



Puerto Rico  
Science, Technology  
& Research Trust

prsciencetrust.org

**A LA MANO**

16 de noviembre de 2021

*Hon. Pedro Pierluisi Urrutia*  
Gobernador de Puerto Rico

*Sr. Yamil Rivera Vélez*  
Secretario  
Senado de Puerto Rico

*Lcdo. Javier Gómez Cruz*  
Secretario  
Cámara de Representantes de Puerto Rico

*Senado de PR*  
**OFICINA DEL SECRETARIO**  
Recibido por: *Julissa*  
Fecha: *16. noviembre. 2021*  
Hora: *11:59 am*

**Re: Entrega de Informe Anual Año Fiscal 2020-2021**  
**Fideicomiso para Ciencia, Tecnología e Investigación de Puerto Rico**

Estimados Honorable Gobernador Pierluisi, señor Rivera y licenciado Gómez:

Reciba un cordial saludo de parte del Fideicomiso para Ciencia, Tecnología e Investigación de Puerto Rico ("FCTI").

En conformidad con nuestra encomienda legislativa de presentar el Informe Anual correspondiente al año fiscal 2020-21 al Gobernador y a la Secretaría de ambos cuerpos legislativos, le remitimos el Informe Anual en referencia para su consideración y trámite pertinente durante el día 8 de noviembre de 2021. No obstante, luego de ya entregado el Informe Anual, advenimos en conocimiento de un error en su impresión, el cual omitía los informes financieros auditados.

Así las cosas, estamos presentando nuevamente el Informe Anual correspondiente al año fiscal 2020-21, ya corregido con la inclusión de los informes financieros auditados.

Lamentamos los inconvenientes que esto pueda causar y, de necesitar cualquier información adicional relacionada con este documento, puede comunicarse al 787-523-1593.

Atentamente,

*Luz A. Crespo Valentín*  
Luz A. Crespo Valentín  
Principal Oficial Ejecutiva



Puerto Rico  
Science, Technology  
& Research Trust



parallel<sup>18</sup>



Entrepreneurship

Public Health



Foundation Programs



Research & Development

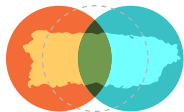


ANNUAL REPORT

FISCAL YEAR  
2020-2021



TT





Puerto Rico  
Science, Technology  
& Research Trust





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# LETTER TO STAKEHOLDERS

Welcome to the 2020-2021 Annual Report for the Puerto Rico Science, Technology and Research Trust (PRSTRT). As I write this letter to our stakeholders, Puerto Rico and the world continue facing the impact to one of the most significant health threats of our generation: COVID-19 Pandemic. Hopefully, thanks to the advances in science, it seems that we are getting close to return to a more normal life environment. I hope that everyone is doing well, and please continue to take all the prevention, protection, and social distancing measures to protect yourself, your family and loved ones from COVID-19.

The toll taken on human life by COVID-19 is heartbreaking and the pandemic has deeply affected the life of everyone. On the other hand, despite the current pandemic situation the Trust continue to advance Puerto Rico's Science and Technology agenda.

The current pandemic situation has accelerated the adoption of technology at a rate never seen before. I am enormously proud of how quickly all the P.R. Science, Technology & Research Trust employees and collaborators adapted to the new remote virtual work and life environment and transformed the delivery and deployment of the existing and new PRSTRT programs to a virtual format mainly. Our Information and Communication Technology team under the leadership of the Trust's Chief Information Officer, César Piovanetti, played an essential role in enabling this digital transformation based on leading-edge platforms and applications together with a robust cybersecure framework, policies, and processes. I also want to highlight the significant contribution of the Puerto Rico Public Health Trust (PRPHT) under Dr. José Rodríguez Orengo leadership. He and his team provided outstanding leadership for the scientific community regarding COVID-19.

In this annual report we are communicating the Trust major accomplishments in our three main pillars of activities: Public Health, Research, and Entrepreneurship. We will also cover all our Foundation programs as well as some financial and operational performance. During the year we signed 51 collaboration Memorandum of Understanding (MOUs) with different organizations.

In terms of communications, the Trust as an organization and brand has gained respect and recognition as an organization of reference, with a total of \$7,190,840.06 million in unpaid advertising. An achievement of all programs and the direction of our Chief Communications Officer, Lupe Vázquez, with the support of our three Public Relations agencies (The Big Think Group, Pharmacon and BCW).

In its second year of operation the **Puerto Rico Public Health Trust** (PRPHT) under the direction of Dr. José Rodríguez Orengo, continue enhancing its role as the trusted advisor in the healthcare sector in Puerto Rico. Working with the Puerto Rico Health Department, the Scientific Coalition of Puerto Rico, and private entities, the program continue to advise on how Puerto Rico should address the COVID-19 pandemic and to advance the mission of promoting and improving public health initiatives based on evidence and to provide avenues to improve the economy in Puerto Rico.

Since the beginning of the pandemic in the island of Puerto Rico, on March 2020, PRPHT has played a leading role in educating communities using multiple interventions in traditional, digital, and social media. I want to highlight, the significant contribution delivering specialized remote medical services and education with its Telemedicine and Telehealth program. This program is serving 48 locations in Puerto Rico, in the most isolated areas, and deploying the latest technologies for remote care. One of Telemedicine/Telehealth most valuable contributions is the development and deployment of knowledge through conference and training in both presental and virtual environments.





One of this year mayor accomplishment for our PRPHT was the expansion of the Community Health Promoter Program, that started a collaboration of the Medtronic Foundation in six communities, and that now will be deployed in 20 additional communities in Puerto Rico, including Vieques and Culebra with the support of a CDC multi-year grant.

As I write this letter we are implementing in coordination with the CDC and PRDOH the new PR COVID-19 Variant Surveillance Initiative. This new scientific infrastructure will enable Puerto Rico genomic surveillance capabilities and will enable us to better address COVID-19 variants. The Trust will also be hosting the Puerto Rico Surveillance Consortium to unify scattered surveillance efforts.

As we celebrate PRVCU 5th anniversary, we are very proud of being recognized as a one of the top innovative vector management organizations in the country. The **Puerto Rico Vector Control Unit** (PRVCU) under the leadership of Dr. Grayson Brown, working with the CDC and PRDOH, expanded its mosquito surveillance efforts to historical dengue hotspots in Puerto Rico to reduce the outbreak risks. The mosquito surveillance efforts were expanded to several new municipalities, and a new super pooling method for traps was implemented resulting in an increased test capacity yielding higher volume at a lower cost. PRVCU expanded its coverage area to serve as a resource to the USA Virgin Islands and also offering laboratories services to the Marshall Islands.

In one of the most innovative projects, PRVCU released over 60M mosquitos with Wolbachia in the Ponce area, reducing the *Aedes aegypti* in about 50% in Ponce. We also started a new mosquito reduction project in Caguas, and with the support of the Rotary Club International we launched a new Culebra- Free of *Aedes aegypti* mosquito initiative.

With over 100 media appearances PRVCU is recognized by the public as a trustworthy leader in vector control in Puerto Rico. Outreach and educational activities have reached over 150,000 people and 42,000 students all around the island.

To expand on this type of efforts, a Vector Management Association was created to bring together groups interested in the field and provide updated information and training on vector control practices. The Association has over 100 members currently.

PRVCU's laboratory supervisor, Ms. Nicole Nazario, was selected to be part of the Science Policy Program of the Entomological Society of America. For the next two years, she will serve as an active member and will have the opportunity to professionally train in public and science policy with federal policy experts. Nicole is the first Latina and representative of Puerto Rico to participate in this program, where she seeks to fairly represent and advocate for the Caribbean, U.S. territories, and the Hispanic community needs in the field of entomology. PRVCU's educational program received a grant from the Chrysalis Fund of the Entomological Society of America (ESA). This program aims to encourage educational activities that will raise interest in entomology. Dr. Grayson and his team secured funding up to 2026 at a rate of \$5M from the CDC.

Reviewing our entrepreneurship pillar, **Colmena66**, our entrepreneurship ecosystem builder program is fulfilling the Trust's commitment with our entrepreneurs who are the change makers driving innovation and economic activity. One of the newest members of the nationwide network of over 50 organizations of ecosystem builder ranked among the top 4 affiliates on key performance indicators, including number #1 position in number of entrepreneurs assisted through the hotline or email, and in counseling hours. Colmena66 was second in searches using the Resource Navigator were made through our Resource Navigator with over 15K.

Despite the major challenges that we faced this year, Colmena66 increase the number of resource partners to 259. More than 2,212 entrepreneurs and business owners were served by Colmena66 and over 7,600 referrals were forward to our resource's partners. Colmena66 interacted 4,275 times with entrepreneurs to provide support and guidance and had provided over 270 counseling hours using their new call center, that was expanded this year to address the increasing number of clients and provide better response and service. Demonstrating outstanding resiliency, Colmena66 just started a new program with the Puerto Rico Economic Development Department to deliver e-commerce online capacity building for small and medium businesses. They also published Guía de Recuperación - Covid 19 a digital directory with information about grants and support programs available to small and medium companies.

Advancing the Trust's mission to accelerate and diversify Puerto Rico's economy we continue creating new opportunities for entrepreneurs in our innovation ecosystem. We continue supporting the entrepreneurs in Puerto Rico to make their dreams a reality From Puerto Rico to the World. During the last year the 8th Generation of **Parallel18** was completed, and we are currently running the 9th Generation. Since the program inception, 290 companies were accelerated with over 700 jobs created. Some of the key performance indicators for parallel18 are:

- a. Grants Distributed = \$11.6MM
- b. Total Revenues = \$189M with \$62 M from local PR revenues.
- c. 40% of foreign companies-maintained operations in PR
- d. Total private investment raised of \$126M with \$20M local capital.



