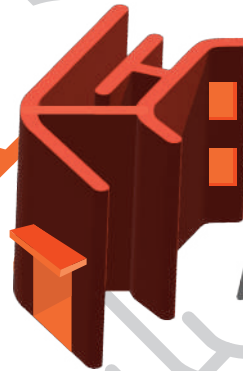




# RESEARCH GRANTS P R O G R A M

FUNDS TO GROW





## RESEARCH GRANTS PROGRAM

As part of the PRSTRT, the Research Grants Program is a structured, systematic, open and competitive funding mechanism to support the development of science and technology research projects in Puerto Rico.

Presently, there are no other peer-reviewed funding mechanisms available to researchers in Puerto Rico that encompass opportunities for junior, mid-level and senior researchers representing a broad range of disciplines. In total, since its inception, the Research Grants Program has awarded more than 120 research grants through its competitive initiatives for a total investment by The Trust of \$13.8 million with a return of investment of over \$37.3 million.

## OUR MISSION

The mission of the Research Grants Program is to provide proof-of-concept funding and incentives to advance locally developed R&D projects to become more competitive for federal and private funding and/or commercialization. The Research Grants Program represents a critical source of competitive financial support for fundamental research and commercialization activities that builds the knowledge economy, fuels innovation, and empowers Puerto Rican scientists and entrepreneurs.

## OUR VALUES



RESEARCHER  
FOCUSED



AGILE



COOPERATIVE



ADAPTABLE



FACILITATOR



## PROGRAM DIRECTOR



Andreica Maldonado has managed the Research Grants Program since 2017. As a “change agent,” she brings together the scientific community, government agencies and officials and research stakeholders to promote the development of innovation in Puerto Rico. Among other key roles delivering high performing results, her vast and diversified experience includes working at Parallel18 as a Startup Executive and at Rutgers, the State University of New Jersey’s Center for Leadership and Management. She also has experience in working with disparate community cohorts, including seniors, women and adolescents, in New Jersey, Massachusetts and Puerto Rico. Her skills and experience are rounded by her passion for entrepreneurship, innovation, science and challenging the status quo.





## PROGRAM IMPACT METRICS

**120**

**Programatic Awards**

**\$13,811,978**

**Grants Awarded**

**\$37,301,563**

**ROI**

**8**

**Founded  
Companies**

**417**

**Abstracts &  
Presentations**

**18**

**Awarded SBIR/STTR  
Proposals**



## RESEARCH GRANTS

P R O G R A M

*FUNDS TO GROW*

**428**

**Students  
Impacted**

**130**

**Publications**

**39**

**Patents**

**60**

**Patent  
Applications**

### STRATEGIC SECTORS:



**Aerospace**



**Agriculture**



**Biotechnology and Natural Sciences**



**Clean Technologies and/or  
Renewable Energy**



**Electronics**



**Clinical Trials**



**Environmental Sciences**



**Medical Devices**



**Conservation Sciences**

## CURRENT GRANTEES (ALL)

From July 2021 until June 2022, the grantees reported the following achievements:

### Students Impacted

**73 undergraduate students** (for a total of 129 since funds were awarded)

**46 graduate students** (for a total of 99 since funds were awarded)

### Thesis and Dissertations

As a result of the funding provided by the Research Grants Program, **three (3) undergraduate thesis, four (4) MS thesis, and five (5) PhD dissertations** were completed. Also, **one (1) MS thesis, and three (3) PhD dissertations** are in progress.

### External Funding

Since July 2021, the total amount of external funding secured that the active grantees reported is **\$4,179,891 for a total of \$9,001,889** (since funds were awarded). It is important to note that obtaining preliminary data and securing additional funding is a lengthy process. Several grantees are awaiting responses from federal agencies to which they have submitted proposals.

