BiRC researchers, and improve science education by integrating computational experiences in traditional biology courses through new Statistics, and the Research and Education (R&E) Sub-cores.



## EVALUATION METHODS

A process and outcome evaluation was designed for the *Puerto Rico IDeA Networks* of *Biomedical Research Excellence*. Process evaluations document whether a program has been implemented as intended. While outcome evaluation helps answer the basic question "Is this program or project working?" Outcome evaluations are important to assure funders that the programs they support deliver what they promise. They are also useful to learn where the project is working well and what changes may need to be made in order to optimize results.

In order to design and implement the process and outcome evaluation several methodologies and activities were used/conducted as follows:

- ▶ Document review- This included a review of NIGMS guidelines and relevant documents (i.e. NOA, Performance Measures Guideline, Scientific Information Reporting System) annual reports (APR), relevant literature on biomedical research programs, mentoring, scientific productivity, and career development of underrepresented students.
- ▶ Work Plan- The main purpose is tracking information regarding the progress of the core activities and outcomes. The Eval team collaborated with the PR-INBRE leadership to develop annual work plans for each of the program cores. The work plans ensure the information and data collection of program cores outcomes occurs.
- ▶ Student, Faculty and Institutions Tracking System (Productivity)- Eval team developed and implemented a tracking system to measure program outcomes.
  - Junior Research Associates (students)- An annual online survey was implemented in order to track current students' research skills development, mentoring experiences, and career development. Students also completed an annual progress report.
  - DRPP Projects Investigators- An annual progress report was conducted and information about scientific productivity collected.
  - Feasibility Projects Investigators- A progress report was requested to all of the feasibility awards investigators.

- ▶ Instrumentation Award- A progress report was requested to all the award recipients.
- ▶ Institutions (PR-INBRE network)- An institutional profile survey was designed and implemented. The Eval team in collaboration with the program Steering Committee collected data of the PR-INBRE network institutions. The profile instrument gather data about new instrumentation, research environment (ie. new faculty, research space, number of undergraduates/graduate in science careers), research productivity (i.e. grants submitted and awarded), among others.
- ▶ Database searches- The evaluation team conducted searches in several databases (i.e. NIH Reporting, PubMedCentral, NSF Awards Search) and webpages to supplement the productivity data.



# PROGRAM EXPERIENCE & IMPACT

- ▶ Workshops and Conferences Evaluation- Activities sponsored by the PR-INBRE program were documented. An evaluation survey was administered at the end of the activities. The survey collected the following data: participant profile, knowledge self-assessment, satisfaction, relevance/utility and recommendations.
- ▶ JRAs Students & Mentors Program Experience Evaluation- The students and mentors evaluated their experience with the PR-INBRE program at the end of the academic year.
- ▶ Local Summer Internship Evaluation (students & mentors)- Students in the local summer program evaluated their experience. An online survey was administered at the beginning and end of the program. Mentors also evaluated their mentee skills improvements and performance at their labs.
- ▶ WV & PR Summer Internship Evaluation (students & mentors)- The students experience was evaluated with a pre/post survey. Mentors also completed an evaluation of their mentee research skills improvement and performance at the lab.

A mix methods approach was used in the evaluation. The mixed-method evaluations blend various designs and data collection strategies (Pole, 2007). The mixed methods design combines qualitative and quantitative method to provide a more comprehensive and convincing evidence (Creswell and Clark, 2011). Moreover, this design encourages multidisciplinary collaboration and the use of multiple paradigms (Guest, Namey, Mitchel, 2013).

Data was analyzed using a combination of technologies. Quantitative data was analyzed using various software applications including: Excel, SPSS and Survey Monkey analyzer. Semantic and content analysis was used to summarize findings of the qualitative data. This evaluation report presents the results of the productivity data collected during the year 2024-2025. The evaluation findings were subdivided in four sections: Network Institutions, DRPP investigators, JRA students and Overall (program cores).



# PRODUCTIVITY INDICATORS

- ✓ New research collaborations
- ✓ Publications
- ✓ Proposals submitted
- √ Grants awarded
- √ New equipment
- √ Mentored students
- √ Awards & recognitions
- √ New faculty recruited

- √ STEM students enrolled
- √ STEM degrees awarded
- √ New STEM courses
- √ Service in peer review panels
- √ Poster and oral presentations
- √ Instruments (equipment) users



























# DRPP INVESTIGATORS

## FULL & PILOTS PROJECTS

The major focus of the Developmental Research Project Program (DRPP) is the support and development of the careers of promising faculty in the PR-INBRE network. The DRPP provide mentoring and financial support to the Developmental project investigators in the three scientific cluster areas: Neuroscience, Molecular Medicine/Genomics, Drug Discovery and Development.

#### **DRPP Supported Investigators 2024-2025** (n=16)

#### **3** Full Projects (\$300,000)

Investigators	Institution	Thematic Area
Carlos Díaz*	UPR. CCC	Drug Development
Kevin Alicea	UPR.Humacao	Molecular Medicine
Camilo Mora	UPR.Mayagüez	Molecular Medicine

<sup>\*</sup>Transferred to UPR MSC as Admin Core grant

#### **13** Pilot Projects (\$650,000)

Investigators	Institution	Thematic Area
Claudia Ospina	InterAmerican, Bayamón	Drug Development
Marcos Ramos	PHSU	Molecular Medicine
Elsie Pares	UPR Mayagüez	Drug Development
Wilfredo De Jesús	PHSU	Molecular Medicine
Lymari Fuentes	UAGM.Cupey	Drug Development
Enrique Rodríguez	UPR.Cayey	Molecular Medicine
Mitkel Santiago	UPR.Humacao	Drug Development
Ricardo Chiesa	UPR.Cayey	Drug Development
Yamixa Delgado	San Juan Bautista	Drug Development
Edwin Flores	UPR Mayagüez	Neurosciences
Rafael Madonado	UPR.Cayey	Drug Development
Joshua Reyes	UAGM.Gurabo	Neurosciences
Stephanie Dorta	UPR.MSC	Molecular Medicine