P18 Ventures also invests in P18 Startups with two funds: the Matching Fund, designed to co-invest in promising startups fresh from parallel18; and the Business Continuity Fund, a one-time special fund to support all P18 Alumni during the pandemic. Investments on both funds are made by the Puerto Rico Science, Technology, and Research Trust. So far, we had invested \$2.6M in 48 P18 Startups, and 12 of our investees have received US \$1M or more in the life of the company. Puerto Rican companies that received the fund have expanded their companies to the United States or Latin America.

P18 Connect is our Corporate Innovation program is focused on helping startups grow on the island while promoting that Puerto Rico's biggest industries become more competitive by integrating the latest innovations. So far, we hosted over 150 unique interactions between corporates and startups, and 3 investment deals have resulted from P18 Connect relationships.

Celebrating parallel18's 5th anniversary the program launched the Startup Directory, a digital tool that feature parallel18 startups, and connected them with investors and corporate partners from all over the world. This novel initiative aims to streamline and automate the process by which our network of partners and investors interact with companies that are ready to receive investment and close deals. In January 2021, parallel18 launched under its pre18 program initiatives, the Challenge to Innovate: NASA Edition. This competition gave the opportunity to undergraduate students from universities of Puerto Rico majoring in electrical, mechanical, computer, agricultural, or industrial engineering, as well as computer science, the opportunity to think, research, and develop solutions with NASA patented technologies.

The **Resiliency and Business Innovation Program** (RBI) is the other key program the Trust support to enhance the entrepreneurship ecosystem. During this year a second cohort of the Resiliency courses were created with George Mason University. Several courses were offered to enhance small business resiliency in Puerto Rico: "Building a Resilient Business Community: A Course for Entrepreneurs Support Practitioners" (G2); "Creating a Resilience Plan for your Business: A Course for Businesses" (G3); "Organizational Resilience from the Perspective of Human Capital"; "Recovery Process After a Natural Disaster in the Agro-Industrial Sector: The Experience of Rico Banana Inc. and Café San Pedro Inc."; "Conversation on Resilient Strategies for Business Continuity, Challenges and Opportunities: The Perspective of Retailers in Puerto Rico"; "Cómo Ser Más Resiliente Ante un Terremoto"; and "Embracing Change: Successful Transitions in the Post Covid 19 Environment". On 2021, over 1500 people and businesses have benefited from the products and services offered by the RBI, including training, research, webinars, technical support, mentoring, and business concept reviews.

Among other RBI key accomplishments, we can mention those that led the organization of the Puerto Rico Global Entrepreneurship Week with over 100 conferences across all Puerto Rico. They also partnered with GRILLO on a special project to create an Earthquake Early Warning System in the Caribbean using seismic sensors in key buildings around PR. Similar systems are already operating in Mexico and Chile. In Puerto Rico, the project will be known as GRILLO-PR.

The project is sponsored and backed by IBM, the Clinton Global Foundation, la Red Sísmica de Puerto Rico with the leadership of the RBI program at the PRSTRT. We were very pleased when a special announcement about the project was given at the virtual Clinton Global Foundation annual activity on May 25th by President Bill Clinton.

As part of our research pillar, the **Puerto Rico Consortium for Clinical Investigation** (PRCCI) successfully completed its fifth year of operations on June 30th, 2020. During this year, the consortium grew to 29 members/clinical research sites in Puerto Rico with more than 116 on-boarded physicians/ investigators at three universities, hospitals, family practices and specialized research centers across the island, covering more than twenty therapeutic areas. PRCCI brought to the island more than 300 clinical trial opportunities and as capacity is being built, executed 19 clinical trials during the last quarter in the following areas: COVID-19, oncology, infectious diseases, pulmonology, cardiovascular, and dermatology.

PRCCI delivered 2 Clinical Research Coordinator training sessions. They are in the process of deploying the Puerto Rico Patient Health Network deploying Dacima, a patient register platform for COVID-19 and other diseases. The platform deployment includes a full patient education campaign.

We are achieving excellent results from our **Research Grant program**. In May 2021, our Grants Program announced the award of an additional \$1.8 million to 15 science and technology research projects. In total, since its inception, the Research Grants Program has awarded more than 113 research grants through its competitive and non-competitive initiatives for a total PRSTRT's investment of \$13,549,478 million and a return of investment of over \$33,121,672 million. This year the first Assessment of PR Scientist and Researchers' needs was performed to better understand potential actions the Trust may coordinate or support to enhance research activities in Puerto Rico.



One of this year key accomplishments of the grant program was the deployment of the **BEACON** platform. BEACON is a new centralized platform that provides a better understanding of Puerto Rico's research ecosystem. It allows researchers to create and update their profiles. It also allows potential collaborators and the public to search for them.

Our **Technology Transfer Office** (TTO) continue to increase the commercialization efforts in Puerto Rico. For the **Southeast XLerator Network** (XLN), just completed the first three year and supports the development of life/bioscience and healthcare discoveries from lab to market. Two additional sites will be added in 2022: Universidad Central del Caribe and San Juan Bautista School of Medicine. This year, the TTO completed a pilot program "EnTRUST" to develop and deliver educational content, programs, and resources to increase participation of researchers/inventors in HSIs (Hispanic-Serving Institutions). The other major commercialization effort is Therapeutics Accelerator Program (TAP). Deliverables under the "**Therapeutics Accelerator Program**", conducted by the TTO in cooperation with Columbia University included: identification of over 50 researchers at universities working in the field of therapeutics; a call for pre-proposals, and for those that qualified, a 12-week "bootcamp" for Lab-to-Market program, in cooperation with Columbia's accelerator programs; for those completing the bootcamp, a call for proposals, reviewed by external experts; TAP final projects presented at a Pitch Day, evaluated by a select group of experts. Seven awards were made, up to \$75,000 each, and implementation works will begin in FY2022.

Last year over 26 disclosures were evaluated, 23 of them were by a female inventor. New six patents were filed, and three patents were issued. We marketed over 27 technologies from our portfolio and closed four licensing agreements.

Our **STEM and Workforce Development Program** was successfully awarded a \$1.3M CDBG-DR grant to advance its premier workforce training initiative for two years. So far, the program has directly impacted over 2,600 students in Puerto Rico, 65% from public school. We are making significant advance with our gender equality objective and so far over 35% of the STEM education experiences participants are female. Over 1,500 teachers participated in STEM education workshops including Physics, Biology, and Environmental Sciences. The program successfully delivered the 3rd edition of Resuélvelo Boricua, a STEM contest in which the participant demonstrated their STEM skills through project-based activities. This year a \$20K in cash grants was given to the top 3 places to prototype their project ideas. We recently launched Academia del Cacao, a structured initiative designed to fulfill the gaps in knowledge and expertise with agroforestry farming practices among farmers in Puerto Rico. The program recently signed a strategic collaboration agreement with one of the nation leading technology entities the Internet Security and Controls Association (ISACA). The partnership enables the Puerto Rico Science Technology and Research Trust to become the provider of two professional certificates: Information Technology Associate and Certificate in Emerging Technologies.

Following the action items from our Caribbean Strong Conference in 2019 we just launched our latest initiative **Caribbean Center for Rising Seas** under the leadership of John Englander, who was one of the key speakers of the event and is now the executive director of the center. The mission of the center is to prepare Puerto Rico and the Caribbean to adapt and thrive in the new era of increasing flood risk from storms, tides, and sea level rise. This new program of the Puerto Rico Science, Technology and Research Trust will further establish Puerto Rico's leadership and stature as a center of excellence and innovation. The Center's focus will be on "resiliency + adaptation", promoting design guidelines and best practices for the built environment to better prepare communities for increased flooding. The four primary areas of focus will be: (a) Create Safe Advanced Flood Estimates (SAFE™), (b) Work with the built-environment professions, (c) Establish a policy center for smart building codes and zoning, and (d) Do outreach to promote 100-year flood safe communities.

Before I close this letter, I am happy to report that our new construction at **Science City**, the Forward Center is progressing faster than scheduled. The Forward Center is a 30,000 square feet three story energy star facility that will home to our medical devices' incubator/accelerator, and our parallel18 alumni. Completion date based on current pace is expected by end of 2022.

As an optimistic person, I am always looking for those opportunities within the challenges that we faced. I hope that by reading this annual report you can appreciate the commitment and passion that the Puerto Rico Science, Technology and Research Trust leadership, associates and trustees have with the programs and the stakeholders we support. As you read through the report you will be able to appreciate how the Trust is incorporating innovation and technology in all our programs to deliver on our mission of investing, facilitating, and building capacity to continually advance Puerto Rico's economy and its citizens' well-being through innovation-driven enterprises, science and technology and working with our industrial base.

I want to express my deepest appreciation to our dedicated and talented professionals that with their exceptional capabilities, character and expertise are devoted to advance our strategic plan and agenda; to our outstanding board of trustees, and members of the different advisory committees that with their wisdom provide guidance to set the path to follow, and to all our donors and collaborators that believe in what do: creating a better future for all through science and innovation.





# ABOUT THE TRUST

## Mission

We invest, facilitate and build capacity to continually advance Puerto Rico's economy and its citizens' well-being through innovation-driven enterprises, science and technology and its industrial base.

## Vision

By 2022, Puerto Rico is a globally recognized innovation hub that develops, attracts, and retains scientists, technology entrepreneurs, and enterprises to unlock world class creativity and competitiveness.

## Core Values





## Executive Team



Doira Díaz, Esq., General Counsel and Administrator  
Sebastián Vidal, Chief Innovation Officer  
Lucy Crespo, Chief Executive Officer

Lupe Vázquez, Chief Communications & Marketing Officer  
César Piovonetti, Chief Information Officer  
Gilberto Márquez, Chief Financial Officer



## OUR TRUSTEES

Our Council of Trustees is composed of distinguished professionals who support and oversee our work and provide guidance to ensure that the Trust is managed to accomplish its mission and vision.