### Publications

Since July 2021, our grantees have published in the following peer reviewed journals:

**ARG – 20 new peer-reviewed publications (for a total of 36 publications since funds were awarded)**

**CRG – 11 new peer-reviewed (for a total of 21 publications since funds were awarded)**

## FUNDING MECHANISMS

From July 2021 until June 2022, the grantees reported the following achievements:

### ADVANCED RESEARCH (ARG)



Solicited proposal mechanism with the goal of providing funding to advance locally developed science and technology projects to a point where these will be able to be further developed through alternate sources of funding and/or commercialized. Up to \$150K.

Learn more: <https://prsciencetrust.org/advanced/>

### CATALYZER RESEARCH (CRG)



The CRG enhances the competitiveness of Puerto Rico's researchers by providing critical bridge funding to help them (1) obtain reproducible and robust preliminary results, (2) address any recommendations from previous grant reviewers to improve the R&D project to strengthen its position to obtain the grant and (3) secure reagents, laboratory materials, collaborations, or additional technical training necessary for the proposed goals. Up to \$70K. Learn more: <https://prsciencetrust.org/catalyzer/>

### 1-TO-1 MATCHING FUNDS FOR PHASE I & II SBIR/STTR PROPOSALS



1-to-1 matching funds for Phase I & II SBIR/STTR proposals: to promote and increase commercialization of research. Match up to \$100,000 for Phase I and up to \$200,00 for Phase II.

Learn more: <https://prsciencetrust.org/sbir-sttr/>

### CDTI GRANT



This call will allow the selection and financing of R&D projects in effective collaboration between a Puerto Rican entity (Research Center, University or Company) and a Spanish company. Awards up to \$75,000/year.

Learn more: <https://prsciencetrust.org/advanced/>



## CATALYZER RESEARCH GRANTS PROGRAM

### CATALYZER GRANTS CALL PEER REVIEW PROCESS

The Catalyzer Research Grants opened an RFP (Request for Proposal) in January 2022, in alignment with the Trust's mission to advance research in Puerto Rico. The program has a rigorous peer review process; its goal is to assess the scientific merit of grant applications in a fair, independent, expert-driven, and free from inappropriate influences, so that the Trust can fund the most promising research or development work. During the peer review process, the Research Grants Program team sent approximately 85 invitations to selected subject matter experts (SMEs). A total of 37 qualified reviewers, based on

scientific and technical qualifications, were recruited from the United States, Latin America, and Europe, and completed the evaluation.

Each application was assigned three primary reviewers. Reviewers were asked to score the applications utilizing the following six criteria: Approach and Technical Merit, Innovation, Significance, Investigators, Environment and Collaboration, and Budget Justification. After all the evaluations were completed, the Research Grants Program team scheduled the scientific panels. Each panel meeting lasted 3 to 4 hours and evaluated approximately 10 proposals. A total of 3 scientific panel discussions were conducted.

### THE RESEARCH GRANTS PROGRAM, RECEIVED 31 FULL PROPOSALS FOR THE CRG IN THE FOLLOWING STRATEGIC SECTORS:



**Aerospace (1)**



**Biotechnology and Natural Sciences (18)**



**Clean Technologies and/or Renewable Energy (3)**



**Environmental Sciences (4)**



**Information and Communications Technology (1)**



**Medical Devices (2)**



**Other (2)**

#### Gender

- Female (17)
- Male (14)

#### Type of Application

- New submission to a federal grant (27)
  - Junior faculty seeking to secure their first grants (16)
  - PI's with a successful track record embarking in a new research topic (11)
- Resubmission to a federal grant (4)

#### Institutions

- Ana G. Méndez University - Gurabo Campus (1)
- Ponce Health Sciences University (3)
- Pontificia Universidad Católica de Puerto Rico - Ponce Campus (1)
- Universidad Central del Caribe (2)
- University of Puerto Rico - Humacao Campus (1)
- University of Puerto Rico - Mayaguez Campus (10)
- University of Puerto Rico - Medical Sciences Campus (6)
- University of Puerto Rico - Ponce Campus
- University of Puerto Rico - Río Piedras Campus (5)