# DRPP INVESTIGATORS PROFILE 2024-2025



#### Gender

69% Male 31% Female



#### Institution

63% from PUIs
24% from OIs
13% Lead Institution

#### **Research Project Thematic Area**



14% Neuroscience & Behavior



43% Molecular Medicine and Cancer



43% Drug Discovery and Development

## INVESTIGATORS PRODUCTIVITY SUMMARY



New publications



Grants awarded



Undergraduates and Graduate students **mentored** 

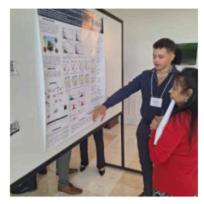


Oral and poster **presentations** 



New research collaboration established

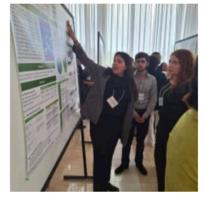




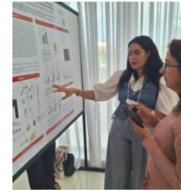




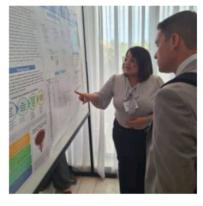






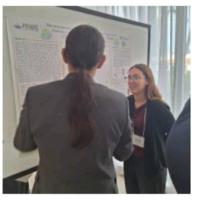


















# JRA STUDENTS

# JUNIOR RESEARCH ASSOCIATES (JRA)

Since 2001, the PR-INBRE have been supporting through the Science and Technology Competency Education Core (STCE) a significant number of undergraduate and graduates students. The STCE main goals is to provide opportunities for promising undergraduate and graduate students by sponsoring research training and enrichment opportunities, provide support for travel conducive to research training and sponsor workshops, specialized courses and training in science, technology, engineering, and mathematics (STEM) areas. The STCE helps strengthen research capacity at network institutions by providing opportunities for students to increase their knowledge of science topics and develop research skills. Student participation in the proposed STCE activities will prepare them for a successful application process into graduate programs. A total of 18 students participated of the Junior Research Associate Program in the reporting period.

#### **Undergraduate Students** (n=14)

Student	Institution	Mentor
1. Gerianne Oliveri	UPR-Rio Piedras (M)	Dr. Filipa Godoy
2. Mayra Luciano	UAGM.Cupey (PUIs)	Dr. Beatriz Zayas
3. Daniela Torres	UPR-Humacao(PUIs)	Dr. Kevin Alicea
4. Reydiliz Nieves Acevedo	Inter-Bayamón (OI)	Dr. Claudia Ospina
5. Ariana Negroni Santiago	UPR-Mayagüez (PUIs)	Dr. Juan López Garriga
6. Jafet Ramírez	Inter-Arecibo(OI)	Dr. Claudia Ospina
7. Alexander Morla	UPR-Rio Piedras (M)	Dr. Filipa Godoy
8. Juan E. Figueroa	Inter-Bayamón (OI)	Dr. Michelle M. Martínez
9. Valentina Vélez	PUCPR (OI)	Dr. Ceidy Torres
10. Bianca Alonso	UPR-Rio Piedras (M)	Dr. Filipa Godoy
11. Giancarlo Nevado	UPR-Mayagüez (PUIs)	Dr. Elsie Pares
12. Paula Vega	Inter-Bayamón (OI)	Dr. Claudia Ospina
13. Nathaly M. Román	Inter-Metro(PUIs)	Dr. David Sanabria
14. Adriana Aponte	Inter-Bayamón (OI)	Dr. Michelle M. Martínez

### **Graduate Students** (n=4)

Student	Institution	Mentor
1. Neishaliz Cotto	Pontificia Universidad Católica (OI)	Dr. Ceidy Torres Ortiz
2. Adneliz Catala	UAGM.Cupey (PUIs)	Dr. Loyda Méndez
3. Ivette Agront	UAGM.Cupey (PUIs)	Dr. Beatriz Zayas
4. Daraishka Pérez	San Juan Bautista (OI)	Dr. Yamixa Delgado

## STUDENTS PRODUCTIVITY SUMMARY



7 New honors & awards received

(32) Oral and poster presentations



New research collaboration established



# **CORE LEADERS**

#### NEW PUBLICATIONS

Thirty two (32) articles published by INBRE Cores

#### **Total Publications: 32**

- ▶ 14 publications by DRPP investigators in collaboration with other cores
- ▶ 6 publications by JRA students

#### Publications distribution by Status

Status	Numer of publications
with PMCID complete	25
with PMCID (but not in Pubmed)	3
not in Pubmed	4
Total	32

#### Publications distribution by Cores

Core/Participants	Numer of publications
Investigators (Full & Pilots)	12
Investigators + JRA students	1
Investigators + CRI Core	1
JRA students	3
JRA students + BIRC	2
CRI Core	5
BIRC Core	5
BIRC Core + CRI Core	3
Total	32

- ▶ A total of 21 manuscripts were in preparation or submitted by DRPP investigators at the end of this reporting period.
  - 16 In preparation, 2 Submitted
  - 3 Accepted