### Daniel Colón Ramos

Dr. Colón Ramos is an Associate Professor of Cellular Neuroscience at Yale University and co-founder of Ciencia Puerto Rico. His lab at Yale studies the development and function of the nervous system, and his work has been recognized by a number of awards, including the Sloan Fellowship for “outstanding promise”, an award given to recognize the best researchers of the United States and Canada. Ciencia Puerto Rico is a non-profit organization that promotes scientific research and education in the Puerto Rican archipelago.



### Salvador Moncada

From 1975 to 1995, Professor Moncada worked at the Wellcome Research Laboratories, first as Head of Prostaglandin Research and then as Director of Research. He described the structure of prostacyclin, which acts as an effective vasodilator and also prevents blood platelets from clumping. In 1980 came the discovery by Robert Furchgott of ‘endothelium-derived relaxing factor’ (EDRF) which causes smooth muscle in the vessel walls to relax. Moncada and his team showed that EDRF was, in fact, Nitric oxide, which has since become appreciated as a neurotransmitter, a modulator of inflammation and a sensor of cellular distress as well as a regulator of vessel tone. Nitric oxide is both the target and effector of a range of compounds now being used for the treatment of cardiovascular and rheumatic diseases. Professor Moncada was appointed Director of the Wolfson Institute for Biomedical Research at University College in 1995. He has won numerous awards from the international scientific community including a Dart/NYU Biotechnology Achievement Award, the Prince of Asturias Scientific and Technological Research Award and the Dr AH Heineken Prize for Medicine from the Royal Netherlands Academy of Arts and Science.



### Alfredo Casta

Founder and Chairman of Cascades Technologies, Inc. (CTi), Alfredo Casta led the organization to become one of Inc. 5000 magazine’s fastest growing companies for eight years. Currently, CTi is ranked #3498 on the Inc. 5000 list. Mr. Casta combined his technical expertise, solid management skills and an unrelenting mission focus to accomplish results in the service of the American public. Under the tenants of Think – Build – Measure, CTi delivers IT Governance services, Technical Solutions, Data Management, Agile Development, and IT Organization Analysis including Cyber Security expertise to key cabinet agencies such as NIH, CDC, Labor, GSA, US Army, DHS, Justice, and Financial Regulatory Agencies.





### **Gualberto Medina**

Mr. Medina, a licensed attorney, CPA, and real estate broker, was New Jersey's former Secretary of Commerce. He also served as the co-founder, president, or general counsel for many technology and biotechnology startups. Because of his successful career in government and business sectors, Mr. Medina was named one of Hispanic Business Magazine's 100 Most Influential Hispanics. He has ample experience serving as a Trustee for the Trust.



### **Ubaldo Córdoba**

Dr. Ubaldo M. Córdoba-Figueroa completed his BS degree in Chemical Engineering at the University of Puerto Rico at Mayagüez (UPRM) in 2003. That same year, he went to Pasadena, CA to pursue a MS and PhD in Chemical Engineering at the California Institute of Technology. In 2008 he obtained his PhD and returned to UPRM where he is now an Associate Professor in Chemical Engineering. In 2011, he was awarded the prestigious NSF CAREER award, and in 2013 as Distinguished Professor in Chemical Engineering. His research experience includes the authoring of peer-reviewed articles in Physics Review Letters, Soft Matter, Journal of Fluid Mechanics, Advanced Functional Materials, and Nature Chemistry.



### **Dara Schuster**

Healthcare executive with extensive clinical, pharmaceutical industry and leadership experience. During my career, I have worked to improve healthcare delivery, educated medical professionals, performed clinical research, been a senior leader in medical affairs in diabetes for a major pharmaceutical company and ran a diabetes research organization. Schuster's strengths include clinical care, strategic planning and team management.



### **Esther M. Alegria**

Esther Alegria is Senior Executive Biopharmaceutical Advisor at Catalyst Excel & Advance (EA) lending her R&D thru Commercialization expertizes of over 28-year experience to establish and start-up pharmaceutical & biopharmaceutical companies. In addition, Alegria has served on BOD for non-profit organizations' supporting the multiple sclerosis research & patient support and currently serves at the UAE-Union Atlantic Enterprises Board of Directors (for-profit) and Shepherd Care Medical Clinic (non-profit org).



### **Manuel Cidre**

Manuel Cidre is the founder of Los Cidrines, a market leader in the sale, distribution and manufacturing of bakery products in Puerto Rico. He is a graduate of the Pontifical Catholic University of PR, with a bachelor's degree in management, major in finance and marketing. Manuel Cidre has held several leadership positions, such as president of the PR Products Association, president of the PR Manufacturing Association, founder and president of the Alliance for Puerto Rico's Development, among other community and philanthropic organizations. Cidre ran for Governor during the Puerto Rican general election, 2016 as an independent candidate. His commitment to Puerto Rico and work has been recognized by multiple community and professional organizations. His motive in life is returning to God all the blessings he has received by devoting much of his time to organizations seeking to make Puerto Rico a better country.



### **Enrique A. Volckers Nin**

Designated Chief Innovation & Information Officer at Puerto Rico Innovation and Technology Service.



### **Edith A Pérez, MD**

An internationally recognized translational researcher and cancer specialist, Chief Medical Officer of Bolt Therapeutics, Inc., Professor of Medicine at Mayo Clinic, and Director of the Mayo Clinic Breast Cancer Translational Genomics Program. Dr. Perez is known for her strategic vision in designing innovative clinical trials, her passion for patient care, and her strong team leadership. Her experience includes leadership in academic and biopharmaceutical environments, as well as focused philanthropic endeavors.



### **Frances Santiago-Schwarz, Ph.D.**

Professor of Molecular Medicine at the Donald and Barbara Zucker School of Medicine at Hofstra/Northwell and Professor, Elmezzi Graduate School, Northwell Health. She was born in San Juan, Puerto Rico and attended the University of Puerto Rico, where she obtained a B.S. in biology. She then graduated with a M.S. in Biology/Immunology from New York University and subsequently pursued doctoral studies in Molecular Biology/Immunology at the University of Southern California, School of Medicine.

Among her contributions to the field of human immunology are: isolating and functionally characterizing for the first time, specialized immune cells (immune dendritic cells) in humans; human DC hematopoiesis from cord blood progenitors, deciphering key molecular events related to the positive and negative control of DC development and function, the first description of a leukemic counterpart of myeloid DCs. Most recently, at the Feinstein Institute for Medical Research, Dr. Santiago-Schwarz' research focused on the control of monocyte and DC development in normal and abnormal physiology and, developing new therapeutic agents for autoimmune diseases.



Puerto Rico  
Science, Technology  
& Research Trust

ANNUAL  
REPORT

FISCAL YEAR  
2020-2021

Research  
& Development



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Puerto Rico  
Science, Technology  
& Research Trust

# RESEARCH & DEVELOPMENT



## RESEARCH GRANTS P R O G R A M

*FUNDS TO GROW*





## Introduction

As part of the Puerto Rico Science, Technology and Research Trust (“The Trust”), 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.

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.

The funding initiatives of the Research Grants Program were developed to directly support basic research, applied research and product development through both competitive and non-competitive mechanisms. The Program launched its first competitive initiative in 2014, the Science and Technology Request for Proposals (now the Advanced Research Grant), with the aim of supporting the most innovative and relevant R&D projects on the island from researchers at academic, non-profit and for-profit institutions. In 2015, the Small Research Grants Program (now Catalyzer Research Grant) was launched with the goal of improving the likelihood of success of researchers in academic institutions and non-profit research entities to secure federal funding for their R&D activities. Finally, the SBIR/STTR Matching Fund Program for Phase I projects was implemented as a non-competitive mechanism to incentivize local technology-oriented small companies to compete for SBIR/STTR Phase I grants. Since 2019, the SBIR/STTR Matching Fund Program also includes Phase II projects.

Presently there are no other peer-reviewed funding mechanisms available to researchers in Puerto Rico that encompasses 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 110 research grants through its competitive and non-competitive initiatives for a total investment by The Trust of \$13.5 million with a return of investment of over \$33.1 million.

The Research Grants Program’s selection process is based on standard and recognized peer-review procedures utilized by federal agencies such as the National Institutes of Health and the National Science Foundation. By strictly adhering to a comprehensive peer review process that assesses the scientific merit of grant applications in a fair, independent, expert-driven, and free from inappropriate influences, the Trust is able to identify and fund the most promising research or development work. The Research Grants Program is continuously optimizing its internal processes, such as grants administration and management, grantee evaluations and progress monitoring, internships, collaborations with other Trust initiatives, and its policies, among others.

Also, the Research Grants Program assists other Trust programs and initiatives with their Request for Proposals (RFPs).

The Research Grants Program is empowering scientists and researchers to take Puerto Rico’s knowledge economy to a higher level of excellence. Continued expansion and investment in the Research Grants Program is among the Trust’s highest priorities with the understanding that the outputs of a robust scientific community engaged in competitive research and development are critical to the creation of meaningful jobs and economic growth in Puerto Rico.



**Grants Awarded**  
**\$13,549,478**

**ROI**  
**\$33,121,672**



## Strategic Sectors



Aerospace



Agriculture



Biotechnology and  
Natural Sciences



Clean Technologies and/or  
Renewable Energy



Clinical Trials



Conservation Sciences



Electronics



Environmental Sciences



Information and  
communication technologies



Medical Devices

## Funding Mechanisms

- Advanced Research Grants (ARG)
- Catalyzer Research Grants (CRG)
- 1-to-1 matching funds for Phase I SBIR/STTR proposals



### ADVANCED RESEARCH GRANTS PROGRAM

The Advanced Research Grants (ARG) aims to advance the most innovative Research & Development (R&D) projects in Puerto Rico. The ARG is a solicited proposal mechanism to entice the science and technology community in Puerto Rico to submit proposals for funding consideration. As such, the goal of this RFP process is to provide proof-of concept 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 (e.g. federal R&D funding, angel and private investments, etc.) and/or commercialized (through licensing, sales, acquisitions, vertical venture integration or a combination of these). Awards are up to \$150,000/year.