## THE FOLLOWING 10 PROJECTS WERE RECOMMENDED FOR FUNDING:

**We are also proud to announce that 80% of this current cohort are female researchers.**

Grantee	Institution:	Project Title	Strategic Sector
Andres Cecchini , PhD	University of Puerto Rico - Mayaguez Campus	Design Optimization of Innovative Multi - material 3D- printed Sandwich Structures with Enhanced Fatigue Strength and Damage Tolerance for Aerospace Applications	Aerospace
Bianca A. Torres Hernández, PhD	University of Puerto Rico - Medical Sciences Campus	Characterization of Gut Microbiome and its association with inflammatory cytokines in Puerto Rican individuals diagnosed with mental illness	Biotechnology and Life Sciences
Carla Restrepo , PhD	University of Puerto Rico - Rio Piedras Campus	Landsliding and rhizobiota link the short- and long-term carbon cycles: A "multi-omic" approach	Environmental Sciences
Catalina I. Villamil, PhD	Universidad Central del Caribe	Assessing estimates of evolution from phenotypic integration: relationship of genotype to phenotype in the vertebral column	Biotechnology and Life Sciences
Darlene Santiago , PhD	University of Puerto Rico - Medical Sciences Campus	Refining a buprenorphine precision medicine approach for the opioid use emergency in PR	Medical Sciences
Imilce A. Rodriguez-Fernandez, PhD	University of Puerto Rico - Rio Piedras Campus	Probiotics, metabolome, and the gut -brain axis in health and aging	Biotechnology and Life Sciences
Joselyn Del Pilar Albaladejo, PhD	University of Puerto Rico - Mayaguez Campus	Strategic Solvothermal Synthesis Design for the Preparation of Spinel -based Catalytic Materials	Clean Technologies /Renewable Energy
Julie Dutil , PhD	Ponce Research Institute	Leveraging existing large datasets to study the role of mitochondrial heteroplasmy in breast cancer risk and health disparities	Biotechnology and Life Sciences
Magaly Martinez-Ferrer, PhD	University of Puerto Rico - Medical Sciences Campus	Synthesis of andrographolide derivatives and its activities in prostate cancer	Biotechnology and Life Sciences
Umberto Ciri, PhD	University of Puerto Rico - Mayaguez Campus	Development of a virtual environment for offshore wind energy acceleration	Clean Technologies /Renewable Energy







## SUPPORT TO OTHER TRUST PROGRAMS

The Research Grants Program also assists other Trust programs and initiatives with their Request for Proposals (RFPs) by creating their application and review portals through Zengine, a managing platform from the WizeHive company. This platform allows us to manage the grants cycle in a centralized way. It is a robust tool that gives access to a customizable dashboard that shows research trends, demographics, and reports.

## ACT 60

The Grants Program oversees processing and evaluating the applications of the Act 60 tax incentives. The purpose is to foster research and development activity conducted at local universities in Puerto Rico, allowing qualified Principal Investigators or a Co-Principal Investigator to seek tax exemptions for salaries earned from eligible R&D research grants. The main objective of this incentive is to attract and retain competitive researchers to strengthen Puerto Rico's performance in science and technology and the Island's position in the knowledge economy.

At the time of this report, for fiscal year 2021, a total of 99 incentive applications have been received. If approved, this will represent over 3.7 million in tax incentives for researchers.

For fiscal year 2021, 39% of the Act 60 tax incentive applicants are female researchers and 61% male.

## THERAPEUTICS ACCELERATOR PROGRAM (TAP)

The Trust's Technology Transfer Office launched the EnTRUST Program with a pre-application call for topics. For approved topics, the research team was required to participate in a thirteen (13) week Lab-to-Market, Life Sciences program in cooperation with Columbia University from January through April 2022; submit a Proposal; and present Proposal highlights at a Pitch Day. Six (6) Proposals and six (6) Pitch Day presentations were evaluated and ranked by a group of experts. The Grants Program assisted in the application and review process as well as in the financing of half of the selected projects.

## FORWARD RESEARCH & INNOVATION SUMMIT

With the mission of promoting innovation in science and technology, the Trust held the third edition of the Forward Research and Innovation Summit ("The Summit"). The Summit was celebrated virtually through an IA platform on December 10, 2021, and focused on artificial intelligence in order to accelerate scientific and technological activity on the Island. Thanks to the efforts of our team, colleagues and partners, the event was free of charge enabling the exchange of knowledge between the local and international scientific and technological community.