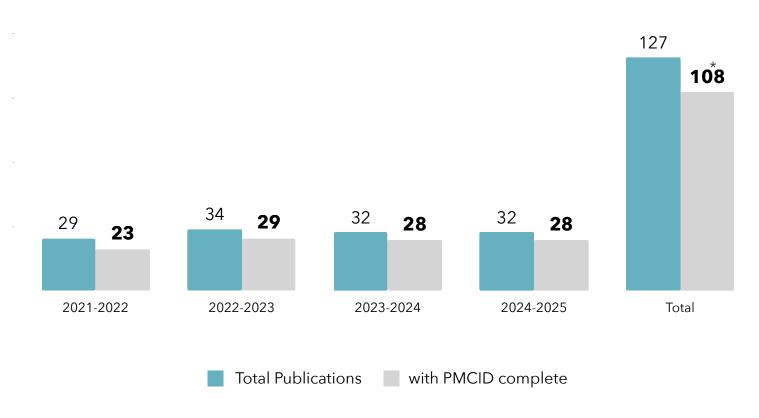
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#### TOTAL PUBLICATIONS BY YEARS



#### PUBLICATIONS NOT IN PUBMED

Year	Not in PubMed	By Core
2021-2022	6	2 BIRC Users, 3JRAS, 1CRI
2022-2023	4	1CRI, 2 BIRC Users, 1 Investigator
2023-2024	2	2 JRA students
2024-2025	4	2JRA students, 1CRI, 1 Investigator
Total	16	

<sup>\*16</sup> publications were not registered in Pubmed and 3 the PMID are in process.

### NEW GRANTS

58
GRANTS
SUBMITTED

Submitted	Total
DRPP Investigators	30
CRI Core	23
BIRC Core	3
CRI & BIRC Core	2
TOTAL	58

15
GRANTS
AWARDED

Awarded	Total	Budget
DRPP Investigators	13	\$3,389,622
CRI Core	2	\$7,434,491
TOTAL	15	\$10,824,113

# **30** GRANTS **SUBMITTED** BY DRPP INVESTIGATORS

#### Camilo Mora (4)

R35, Tissue-Specific Extracellular Vesicles as Key Players in Wound Healing \$1,964,019

R01, Aerosol Delivery of Extracellular Vesicles to Enhance Vocal Fold Repair \$3,065,880

Imaging-Enabled Flow Cytometry for Enhancig Extracellular Vesicles, Lipid nanoparticle, and Cell Morphology Characterization

\$249,048

R01, Aerosol Delivery of Extracellular Vesicles to Enhance Vocal Fold Repair \$3,065,880

#### Carlos Díaz (1)

Impact Award HT942524PRCRPIPA; Molecular Profiles and Biomarkers of Gastric Cancer Progression in Autoimmune Gastric Precancerous Lesions

\$1,000,000 total for 3 years

#### **Enrique Borrero (1)**

Pilot-COBRE, Drosophila melanogaster as a Research Model to Study the Impact of PFAS on Neuroplasticity

\$50,000

#### Joshua Morales (3)

R15, Advancing Multiplex Biosensor Technology for Comprehensive Health Monitoring \$350,000 [Not granted]

DOE, Understanding Non-Platinum Group Metal Oxide Catalysts Degradation after Long-Term Performance

\$3,000,000 [Waiting decision]

Full Proposal, Advancing Energy Storage with Zinc-Ion Batteries Using Additive-Induced Dendrite Control

\$150,000 [Waiting decision]

#### Kevin Alicea (3)

Research Grant, A Comprehensive Analysis of Lung Cancer in Hispanic Women: Exploring Behavioral, Environmental, and Biological Factors

\$10,000

Academic Grant; MACSQuant 10 Flow Cytometer

\$111,190

Research Grant; AACR Trailblazer Cancer Research Grants for Early-Stage Investigators \$1,000,000

#### Lymaris Fuentes (1)

S-STEM: Building Resources and Initiatives for Development, Growth, and Excellence in Science (BRIDGES), NSF

\$2,000,000 [Not granted]

#### Marcos Ramos (4)

R01, Fostering Diversity and Discovery through Investigating the Association between Saharan Dust, Neutrophil Activation, and Asthma Exacerbations

2,975,133 [Not granted]

Research Career Development Award, Evaluating Parasite-Derived Fh15 as a Therapeutic Strategy for Lupus

\$600,000 [Not granted]

R01, Evaluating Trained Immunity-Driven Epigenetic and Functional Reprogramming of Neutrophils in Chronic Suppurative Lung Disease

\$2,400,000 [Waiting decision]

Next Generation Grant, Trained Immunity and Antibody Isotype in Dengue Neutrophil Responses

\$150,000 [Waiting decision]

#### Mitkel Santiago (1)

DOE-EPSCoR, Understanding Non-Platinum Group Metal Oxide Catalysts Degradation after Long-Term Performance

\$3,000,000

#### Rafael Maldonado (3)

MIR, Establishment of a Collaborative Multi-User Orbitrap Mass Spectrometry Facility at the University of Puerto Rico, Cayey

\$1,400,000

FDI, Leveraging Eleutherodactylus juanariveroi egg microbiome metabolites to discover new solutions for multidrug-resistant bacterial infections.

\$10,500

S10, Acquisition of a Phenom XL G2 Desktop SEM with EDS Capabilities to Advance Multidisciplinary Research and Undergraduate Training in Puerto Rico.

\$246,733

#### Ricardo Chiesa (1)

Advanced Research Grant (ARG), Tropical Marine Algae as Targets for the Discovery of Anxiolytic Agents

\$150,000 [Waiting decision]

#### **Stephanie Dorta (3)**

R16, Streptococcus species as potential therapeutics for oropharyngeal squamous cell carcinoma

\$592,080 [Awarded]

U54,Antigen-specific immune responses associated with microbial signatures and cervical disease progression in Hispanics

\$7,121,156 [Scored, call removed]

U54, Pilot CePACHE: Streptococcus salivarius as a potential therapeutic for oropharyngeal cancer

\$50,000 [Scored, needed to decline due to overlap with COBRE award]

#### Wilfredo de Jesús (2)

R01 reward, NIH R01 Research with Activities Related to Diversiry (ReWARD) as a Co-PI. Title: Fostering Diversity and Discovery through Investigating the Association between Saharan Dust, Neutrophil Activation, and Asthma Exacerbations.