### Who is eligible:

- Startups
- Established companies
- Private and State Academic Institutions
- Other Non-Profit Research Institutions



## CATALYZER RESEARCH GRANTS PROGRAM

The Catalyzer Research Grant Program (CRG) aims to help local researchers increase their probabilities of success in securing federal funding for their research and development activities. In particular, the CRG will provide bridge funding to help researchers to position their R&D proposals competitively prior to the submission, or resubmission, to private or federal agencies. Awards are up to \$70,000/year. The CRG is open to researchers in public and private universities, colleges, and affiliated non-profit research institutions located in Puerto Rico. Ideal candidates fall into one of the following categories:

- Junior faculty (within their first five years of their faculty appointment) with a competitive publication record, seeking to secure their first grants.
- Principal Investigators (PIs) with a successful track record of securing funding in their primary research topic, but now embarking on a new research topic and seeking to secure a grant\*
- PIs that applied for highly competitive federal funding\*, that had their proposal favorably reviewed, but fell short of being funded. In this case, the PI should provide a copy of the evaluated proposal and the evaluations.

## Current Grantees (ARG/CRG 2020/COVID-19 R)

The ongoing COVID-19 pandemic affected the progress of our grantees' projects. Even though the grantees have experienced many obstacles, they have shown resilience and progress.

Since July 2020 until now, the grantees reported the following achievements:

### Students Impacted



- 19 undergraduate students **(for a total of 56 since funds were awarded)**
- 21 graduate students **(for a total of 53 since funds were awarded)**

### Thesis and Dissertations

The following grantees reported that thanks to the funding provided by the Research Grants Program, some of their students were able to complete their research projects. As a result, one (1) MS Thesis was completed and one (1) PhD dissertation is in progress.

#### 1 MS Thesis

**PI** - Dr. Riccardo Papa

**Name of student:** Edgardo Rivera Santiago

The work done as part of this proposal regarding CRISPR Cas9 in *Heliconius charithonia* and other butterfly species was a chapter of the Master thesis defense of Edgardo Rivera Santiago, now a Ph.D student in Germany.

#### 1 PHD Dissertations

**PI** - Carlos A. Sariol, MD

**Name of student:** Alexandra Ortiz Rosa

**In progress:** This work is the Thesis dissertation of a graduate student.





## External Funding

Since July 2020, the total amount of external funding secured that the active grantees reported is **\$4,582,315 for a total of \$4,821,998 (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 response from federal agencies to which they have submitted proposals.

## Publications



Since July 2020, our grantees have published in the following peer reviewed journals:

- **ARG – 7 new publications (for a total of 16 publications since funds were awarded)**
  - Nature communications
  - eLife
  - Metabolites
  - Gynecology and Pelvic Medicine
  - Scientific Reports
  - International Journal of Pharmaceutics
  - Frontiers in Cell and Developmental Biology
  
- **CRG – 6 new publications (for a total of 10 publications since funds were awarded)**
  - Neurobiology of Learning and Memory
  - Proceedings of the National Academy of Sciences
  - Frontiers in Ecology and Evolution
  - Pharmaceutics.
  - Journal of Biomolecular Techniques
  - Science Advances

## New Grantees

On June 10, 2021, the Research Grants Program granted **\$2,031,133 to 17 research projects** of science and innovation in Puerto Rico.

## 2020 Advanced and Catalyzer Grants Call

### Peer Review Process

The mission of the Puerto Rico Science Technology and Research Trust (the Trust) is to invest, facilitate and build capacity to continually advance Puerto Rico's economy and its citizens' well-being through innovation-driven enterprises, science and technology and its industrial base. According to this mission, the Trust launched in 2020 two Requests for Proposals (RFP) for the Advanced and Catalyzer Research Grants. The goal of peer review is to assess the scientific merit of Trust grant applications in a fair, independent, expert-driven, and free from inappropriate influences, so the Trust can fund the most promising research or development work.

Potential reviewers were officially invited, and were offered an honorarium for their service. After their acceptance, information about the review process, guidelines, instructions, and certification forms were submitted. Once the reviewers confirmed that they did not have a conflict of interest on the invited proposals for evaluation, the grants program staff provided guidance and orientation about the review process, and provided electronic access to applications, scoring forms and confidentiality guidelines. Each application was assigned three primary reviewers.



During the peer review process, the Research Grants Program team sent approximately 255 invitations to selected subject matter experts (SMEs). A total of 112 SMEs accepted the invitation and completed the evaluation. It is very important to point out that the current COVID-19 pandemic has delayed the evaluation processes. Numerous potential reviewers were unable to participate in the review process due to diverse personal situations and professional commitments.

Reviewers were asked to score the applications utilizing the following 7 criteria: Approach and Technical Merit, Innovation, Significance, Investigators, Environment and Collaboration, Budget Justification and Viability of Commercialization plan (for Technology/Product Development for Commercialization proposals). 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 6 scientific panel discussions were conducted. Reviewers from 13 countries and 93 research institutions participated in the process, including:

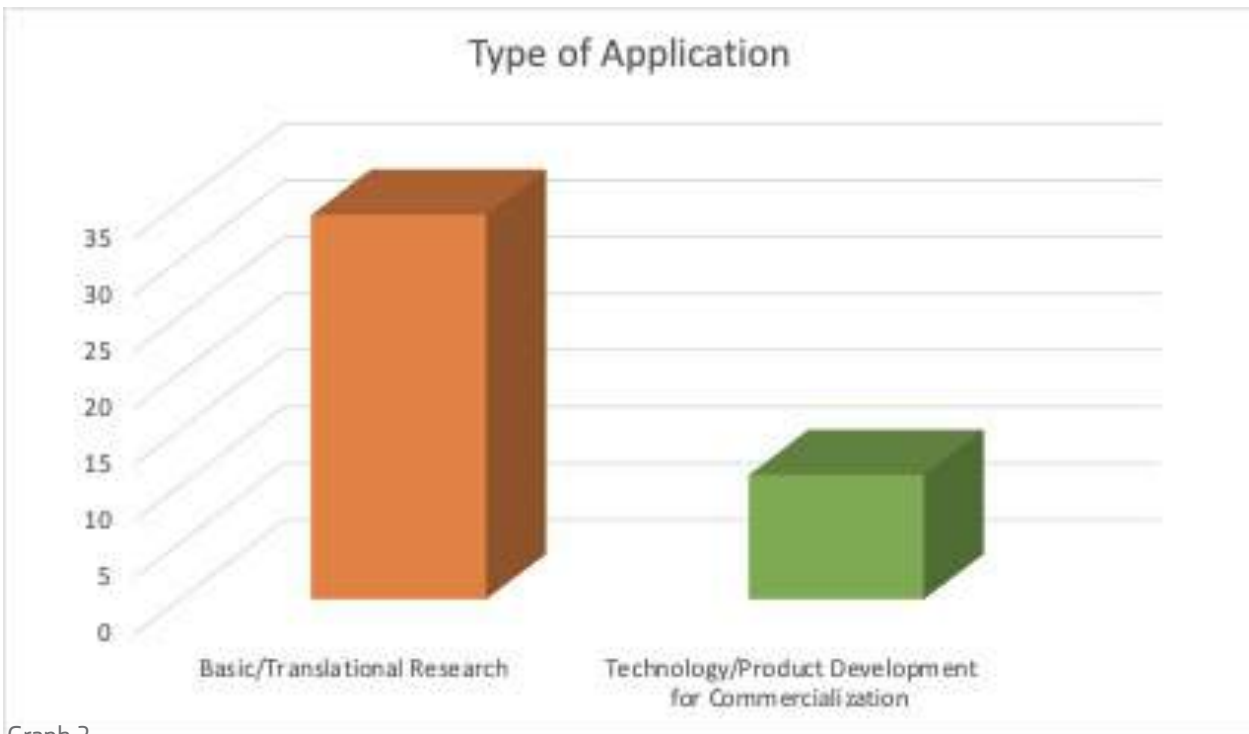


## Advanced Research Grant

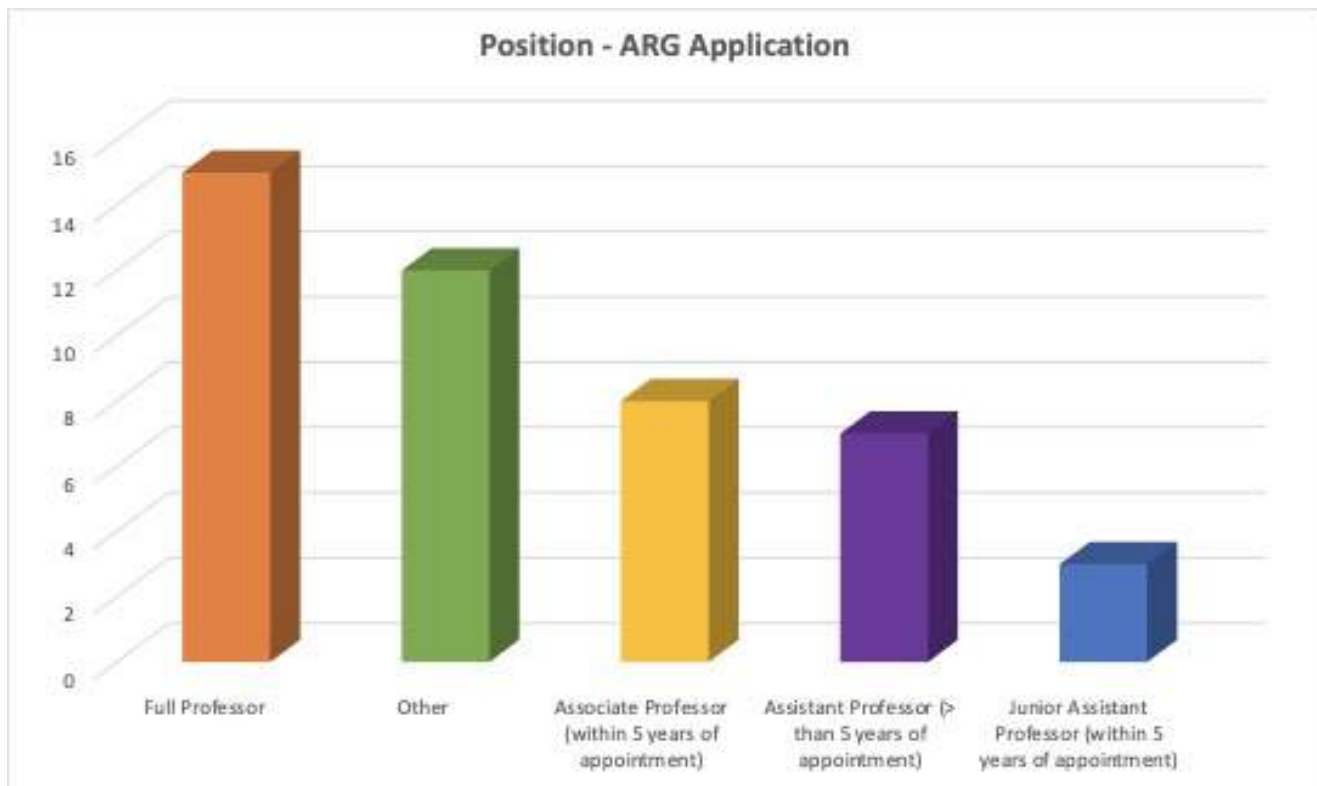
For this year, the Trust received 97 Letters of Intent (LOIs) for the ARG, out of which 52 received an invitation to submit a full proposal. Of those 47, a total of 45 completed the process of submitting a full proposal. A total of 10 different institutions applied to the grant. This includes 8 universities, 2 organizations in the nonprofit sector and 10 in the nonprofit sector (See Graph 1).



Graph 1



Graph 2



Graph 3 - The majority of the university applicants are full professors.



## The Research Grants Program, received full proposals for the ARG in the following strategic sectors:

- 17 Biotechnology and Life Sciences
- 7 Other
- 2 Mathematics
  - “Space and Atmospheric Sciences” and “Planetary Sciences”
  - Biomedical Sciences
  - Seismology
  - Federal Defense
  - Financial Technology
- 6 Agriculture
- 4 Environmental Sciences
- 3 Clean Technologies/Renewable Energy
- 1 Aerospace
- 1 Electronics
- 1 Medical Devices

## The following 12 projects were funded:

1. Alejandro Mises Castellanos - terraFirma Software LLC  
Comprehensive Software for Collaborative Environmental Planning
2. Dr. Alejandro Velez-Santiago - University of Puerto Rico - Mayaguez Campus  
Boundary value problems of nonstandard growth structure over real world regions
3. Dr. Carlos Marin - University of Puerto Rico - Mayaguez Campus  
Studies on the molecular structure and stability of water nanobubbles
4. Dr. Federico Goodsaid - MBQ Pharma, Inc.  
Rac and Cdc42 Inhibitors in Rheumatoid Arthritis Therapy
5. Dr. Héctor Tavárez - University of Puerto Rico - Mayaguez Campus  
Using cost-benefit analyses to determine the economic viability of commercializing innovative differentiated coffees in Puerto Rico
6. Dr. Jorge D. Miranda - University of Puerto Rico - Medical Sciences Campus  
Determine the effect of Tamoxifen in metabolite production and Muscle Physiology after spinal cord injury in male and female rats.
7. Dr. Karen G. Martinez-Gonzalez - University of Puerto Rico - Medical Sciences Campus  
Epigenetic profiling of COVID-19 related depression in a Puerto Rican population
8. Dr. Paul Bayman Gupta - University of Puerto Rico - Río Piedras Campus  
Adapting coffee plants for resistance to climate change and disease
9. Dr. Pedrina Terra dos Santos - Arecibo Observatory; The University of Central Florida Board of Trustees  
PRISMA: Puerto Rican Initiative for Studies using Meteor Radar
10. Dr. Rafael A. Rodríguez Solís - University of Puerto Rico - Mayaguez Campus  
Development of a dual-band (L-Ka), low size, weight and power (SWaP) microwave radiometer for ocean salinity mapping (MiRaS) for small UAS
11. Dr. Son Luu Nguyen - University of Puerto Rico - Río Piedras Campus  
Backward and Forward-Backward Hybrid Switching Stochastic Differential Equations: Properties, Numerics, And Control
12. Dr. Tugrul Giray - University of Puerto Rico - Río Piedras Campus  
Role of microbiota in regulation of biological clocks during honey bee behavioral development

## Catalyzer Research Grant

For this year, the Trust received 33 Letters of Intent (LOIs) for the CRG, out of which 21 received an invitation to submit a full proposal, a total of 17 completed the process of submitting a full proposal.



The applications were divided between new submission and resubmission. New submission is composed by Junior faculty = PI's within their first five years of their faculty appointment with a competitive publication record, seeking to secure their first grants, and New topic = PI's with a successful track record of securing funding in their primary research topic, but now embarking on a new research topic. Resubmission = PI's that applied for highly competitive federal funding, had their proposal favorably reviewed, but fell short of being funded.

## The Research Grants Program, received full proposals for the CRG in the following strategic sectors:

- Biotechnology and Life Sciences - 9
- Agriculture - 2
- Information and Communications Technology - 2
- Aerospace - 1
- Clinical Trials - 1
- Medical Devices - 1
- Other - 1

All applications were checked for completeness and responsiveness by the grants advisory team. Qualified reviewers, based on scientific and technical qualifications, were recruited from the United States, Canada, South America, and Europe.

## The following 5 projects were funded:

1. Dr. Carlos J. Diaz Osterman - Ponce Medical School Foundation, Inc.  
Aberrant lipid metabolism and alternative macrophage activation in therapy-resistant prostate cancer
2. Dr. Linda Laras - San Juan Bautista School of Medicine  
Puerto Rico Health Justice Center (PRHJC) Health Justice Database Project
3. Dr. Ricardo Chiesa - University of Puerto Rico - Cayey Campus  
Discovery and development of anxiolytic agents from tropical marine macroalgae
4. Dr. Sunita Dahiya - University of Puerto Rico - Medical Sciences Campus  
Development of Nanomilling and Spray-drying Processes for Fabrication of Raloxifene Nanocrystals
5. Dr. Wilfredo De Jesus Rojas - University of Puerto Rico - Medical Sciences Campus  
Nasal Nitric Oxide Levels as a Diagnostic Tool to Understand the Phenotypic/Genotypic Profile of Subjects with Primary Ciliary Dyskinesia in Puerto Rico.

## Researchers Needs Assessment

In February 2021, The Research Grants Program conducted an assessment with the scientific community on the Island. At the Trust, we recognize that researchers can experience multiple barriers in their careers. It is our goal to identify those barriers and gaps and explore constructive ways to address them. This report is based on an online survey conducted by the Research Grants Program at the Puerto Rico Science, Technology and Research Trust (the Trust).

The questions and format of this exercise were adapted from a survey conducted in 2014 by PEW and the American Association for the Advancement of Science (AAAS). This report gives an overview of Puerto Rico's scientists' views about the following topics: funding, career advancement, scientific communication, intellectual property commercialization and entrepreneurship.

The survey was sent on February 2, 2021 with follow ups on February 5, 2021, April 14, 2021 and April 21, 2021.

A total of **55 researchers** completed the questionnaire.

The data gathered from the survey, can serve as a roadmap for a study with a larger sample size that besides a survey, can include focus groups and other methodological tools to gather more data. A report is available upon request.