Institution	Act 60 Applications	Incentive Requested
UPR-RP	3	\$ 48,273.00
UPR-MSC	10	\$ 368,667.75
UPR-M	60	\$ 2,381,166.28
UPR-H	9	\$ 209,211.25
UCC	2	\$ 5,307.52
PHSU	15	\$ 715,955.42
<b>Total</b>	<b>99</b>	<b>\$ 3,728,581.22</b>

The event proved to be a huge success!



Over 20 locally and internationally speakers



775 registered participants



Poster Session which showcased 48 projects



This year's keynote speaker was Dr. Cynthia Rudin, Professor and Director of the Predictive Analytics Lab at Duke University. Dr. Rudin received the 2021 Squirrel AI 2021 award, given by the Association for the Advancement of Artificial Intelligence, for her work in

the field of interpretable and transparent AI systems in real-world deployments, and her advocacy for these features in areas such as social justice and medical diagnostics. This award is the most prestigious award in the field of Artificial Intelligence.

## BAJARÍ Outstanding Researcher Award

In addition, the Trust presented the Bajarí Prize, an institutional recognition by nomination granted by the organization to recognize exceptional scientists on the Island. To be eligible for this award, the evaluation committee sought a scientist with an outstanding track record in the following areas: leadership, an exemplary academic and research trajectory and having social impact. The committee determined that Dr. Vanessa Rivera Amill possessed the qualities to achieve this distinction. Dr. Rivera Amill is a Professor and Associate Dean of the Doctoral Program in Biomedical Sciences at Ponce Health Sciences University. She is also the Scientific Director of Inno Diagnostics and Principal Investigator on several scientific grants.



## BEACON: A CENTRALIZED PLATFORM OF RESEARCH

Beacon is a platform that provides a better understanding of Puerto Rico's research ecosystem. It allows researchers to create and update their profiles and allows potential collaborators and the public to search for them.

### Benefits

- A centralized platform for collecting, analyzing, and reporting on all academic and research activities in Puerto Rico.
- Improved data and tools enabling assessment of research strengths and planning for growth.
- More than 200 hundred users in Puerto Rico
- Increases collaborations between public and private Academic Institutions, researchers, companies and/or potential investors.
- Automatic claiming to reduce the number of times users needs to confirm publications.

## BEACON

Powered by:  RESEARCH GRANTS PROGRAM

 TECHNOLOGY TRANSFER OFFICE

 Puerto Rico Science, Technology & Research Trust

Everyday, BEACON searches online bibliographic databases automatically to find new publications and output data for each researcher from the following online bibliographic databases:

- arXiv
- CiNii EN
- CrossRef
- DBLP
- Scopus
- Europe PubMed Central
- ORCID
- PubMed
- RePEc
- SSRN
- Web of Science