\$2.6 million

(COBRE) PHASE 3 Center for Neuroplasticity at the University of Puerto Rico, COBRE(COBRE Phase 3 Neuroplasticity Center's COBRE Collaborative Seeds Proposals (CCSP) Program): Brain-Lung-Sleep Interactions: Understanding RSPH4A Protein Expression in Primary Ciliary Dyskinesia \$5,000

#### Yamixa Delgado (3)

R16

Development of targeted dual-bullet drug delivery systems for lung carcinoma against chemoresistance and metastasis [Waiting decision]

R25

Centers of Biomedical Research Excellence (COBRE) Phase 1: Center for Microbiome Studies\_Component 265 title: "Determining the impact of edelfosine on restoring the gut microbiota after an epileptic insult" [Not granted]

R25

Hispanic Clinical and Translational Research Education and Career Development (HCTRECD) Award \_"Developing non-invasive diagnostic tools for lung cancer through the measurement of NO levels in the Puerto Rican population"



#### Kevin Alicea (2), PUIs

- Research Grant, A Comprehensive Analysis of Lung Cancer in Hispanic Women: Exploring Behavioral, Environmental, and Biological Factors, Source: Foundation
   \$10,000
- 2. Academic Grant, MACSQuant 10 Flow Cytometer, Source: Industry

\$111,190.0

#### Yamixa Delgado (3), OI

3. Hispanic Clinical and Translational Research Education and Career Development (HCTRECD) Award \_Developing non-invasive diagnostic tools for lung cancer through the measurement of NO levels in the Puerto Rican population, Role: Scholar, R25MD007607,

\$40,000

- 4. Determine the impact of Edelfosine on neuronal and microglial inflammation and plasticity markers as a potential epilepsy treatment, SSMN Seed Grant , Source: Foundation \$10,000
- 5.Centers of Biomedical Research Excellence (COBRE) Phase 1: Center for Microbiome Studies\_Component 265 title: "Determining the impact of edelfosine on restoring the gut microbiota after an epileptic insult". Role: Co-Leader, \$75,000

#### Joshua Reyes (2), PUIs

6. Center for Interfacial Electrochemistry of Energy Materials (CIE2M): Advancing the PREM Pathway in Puerto Rico - Nanomaterials for Sustainable Renewable Energy. PREM 2425154, \$120,000 Role: Senior Personnel

7. Zn Ion battery for enhanced energy storage with electrodeposition techniques and additive-driven dendrite control. Source: DOD, Subaward from CHRES. \$22,346. Role: Sennior Personnel

#### Rafael Maldonado (1), PUIs

8. Leveraging Eleutherodactylus juanariveroi egg microbiome metabolites to discover new solutions for multidrug-resistant bacterial infections., Source: FDI \$10,500

#### Camilo Mora (1), PUIs

9. Non-invasive Therapy using Lamina Propria Extract for Vocal Fold Healing. R01DC022510-01. Role: Co-Investigator. \$588,000.

#### Stephanie Dorta (2), Lead

10. Novel Vav/Rac inhibitors in rheumatoid arthritis therapy. Source: DOD. ATRP, AT240067 \$499,859 Role: Co-Investigator

11. COBRE: Puerto Rico Center for Microbiome Sciences; RPL: Immunological changes associated with antibiotic use in oropharyngeal cancer.1P20GM156713-01. Role: Coleader. \$ 943,510

#### Graduate DRPP

#### Lisandro Cunci (2), Lead

12. Development of a Non-Invasive Sweat Biosensor for Traumatic Brain Injury compatible with In-Space Manufacturing to Monitor the Health of Astronauts. Source: NSF, MOSAICS 80NSSC24K1614. \$300,000

13. Development of a novel NPY-sensitive micrroelectrode to detect endogenous NPY. **R01**MH138583. \$659,217



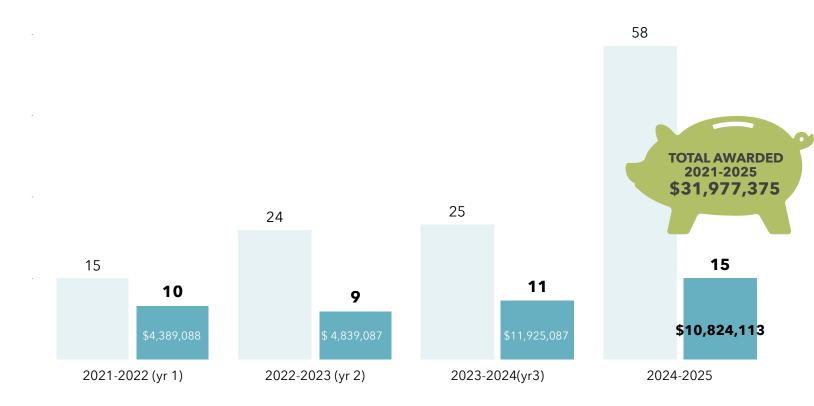
#### Beatriz Zayas, Chemtox-CRI Core

1. Development and optimization of analitical and toxicological methods to determine the presence of opioids on human biological fluids. Source:Reseach Project PR Health Department. \$435,000.0

#### Ricardo Papa, SGF, Nataliya Chorna, CRI-Core

2. Cracking the developmental blueprint of life: Omics, Computational Science, and Al.Full Research Proposal OIA E-RISE RII. \$6,999,491 Source: NSF-# 2435987