# BEACON

Powered by:  RESEARCH GRANTS F R O C E P R A M PLANS TO GROW  
 TECHNOLOGY TRANSFER OFFICE  
 Puerto Rico Science, Technology & Research Trust

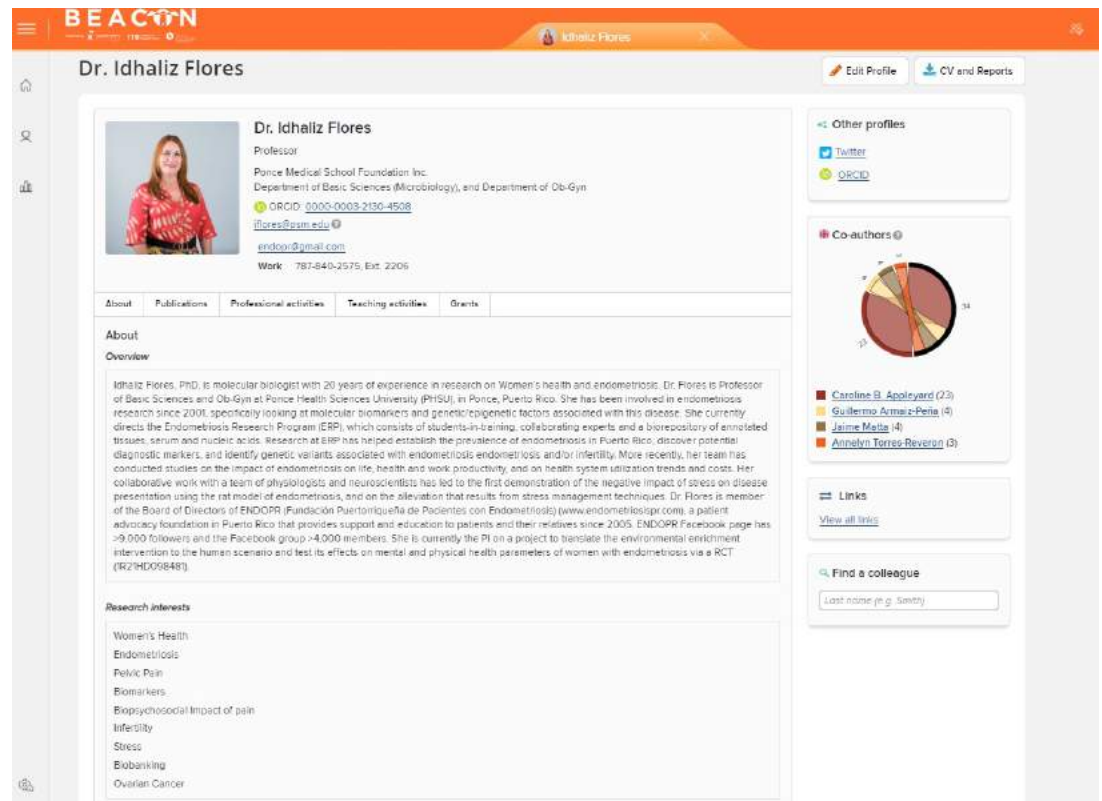
BEACON is a new centralized platform that provides a better understanding of Puerto Rico's research ecosystem. It allows researchers to create and update their profiles and also allows potential collaborators and the general public to search for them.

## 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.
- Increases collaborations between public and private Academic Institutions, researchers, companies and/or potential investors.

## Features

- Every day, 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
  - Europe PubMed Central
  - ORCID
  - PubMed
  - RePEC
  - Scopus
  - SSRN
  - Web of Science
- BEACON also allows researchers to manually add publications and research outputs.
- Researchers are welcome to update BEACON with additional information to populate their Profile, such as education, position, professional & teaching activities
- Administration staff can request reports and analytics with punctual data from their institutions.



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





## Discover world-class research in Puerto Rico

In this platform you will find out more about Puerto Rico's research ecosystem and potential collaborations. You can search for researchers by entering names, research keywords, and disciplines.



Search

### CONTACT US



105 Carr. #21, Km. 0.8 Bo. Monacillo San Juan, PR 00927  
Puerto Rico

### PUERTO RICO, SCIENCE TECHNOLOGY & RESEARCH TRUST

- Home
- Research Grants Program
- Technology Transfer Office
- ACT 60
- SBIR/STTR

### USEFUL LINKS

- Research
- Entrepreneurship
- Public Health



## PROFILES



search by name or keyword

## Refine

Showing 1-24 out of 24

Previous 1 Next



### Institutions

All selected

RESET

- University of Puerto Rico 13
- Ponce Medical School Foundation Inc. 7
- Universidad Central del Caribe 3
- Ana G. Méndez University 1



### Campuses

Include 10 profiles where Campuses has not been set

YES

All selected

RESET

- UPR-Mayagüez 5
- UPR-Medical Sciences 4
- UPR-Río Piedras 3
- UAGM-Gurabo 1

Relevance

Last name



### Dr. Antonio Alegría

- Medicinal and Biomolecular Chemistry
- Organic Chemistry
- Pharmacology and Pharmaceutical Sciences
- Biochemistry and Cell Biology
- Inorganic Chemistry
- Medical Biochemistry and Metabolomics
- Physical Chemistry (incl. Structural)
- Other Chemical Sciences
- Mechanical Engineering



### Dr. Caroline B. Appleyard

With extensive experience in the field of gastrointestinal inflammation my current studies center on the interactions between inflammatory mediators, microflora, and behavior, in the pathogenesis and exacerbation of inflammatory conditions of the intestine. I have developed several animal models to study these conditions...

- Physiology
- Medical Physiology
- Biochemistry and Cell Biology
- Clinical Sciences
- Paediatrics and Reproductive Medicine
- Neurosciences
- Pharmacology and Pharmaceutical Sciences
- Oncology and Carcinogenesis
- Public Health and Health Services
- Curriculum and Pedagogy

Pilot Program with 12 researchers at Ponce Health Science University. Also, the new cohort of grantees (17) are participating in the Pilot.



## ACT 60

The Grants Program is in charge of processing and evaluating the applications of the Act 60 tax incentives. The purpose of this tax incentive 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.

The applications are still under evaluation. We expect to report the number of cases processed and incentives granted in the next annual report.

## Support to other Trust Programs

The Research Grants Program uses 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.

Using this tool, Grace Rendón, Grants Program Specialist assisted other Trust programs and initiatives with their Request for Proposals (RFPs) by creating their application and review portals. Each application portal was developed according to the requirements of each program. This includes brainstorming sessions with the different teams. The Grants Team assisted them with the timelines and the revision and selection process.

### ■ Regrow

- In August 2020, the Trust became a sub recipient partner of the Puerto Rico Department of Housing Community Development Block Grant – Disaster Recovery (CDBG-DR) to carry out the Re-Grow Puerto Rico Urban and Rural Agriculture (RGRW) Program. As part of this initiative, and in collaboration with Wizehive, application and review forms were developed following the guidelines of the program and documents provided by the client. This included adapting their requests in a way that would work with our platform while complying with their regulations.
- We provided the ReGrow team with a user manual to help them navigate the platform, and we also provided training on January 11, 2021.
- Ongoing support and technical assistance has been provided.

### ■ Therapeutics Accelerator Program (TAP)

- In November 2020, the Trust's Technology Transfer Office launched the Therapeutics Accelerator Program (TAP) with a pre-application call for topics; for approved topics, the research team was required to: participate in a twelve week Lab-to-Market, Life Sciences program in cooperation with Columbia University from January through April 2021; submit a Proposal; and present Proposal highlights at a Pitch Day. Seven Proposals and seven Pitch Day presentations were evaluated and ranked by a group of experts.
- We assisted in the development of the application and review forms, and provided technical assistance to the applicants.

### ■ Resiliency and Business Innovation (RBI) Project - Request for Proposals for Research Projects

- In July 2021, the Resiliency and Business Innovation (RBI) Project launched their second Request for Proposals.
- We updated their previous platform for the new call.

## Outreach

- L'Oreal Women in Science (Info Session): December 17, 2020
- Podcast Grants
- Info Session Act 60
- This year, due to the ongoing pandemic we "visited" our grantees virtually.



## Future Plans

- The Research Grants Program will continue providing support to its grantees and the scientific community in the island.
- By the end of the year the Research Grants Program expects to announce a new call.
- We will continue to work with the deployment of Beacon.
- The Program will continue providing support with the SBIR/STTR efforts.
- The Program will expand its operations in order to foster and support the pre and post award divisions of research institutes and other nonprofit organizations.
- The Program will explore new funding mechanisms in order to continue supporting the local scientific community.