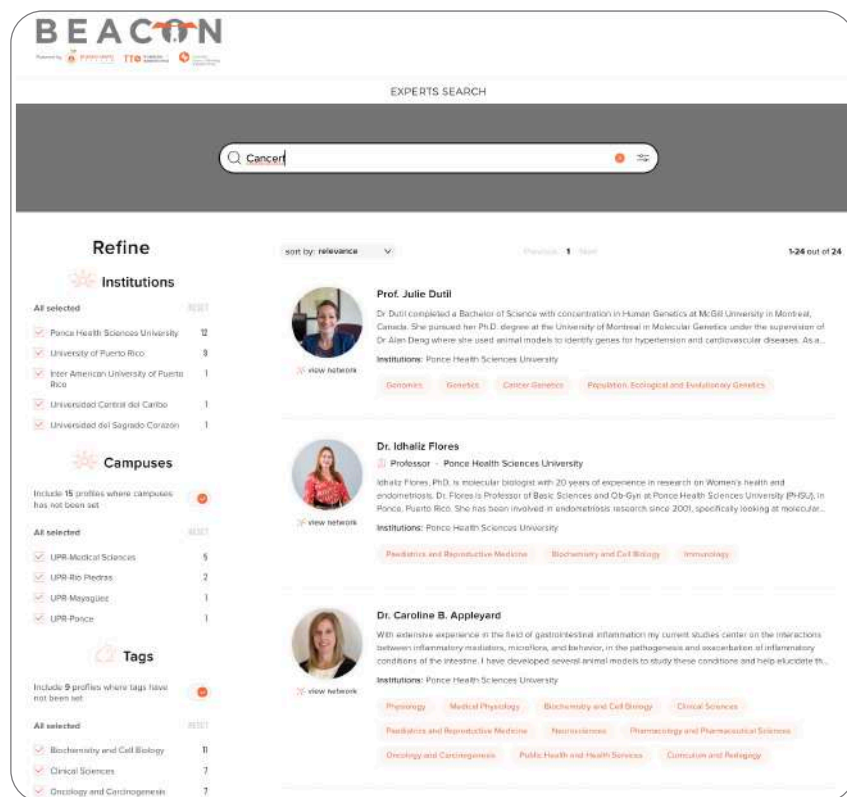




BEACON has a separate page that allows potential collaborators and the general public to search for researchers by entering names, research keywords, and disciplines.

## How will we continue to promote BEACON?

- Contact by email the active grantees of our program and encourage them to fill out their profiles and tell them that it is part of their commitment to our program.
- Make several groups of non-Grantees and contact them in a progressive way.
- Schedule demos.
- Prepare posts explaining the features of the platform
- Develop short guides for users and upload them to our website.
- Conduct an user survey.



## AGILE: PROFESSIONAL DEVELOPMENT FOR GRANT MANAGEMENT

Nonprofits play a critical role in fostering civic engagement and leadership. They also drive economic growth and strengthen our communities, as well as in the development of research and innovation.

### Why is it important?

Over the years, many Institutions of Higher Education (IHE) and nonprofits in Puerto Rico, have faced many challenges, including, harsh budget cuts and have reduced or eliminated continuing education, memberships with related associations, and professional development. These conditions threaten their ability to maximize the opportunities available at the PRSTRT and hinder Puerto Rico's economic development in the short-, mid-, and long-term.

These challenges include the field of Research Administration (Grantsmanship, Sponsored Programs, Grants Management) activities across all levels of the IHEs, an area that is crucial



# AGILE

A program of the:  **RESEARCH GRANTS**  **Puerto Rico Science, Technology & Research Trust**

### Access to the Grantsmanship Investment Leading to Excellence

to further research and investigation. Today's universities, research and research capacity are often used as measures of success and prestige (Connell, 2005; Hazelkorn, 2004; Lombardi, 2013; Nash & Wright, 2013; National Research Council, 2012).

AGILE's mission is to increase agility in the application and execution processes of projects that are subsidized by foundations, public, private and/or federal entities, strengthening their capacity to secure more funds in the future.

This initiative provides tools to maximize funding opportunities and the execution of your compliance requirements. AGILE offers resources to help nonprofit organizations and institutions of higher education maximize funding opportunities and execute compliance requirements. This is considering the numerous private and federal funding opportunities and the importance for professionals in this sector to stay updated



on grant management issues. Through these initiatives, it is expected to increase the agility of the application process, improve project execution, and strengthen the capacity to secure future

## Learn more about this initiative:

Some of the focus areas are:

- The governance of grants and other federal financial assistance
- Phases of the grant management life cycle
- Internal controls to prevent fraud, waste and abuse of funds
- Learning the role and responsibilities of auditors and auditees

*"In Puerto Rico, the number of people who are professionals in grants management is limited. With AGILE, we want to increase training opportunities and train a new generation of professionals who have the tools to manage funds following the highest standards." - Andreica Maldonado, director of the Research Grants Program.*



The first AGILE training initiative was held on May 10th and 11th of 2022. This was a Grants Management Body of Knowledge (GMBok) virtual training offered by the National Grants Management Association (NGMA).