#### GRANTS SUBMITTED AND AWARDED BY YEARS



### NEW PRESENTATIONS (ORAL + POSTER)

256

new presentations were performed by Investigators, Students and Core staff

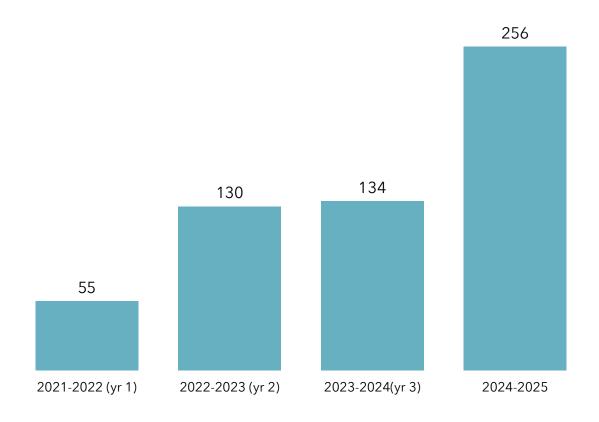
#### **TYPE OF PRESENTATIONS**

- ▶ 89 Oral Presentations
- ▶ **167** Poster Presentations

#### **BY POSITION**

- ▶ 89 Oral Presentations (70 Investigators, 4 JRAS, 15 Core Staff)
- ▶ **167** Poster Presentations (84 Investigators, 28 JRAS, 55 Core Staff)

### PRESENTATIONS (ORAL AND POSTER) BY YEARS



#### DRPP INVESTIGATORS

#### POSTER PRESENTATIONS BY LOCATION

59% PUERTO RICO

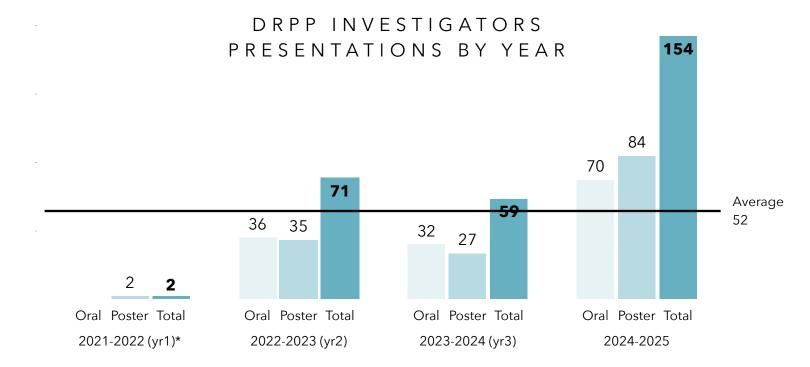


#### DRPP INVESTIGATORS

ORAL PRESENTATIONS BY LOCATION

80% PUERTO RICO





#### JRA STUDENTS

#### POSTER PRESENTATIONS BY LOCATION

65% PUERTO RICO

35% UNITED STATES (MAINLAND)

#### JRA STUDENTS

#### ORAL PRESENTATIONS

75% PUERTO RICO

25% UNITED STATES (MAINLAND)

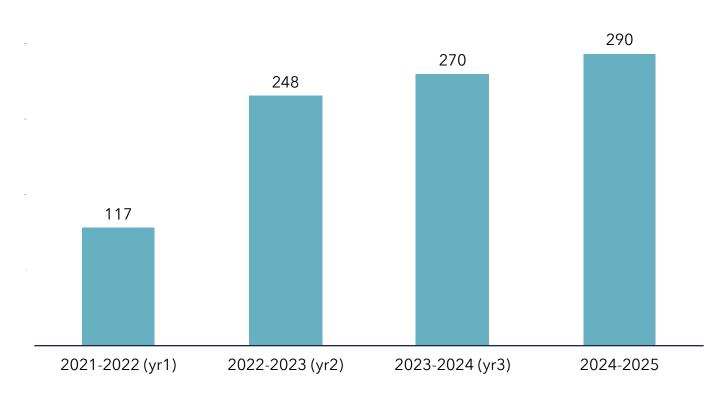


# STUDENTS MENTORED BY CORES (INBRE & NON INBRE)

290

Students (INBRE & Non INBRE ) were mentored by PR-INBRE Cores staff and investigators

#### TOTAL STUDENTS MENTORED BY YEARS



Graph includes undergraduate and graduates students.

### STUDENTS MENTORED BY POSITION

Students	Undegraduates	Graduates
INBRE students (JRAs)	14	4
Non INBRE		
Students mentored by CRI Core staff	32	43
BIRC Core staff	1	6
DRPP Investigators	139	51
TOTAL	186 UG	104 Graduates

JRAs: Junior Research Associates

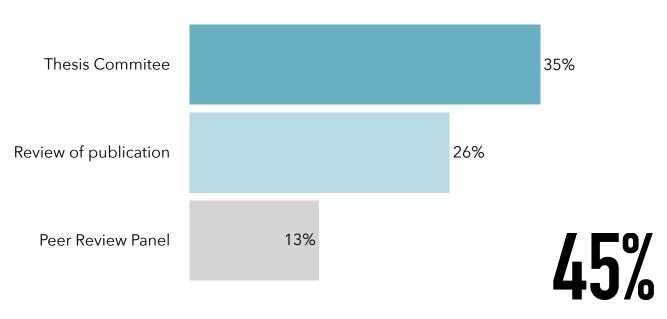
#### SERVICE IN PEER REVIEW PANELS

#### BY DRPP INVESTIGATORS

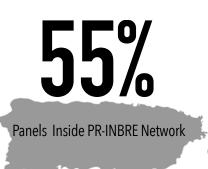


- Investigators collaborated in 54 peer review panels
- ▶ 56% (n=30) of the peer review panels were inside the PR-INBRE Network Institutions (i.e. journals, abstract reviewers, study section-grants).