## Grants Team



**Andreica Maldonado**  
Grants Program Director

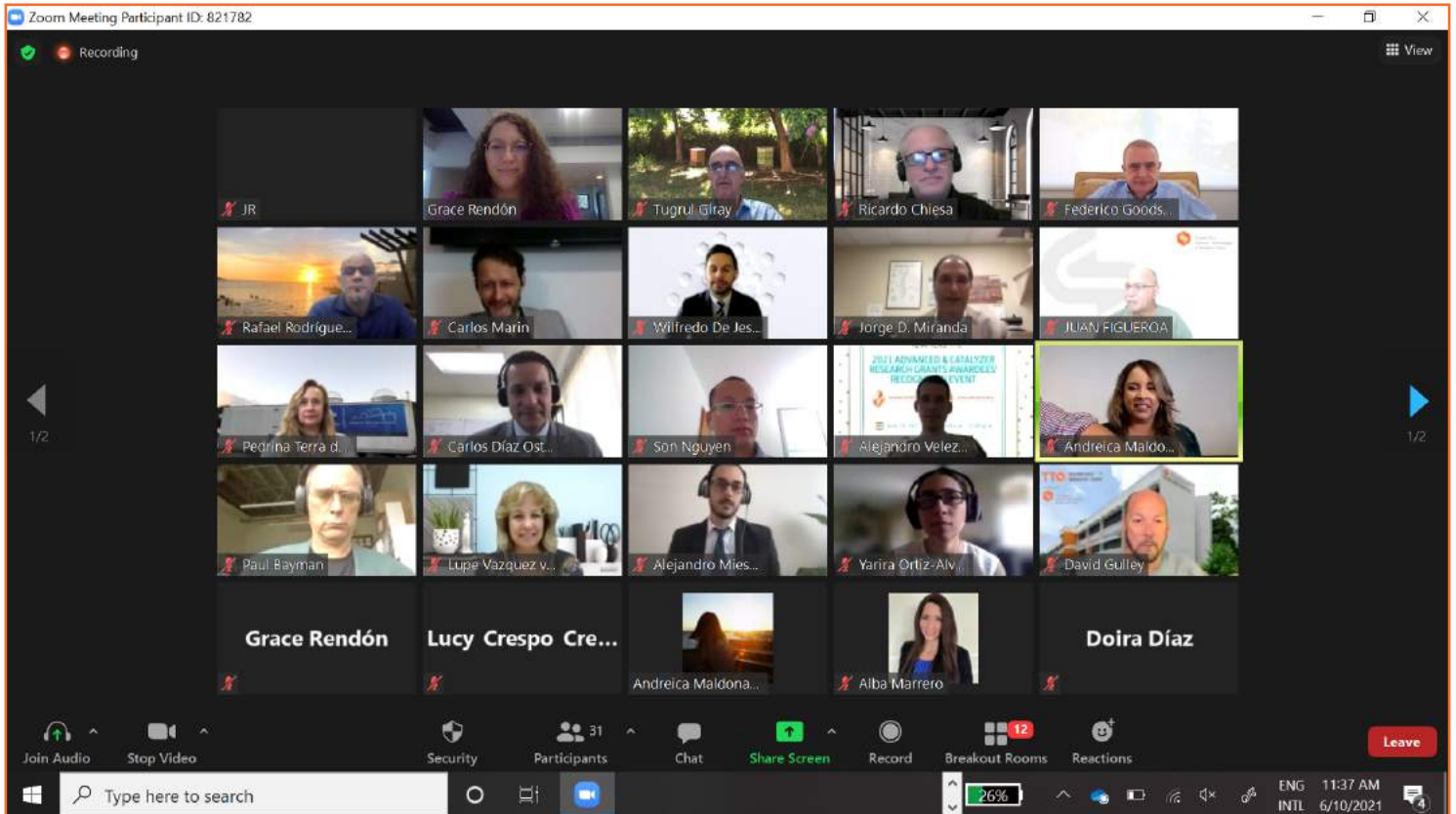


**Grace M. Rendón Febles**  
Grants Program Specialist

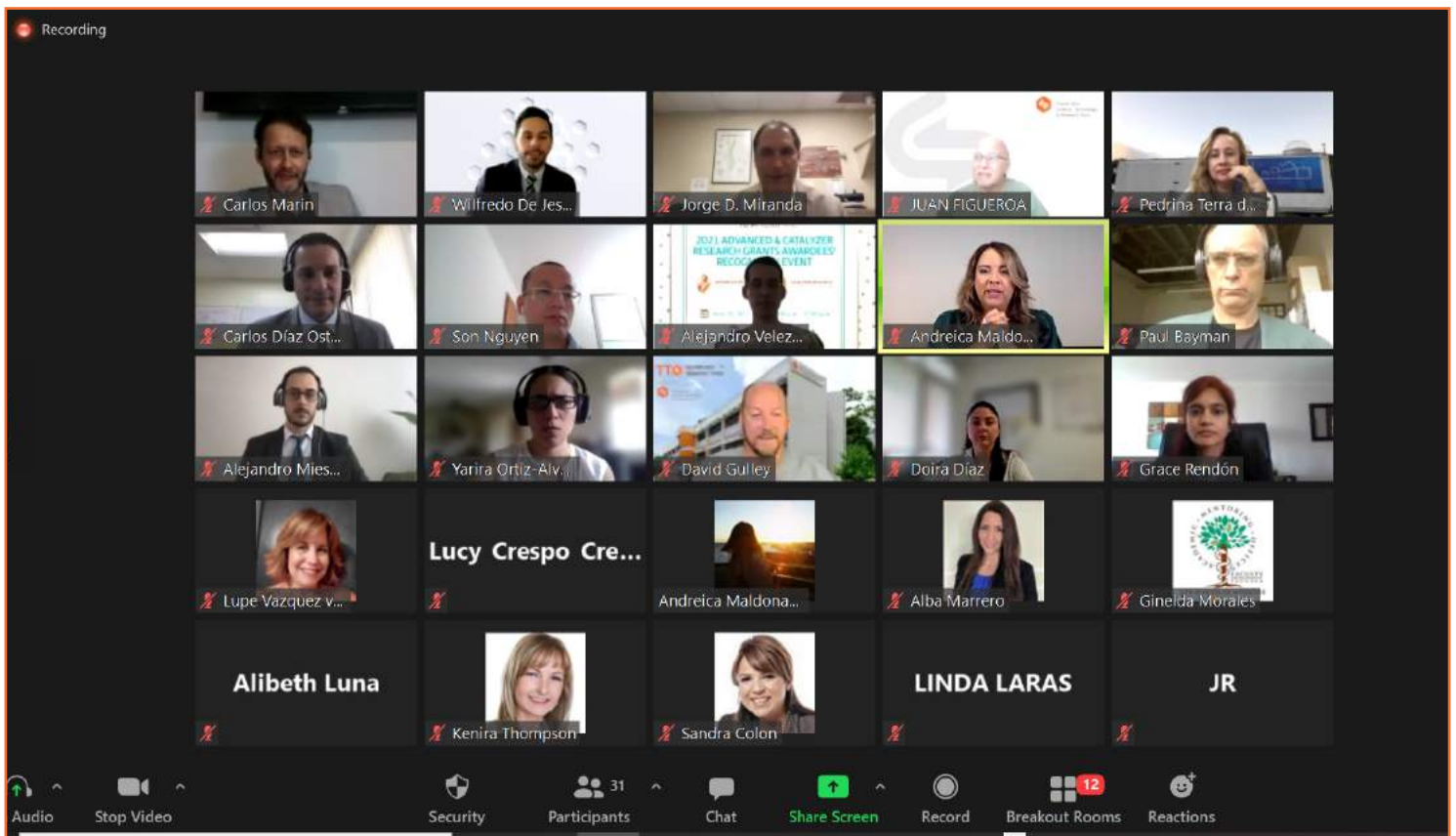


**Juan E. Figueroa, Ph.D.**  
SBIR/STTR Matching Funds





Grants Announcement June 10, 2021



Grants Announcement June 10, 2021



Puerto Rico  
Science, Technology  
& Research Trust

RESEARCH &  
DEVELOPMENT

**TT**  | **TECHNOLOGY** <sup>TM</sup>  
**TRANSFER OFFICE**





# Program Description

The Technology Transfer Office (TTO) improves Puerto Rico’s innovation ecosystem by partnering with universities to support scientists and researchers in order to provide best-of-class technology transfer and knowledge transfer services to promote opportunities for collaborations with existing companies or startups.

## Mission and Vision

The TTO’s mission is to identify, evaluate, protect, market, and transfer the most promising research discoveries and intellectual property (IP) from Puerto Rico’s universities, companies, and researchers to the private sector for commercialization and to benefit the public.

The TTO’s vision is shared risk/shared reward partnerships that deliver best-in-class technology transfer services in order to identify and increase innovation opportunities for Puerto Rico’s scientists and researchers, thereby improving Puerto Rico’s overall innovation ranking.

## Technology Transfer Process



## Goals

The TTO’s goals are to increase the participation of researchers/inventors; use best-in-class IP analytics, patent counsel, marketing platforms, licensing and related agreements; and pursue resources to support technology transfer and a more robust innovation ecosystem.

**University Partners** operate under MOUs and Master Agreements, and represent seventeen (17) campuses:

- Ponce Health Sciences University/Ponce Medical School Foundation, since FY2017
- University of Puerto Rico (11 campuses), since FY2018
- Ana G. Mendez University (3 campuses), since FY2019
- Universidad Central del Caribe, since FY2019
- San Juan Bautista School of Medicine, new in FY2021



## ACHIEVEMENTS

### Southeast XLeator Network (XLN)

The XLN, initiated in 2018, is supported by NIH as a “technology transfer accelerator hub” for the NIH IDeA Southeast region which includes AR, LA, KY, MS, SC, WV, and Puerto Rico. The goal is to assist in identifying and supporting the development of life/bioscience and healthcare discoveries from lab to market.

- The XLN includes 24 academic institutional partners across the region. The PRSTRT, through the TTO, is the State Lead for Puerto Rico, and coordinates with three Sites: UPR Medical Sciences Campus (UPR MSC), Ana G. Mendez University-Gurabo (UAGM), and Ponce Health Sciences University (PHSU). Two additional sites will be added in 2022: Universidad Central del Caribe and San Juan Bautista School of Medicine.
- Deliverables included educational content, Subject Matter Experts, Executives in Residence, and funding for “Idea-to-Products” projects from university sites.
- The TTO completed a pilot program “EnTRUST” to develop and deliver educational content, programs, and resources to increase participation of researchers/inventors in HSIs (Hispanic-Serving Institutions).
- The XLN completed Years 1-3 in 2021 (\$3.5M) and applied to NIH for renewal 2021-2025 (\$6.8M).

### Therapeutics Accelerator Program (TAP)

At the request of Columbia University’s Irving Institute for Clinical and Translation Research, the TTO proposed and delivered a module as part of the Institute’s six-year renewal of their NIH Clinical and Translational Science Award. Deliverables under the “Therapeutics Accelerator Program”, conducted by the TTO in cooperation with Columbia included:

- identification of 50+ researchers at universities working in the field of therapeutics;
- a call for pre-proposals, and for those that qualified, a 12-week “bootcamp” for Lab-to-Market program, in cooperation with Columbia’s accelerator programs;
- for those completing the bootcamp, a call for proposals, reviewed by external experts;
- TAP final projects presented at a Pitch Day, evaluated by a select group of experts; and
- Seven awards were made, up to \$75,000 each, and begin in FY2022.

### NASA Challenge to Innovate

The CTI NASA edition was a 12-week competition that started in January 2021. This initiative gave university students the opportunity to research and create prototypes based on eighteen (18) NASA US patents. This program, led by Parallel18, allowed the TTO to manage:

- in-licensing of six NASA technologies to the Trust for purposes of conducting evaluations and supporting the program;
- conducting a standard TTO evaluation process and delivered Screening Reports of each technology;
- drafting and executing ten (10) options with student teams to establish expectations and deliverables; and
- providing workshops on intellectual property and technology commercialization.