This training was targeted to individuals associated with grants management either in management, administration, proposal writing, or accounting, funding and/or compliance aspects. Examples: Grant Specialist, Grant Manager, Grant Administrator, Grant Writer, Grant Financial Officer, among others.

## This course helped participants to:

Gain a thorough understanding of the grant management lifecycle.

- Become familiar with the new risk assessment before funds are awarded.
- Learn about the new mandatory certifications and declarations.
- Be familiar with the changes in procurement rules.
- Recognize the increased responsibilities in managing their sub-awardees.
- Understand audit requirements, among other

## Results



## How will AGILE continue to provide support:

The program will promote focus groups, outreach activities, community engagement, brain tanks and meeting sessions to approach the topics associated with the grantsmanship and research & development community challenges and its potential solutions in Puerto Rico.

AGILE will continue offering continues education, capacity building certifications and trainings through local and national level associations.

The program will create, in coordination with the IHE's, a students' program to help enable and promote a new generation of Grant Managers and Research Administrators.

AGILE will be upgraded and relaunched by January 2023.

## Some opinions from the participants:



*"The training was comprehensive and very useful to be able to grasp or refresh the grant management guidelines. This type of training is essential to increase the capacity in PR to have competent professionals in the management of grants. Likewise, to be able to bring capital and increase efforts to address needs in PR."*



*"Excellent opportunity for new administrators and to remember topics that, by nature of the jobs, we may not have worked on."*



*"I realized a lot of important things in grant management that I didn't know. Without a doubt, our bible will be 2 CFR Part 200. It's fascinating."*

## FUTURE PLANS

- The Research Grants Program will continue providing support to its grantees and the scientific community on the island.
- We will continue to work Beacon and outreach activities for the scientific community.
- The Program will continue with its AGILE initiatives.
- The Program will continue providing support with the SBIR/STTR efforts.
- The Program will explore new funding mechanisms to continue supporting the local scientific community.

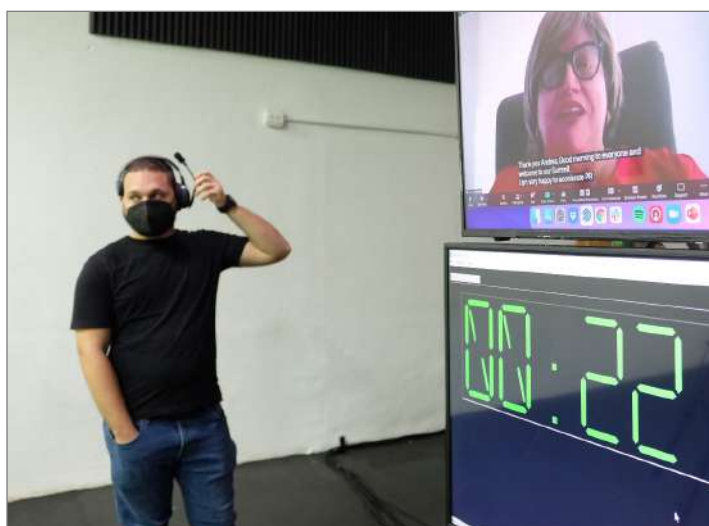


From left to right: Grace Rendón, Grant Specialist; Andreica Maldonado, Program Director; Luis González, Grant Strategist.





The Puerto Rico Science, Technology, and Research Trust (PRSTRT), through the Research Grants Program, held an information session together with the *Centro de Desarrollo Tecnológico e Industrial de España* (CDTI) and the Department of Economic Development and Commerce (DDEC) to guide entities in Puerto Rico and Spain on financing opportunities for technological and innovative projects that are mutually beneficial.



Forward Summit. The Puerto Rico Science, Technology and Research Trust presented the "Forward Summit". Luci Crespo, The Principal Officer of the FCTI, was connected to the internet.



Forward Summit. From the left, moderator Sebastián Vidal with Jesús R. Bernardy Rodríguez, Rafael Esparra y Raúl Negrón Otero.