## PARTICIPATION BY TYPE OF PANEL



Panels Outside PR-INBRE Network

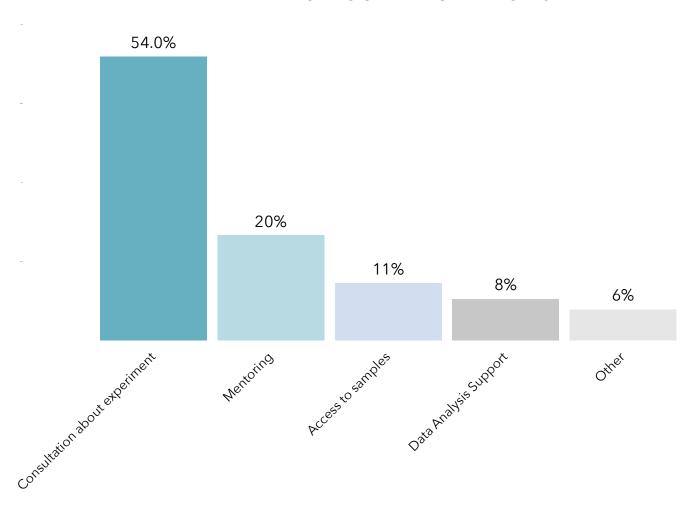


38

# NEW RESEARCH COLLABORATIONS BY DRPP INVESTIGATORS

- ▶ The DRPP investigators established **35** new research collaborations in this period.
- ▶ 54.3% (n=19) of the new collaborations were related to experiments consultation and access to equipment

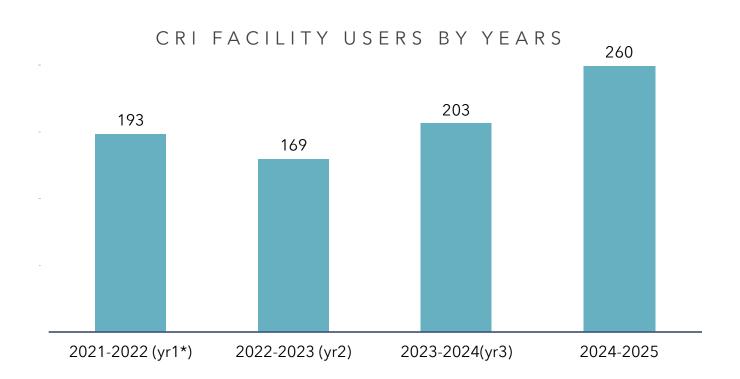
#### TYPE OF COLLABORATIONS



### USERS OF CORE FACILITIES

Users of the Centralized Research Instrumentation Core (CRI)

Position	HGC	Proteomics	SGF	ChemTox	Metabolomics	SubTotal
Faculty	7	20	12	14	26	79
Post doc	2	4	1	0	3	10
Staff	7	6	3	6	3	25
Graduate students	2	12	10	32	15	71
Undergraduate students	8	7		47	13	75
					Total users	260



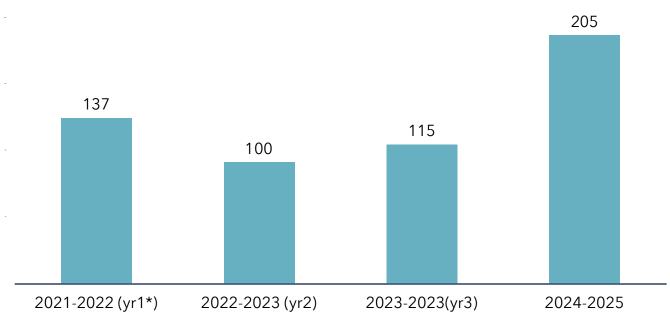
#### CONT. USERS OF CORE FACILITIES

#### **BiRC** Core

Users of the High Performance Facility Computer (HPCf)

- ▶ **68** new user accounts in 9 new research groups
- \*\*Including 12 new user account on the Boquerón cluster from BiCoP training participants.
- ▶ A total of <u>205 support requests</u> from users of cyberinfrastructure-HPCf
- Examples of support requests
  - Boquerón Status of my submitted job
  - Request of temporary password
  - User Account Request HPCf www
  - Forget account password Boquerón
  - Group Account Request HPCf www
  - Request to install NanoPack
  - Password reset
  - BWA error
  - Plotsr

#### BIRC NEW USERS ACCOUNTS BY YEARS



## NEW EQUIPMENT ACQUIRED BY PR-INBRE

#### **DRPP** Core

\$324,435 in instrument support to twenty projects in the PR-INBRE network.

	Investigator	Institution	Instrument	Cost
1	Antonio Colom	Inter Metro	Polarimeter	\$15,000
2	Natasha de León	Inter Metro	Aerosol sampler	\$6,413
3	lda Mejías	Interamerican Metro	PCR workstation	\$5,859
4	David Sanabria	InterAmerican Metro	Nicolet Summit X FTIR Spectrometer	\$32,450
5	Ivelisse Irizarry	InterAmerican Metro	Multiskan microplate reader	\$25,885
6	Javier Palomino	PCUP	ZnO sensor	\$30,000
7	Ceidy Torres	Pontifical Catholic U, Ponce	Centrifuge and computer	\$22,624
8	Loyda Méndez	UAGM Carolina	Hemavet system	\$29,250
9	Eduardo Tosado	UAGM Cupey	Freezer, vacuum pump	\$25,130
10	Lauren Fernández Vega	UAGM Cupey	Tecan plate reader	\$37,803
11	Michelle Martínez	Universidad Central del Caribe	Camera for in vivo imaging system	\$26,348
12	Lilia Kucheryvich	Universidad Central del Caribe	Olympus camera	\$5,710
13	Mitkel Santiago	UPR Humacao	Diffuse reflectance spectrophotometer	\$29,760
14	Elsie Pares	UPR Mayagüez	Protein purification system	\$32,203

## CORE WORKSHOPS & SEMINARS



47

Total of Seminars, Workshops and Conferences that were sponsored by PR-INBRE during the year 2024-2025

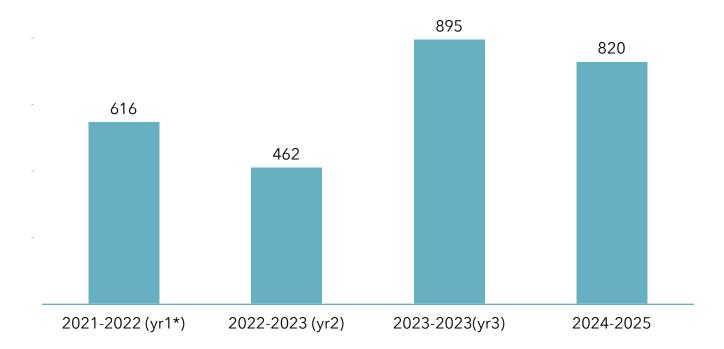


820

**Total Participants** 

Participants by position	Total
Faculty	198
Undergraduate student	359
Graduate student	120
Other	53
Not specified or Data not provided	50

### ACTIVITIES PARTICIPANTS BY YEAR



INDICATOR	Last Year	This Year	
New <b>Publications</b>	32	32	~
New <b>Grants awarded</b>	11	15	4
Oral + Poster <b>Presentations</b>	134	256	4
Students <b>Mentored</b>	270	290	4
<b>User of Core</b> Facilities	203	260	4
Activity <b>Participants</b>	895	820	+

## RECCOMENDATIONS



#### GRANTS SUBMISSION

The majority (50%) of submitted grant proposals were directed to NIH, indicating a strong alignment with federal biomedical funding priorities. While this reflects a solid understanding of NIH mechanisms, there is an opportunity to further diversify funding sources. To increase competitiveness and sustainability, we recommend encouraging submissions to additional funding sources such as the DOD, NSF, DOE, foundations, and industry. Providing targeted guidance and increasing awareness of these opportunities can help diversify the funding portfolio and expand research impact.

#### PUBLICATION RATES



The current publication pipeline shows promising research activity, with 82% of manuscripts still in preparation, while only 11% have been accepted and 7% submitted. To improve the conversion of research outputs into peer-reviewed publications, we recommend the following: (1) Assign publication mentors (senior faculty) to junior researchers, (2) Establish internal deadlines or writing goals to encourage timely manuscript completion, (3) Celebrate accepted and submitted manuscripts publicly (e.g., newsletters, departmental announcements).

## RECCOMENDATIONS



#### CRI FACILITY USERS

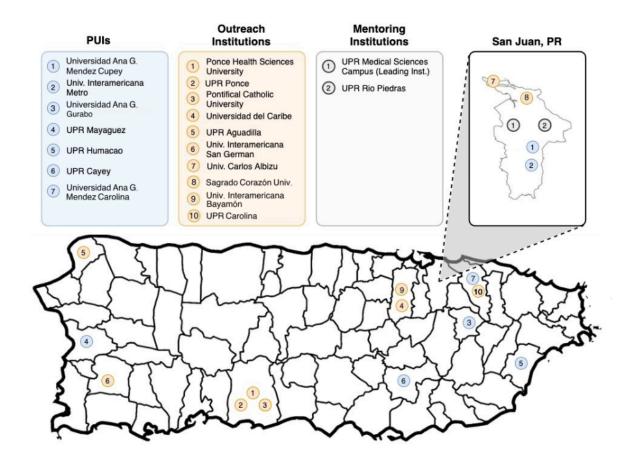
CRI facility usage has shown a strong upward trend, rising from 169 users in 2022-2023 to 260 users in 2024-2025—a 54% increase over two years. This growth reflects increasing awareness and demand for CRI services. To sustain this momentum, we recommend continued promotion of CRI capabilities across departments and partner institutions.

# APPENDIX

## NETWORK INSTITUTIONS

Puerto Rico IDeA Network of Biomedical Research Excellence (PR-INBRE) is a program whose efforts are to promote the continued development of biomedical research infrastructure in Puerto Rico. Since establishment in 2001, PR-INBRE is supported by the National Institute of General Medical Science of the National Institutes of Health (NIGMS-NIH).

The PR-INBRE program is led by an administrative team at the UPR-Medical Sciences Campus (UPR-MSC), under Dr. José Rodríguez Medina, Program Director. Currently, the **PR-INBRE program support 19 institutions across the Island** (see Figure below)



## NEW FACULTY

### 16 new faculty recruited at the Network Institution

94% were recruited in PUIs50% of the faculty position was Assistant Pofessor

Institution	Name	Faculty Rank	Department
	Valerie Ortíz Gómez	Associate Professor	Science and Technology
	2. Luis R. Rivera Arce	Assistant Professor	Science and Technology
	3. Melissa Rivera López	Associate Professor	Science and Technology
UAGM.Gurabo	4. Héctor J Díaz Zabala	Associate Professor	Science and Technology
OAGIVI. Gurabo	5. Yomarie Rivera	Associate Professor	Science and Technology
	6. Wanda Vélez	Associate Professor	Science and Technology
	7. Chelsi Almodóvar	Assistant Professor	Science and Technology
	8. Aida Colón	Assistant Professor	Health Sciences
Pontificia	9. Dr. Wilber Ortiz	Not available	Natural Sciences
	10. Rafael Maldonado	Cat.Auxiliar	-
	11. Arlin J.Alvardo	Cat.Auxiliar	Biology
	12. Emmanuel Echeverri	Cat.Auxiliar	-
UPR.Cayey	13. Adolfo Rodríguez	Cat.Auxiliar	Chemistry
	14. Lesly Y. Carmona	Cat.Auxiliar	Biology
	15. Reynaldo Castro	Cat.Auxiliar	Chemistry
	16. Isaac D.Gómez	Instructor	Math-Physic

## NEW EQUIPMENT

- 23 new equipment were acquired by the Network Institutions (not sponsored by PR-INBRE)
- 56% was acquired by the PUIs

	Institution	New Instrument Acquired (Name)	Number of users	Type Inst.
1	UCC	NI cRio 9045 (2)	20	Ol
2	UCC	Noldus Behavioral Studies Workstation	5	Ol
3	UCC	Olympus FV-1000 Confocal Workstation	5	OI
4	UCC	Centrifuge 5430 R	7	OI
5	Pontificia	UV5 Nano Excellence UV/VIS Spectrophotometer	25	OI
6	Pontificia	SCILOGEX D160, Homogenizer, DS-160/5 5mm generator probe, H-370 stand, for solid/liquid media, volumes < 0.1uL, 110V	20	OI
7	Pontificia	Corning LSE Benchtop Shaking Incubator with Platform	10	OI
8	PHSU	SKINCOLORCATCH	6	OI
9	PHSU	minus 80 Cryocube Freezer	8	Ol
10	PHSU	Plethysmograph Platinum Elite DX	5	OI
11	PHSU	Thermo Scientific 1300 Series Class II Type A2 Biological Safety Cabinet Package	12	OI
12	UAGM.Gurabo	METTLER TOLEDOTM Easy Brix Refractometer	~70	Р

	Institution	New Instrument Acquired (Name)	Number of users	Type Inst.
13	UPR.Humacao	MICROCENTRIFUGA REFRIGERADA LEGEND MICRO 21R SORVW/RTR	21	Р
14	UPR.Humacao	BIOLOGICAL SAFETY CABINET/1300 SERIES CLASS II TYPE A2 (HOOD) WITH CERTIFICATION	21	Р
15	UPR.Humacao	PN FETAL MONITOR	-	Р
16	UPR.Humacao	GRAHAM-FIELD SYNERGY 5000 DELUXE TRAINING BED/SILVER FROST FINISH	66	Р
17	UPR.Humacao	Autoclave Tuttnauer 3870 EAP automático 85L/ 22.5 galones para esterilizar instrumentos, cristales y otros objetos de laboratorio.	196	Р
18	UPR.Humacao	FORMA SERIES 3 WATER JACKETED CO2 INCUBATOR 184L POLISHED STAINLESS STEEL	5	Р
19	UPR.Humacao	SAFETY CABINET HOOD 1300 SERIES CLASS II TYPE A2 BIOLOGICAL SAFETY	5	Р
20	UPR.Humacao	AE3LE TRINOCULAR INVERTED MICROSCOPE SLEDENTOPF/UNIVERSAL ATTACHABLE MECHANICAL	5	Р
21	UPR.Humacao	Electrometro/HI Resistance Meter	8	Р
22	UPR.Humacao	JEOL SMART COATER FOR SEM IMAGING/DII- 29010SCTR	15	Р
23	UPR.Humacao	NT-MDT Integra II Confocal AFM-Raman	11	Р

NOTE: These equipments were not sponsored by PR-INBRE

## NEW GRANTS

Туре	Institutions	Grants Submitted	Grants Awarded	Total Awarded (\$)	Total Grants Awarded to Investigators & Core (non INBRE funds)
L	UPR-MSC	*	8	\$6,865,755	1JRMedina (Supplement) \$310,250 \$943,510 (S.Dorta), \$499,859 (S.Dorta)
М	UPR-Rio Piedras	*	6	\$9,028,842	\$300,000 (L.Cunci) \$659,217 (L.Cunci)
Р	UAGM.Cupey	*	1	\$435,000	\$435,000 (BZayas)
Р	UPR.Cayey	4	3	\$250,559	\$10,500 (R.Maldonado)
Р	UPR.Humacao	5	2	\$121,190	\$111,190 (K.Alicea) \$10,000 (K.Alicea)
Р	Inter.Metro	*	1	\$405,015	David Sanabria (R15) \$405,015
Р	UPR.Mayagüez	*	4	\$1,994,000	C.Mora (\$588,000)
Р	UAGM.Gurabo	8	3	\$152,346	\$120,000 (J.Reyes) \$22,346 (J.Reyes)
OI	UCC	10	10	\$1,845,855	
OI	PHSU	29	4	\$494,603	\$275,385 (M.Ramos)
OI	SJ Bautista	*	3	\$6,436,169	\$10,000 (Y.Delgado) \$40,000 (Y.Delgado)
OI	Pontificia	5	3	\$1,216,472	
	TOTAL	61	48	\$29,245,806	\$3,197,170

<sup>\*</sup>Data were not provided by the Institution

### STEM STUDENTS



8,149 STEM STUDENTS ENROLLED



**890** STEM DEGREES AWARDED\*

# STEM Students Enrolled by program

Associates: 458

Bachelors: 5,119

Master: 629

Doctorate: 1,035

Medical (MD): 908

# STEM Degrees Awarded by program

Associates: 92

Bachelors: 553

Master: 115

Doctorate:68

Medical (MD): 62

<sup>\*</sup>Data were not provided by all the Institution

## REFERENCES

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