### Beacon

As an initiative of the Research Institute and in cooperation with the Grants Program, TTO:

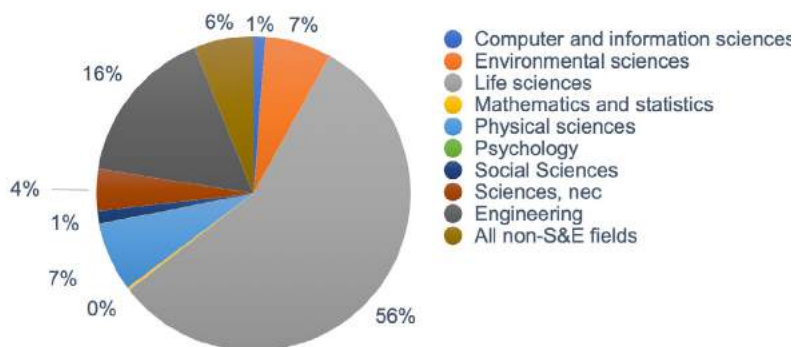
- supported the Symplectic Elements initiative to identify, organize, and promote Puerto Rico research assets (university researcher profiles; expertise, grants, publication, patents);
- conducted an inventory of intellectual property (patent) assets linked to fifty-two (52) University Partner Inventors. Such assets are included with researcher profiles to highlight their contributions.
- Identified a total of three hundred twelve (312) patents and patent applications linked to University Partner Inventors.

### Research Expenditures by Field

Research and development (R&D) expenditures by Puerto Rico’s universities totaled \$121,074,000 in FY2019, according to the most recent official report from the National Science Foundation. The following chart reflects the percentages of R&D in each scientific field and is consistent over the past five years. R&D activity can generate research discoveries, which feeds the pipeline for identifying new invention disclosures and the beginning of the technology transfer process.

## Existing Active Technologies by Status

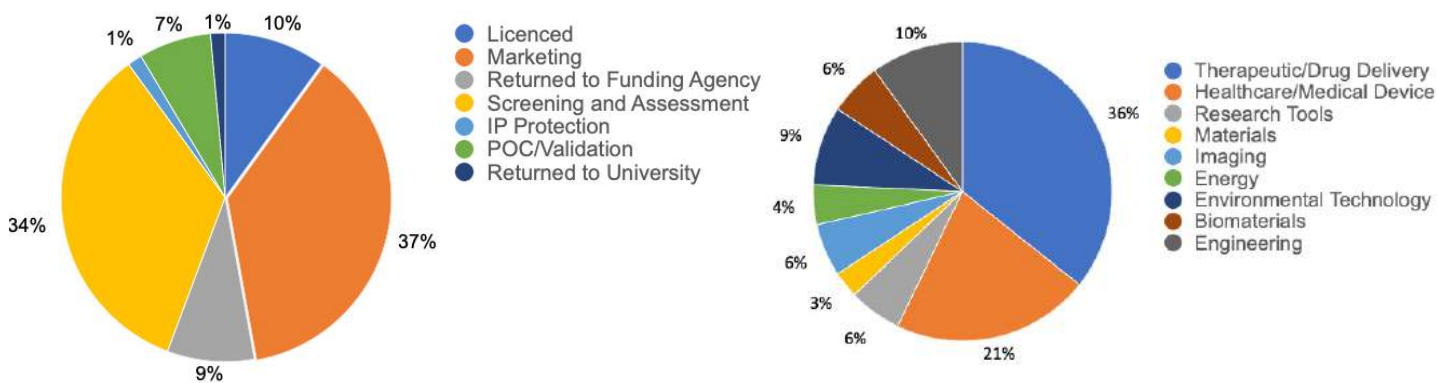
The TTO had an active portfolio of seventy (70) technologies at the end of FY2021. Each technology may include multiple patent applications, a single patent application, and/or non-patentable intellectual property. The TTO’s marketing efforts advanced considerably in FY2020 and FY2021 as more disclosures advanced through the evaluation stage and the TTO’s marketing platforms enabled this increase.



Source: National Center for Science and Engineering Statistics, National Science Foundation, Higher Education Research and Development Survey, Fiscal Year 2019. <http://ncesdata.nsf.gov/herd/>.

## Active Technologies by Field

The TTO’s active portfolio reflects the fields of research showing the strength of life science research and discoveries in the fields of therapeutics, drug delivery, healthcare, and medical devices.



## Staff



David L. Gulley, PhD, RTTP, CLP  
Director

Carlos A. Báez, PhD, MBA, RTTP  
Technology Manager

Josiah Hernandez, BS  
Technology Manager

Alba L. Marrero, MS  
Technology Transfer Analyst

Alba L. Marrero, MS Biotechnology, advanced from a TTO Intern to a full-time Analyst position in FY2021. Alba’s work focuses upon the evaluation of new invention disclosures, using TTO’s screening and evaluation platforms. She works closely with the TTO staff managing the new invention and provides valuable observations for the researcher/inventor. In 2021, Alba was selected for a Howard Bremer Scholarship by AUTM, the world’s largest association of technology transfer professionals.

Dr. Carlos Báez, was awarded the designation of RTTP (Registered Technology Transfer Professional) in 2021 by the Alliance of Technology Transfer Professionals, a global association of fourteen (14) member associations representing forty (40) countries. The RTTP is awarded based upon a combination of experiences, key skills, and achievements and the recommendations of a global Peer Review panel. There are currently over six hundred (600) RTTPs around the world.



## Knowledge Transfer and Capacity-Building

TTO staff worked remotely since early March, which also presented many new opportunities to enhance knowledge and skills in our profession. Many of our professional associations, law firms, and other organizations provided innumerable opportunities to both learn, network, and present during sessions. During FY2021, TTO staff participated in:

- 65 Webinars
- 9 Courses
- 4 Conferences

## IMPACT METRICS

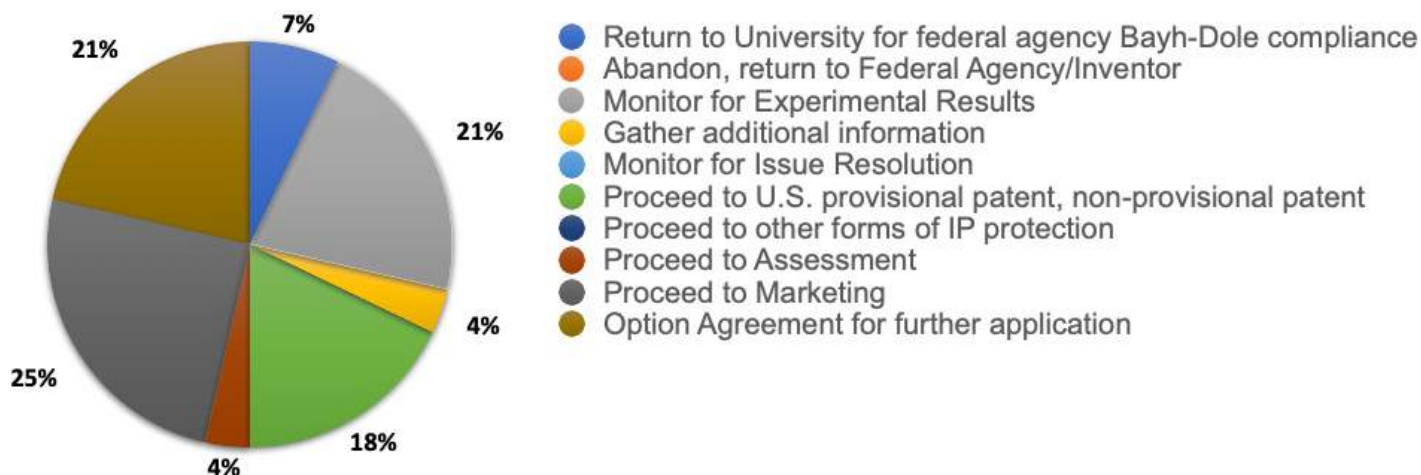
### Screening and Evaluation

**patSnap** is an IP analytics and business intelligence platform used to support the evaluation and decision-making for all new TTO disclosures and generate Screening Reports. R&D and IP datasets provide access to more than 159.7 million patents worldwide, chemical structure searches, R&D intelligence, market and industry trends. Additional platforms through PatSnap are:

- Discovery, marketing intelligence
- Chemical, searching patent databases for chemical structures
- Insights, business intelligence for R&D
- Workspace, allows TTO teamwork from the same datasets

In FY2021, twenty-eight (28) disclosure screenings were completed. Each is evaluated based upon a set of weighted characteristics: (1) scientific and technical merit; (2) development stage of the invention; (3) patentability; (4) commercial potential; (5) inventor factors; and (6) outstanding issues resolved. These are shared with the inventors and the University Partner designate, along with TTO recommendations. A summary of the aggregated Screening Report outcomes show that development stage, patentability, and commercial potential typically pose the most difficult obstacles in moving forward.

### Screening Radar Chart: FY2021 Average Recommendations for Screened Technology FY2021







## Patent and Legal Resources

The TTO has seven firms under engagement with IP patent attorneys with scientific credentials that align with the TTO's technology portfolio and university research base. These firms employ 5,280+ professional staff including 588 IP specialists in 101 offices around the world.


 Baker Botts, LLP  
7 U.S. offices; 7 foreign offices

 Barnes & Thornburg, LLP  
14 U.S. offices

 Ferraiuoli, LLC  
San Juan, Puerto Rico

 Foley & Lardner, LLP  
21 U.S. offices; 3 foreign offices

 K & L Gates, LLP  
23 U.S. offices; 22 foreign offices

 McDonnell Boehnen Hulbert & Berghoff, LLP  
3 U.S. offices

 Hoglund & Pamas  
San Juan, Puerto Rico

## Marketing Platforms



IN-PART connects university research assets and R&D companies. This is the TTO's major marketing platform for twenty-seven (27) current active technologies.

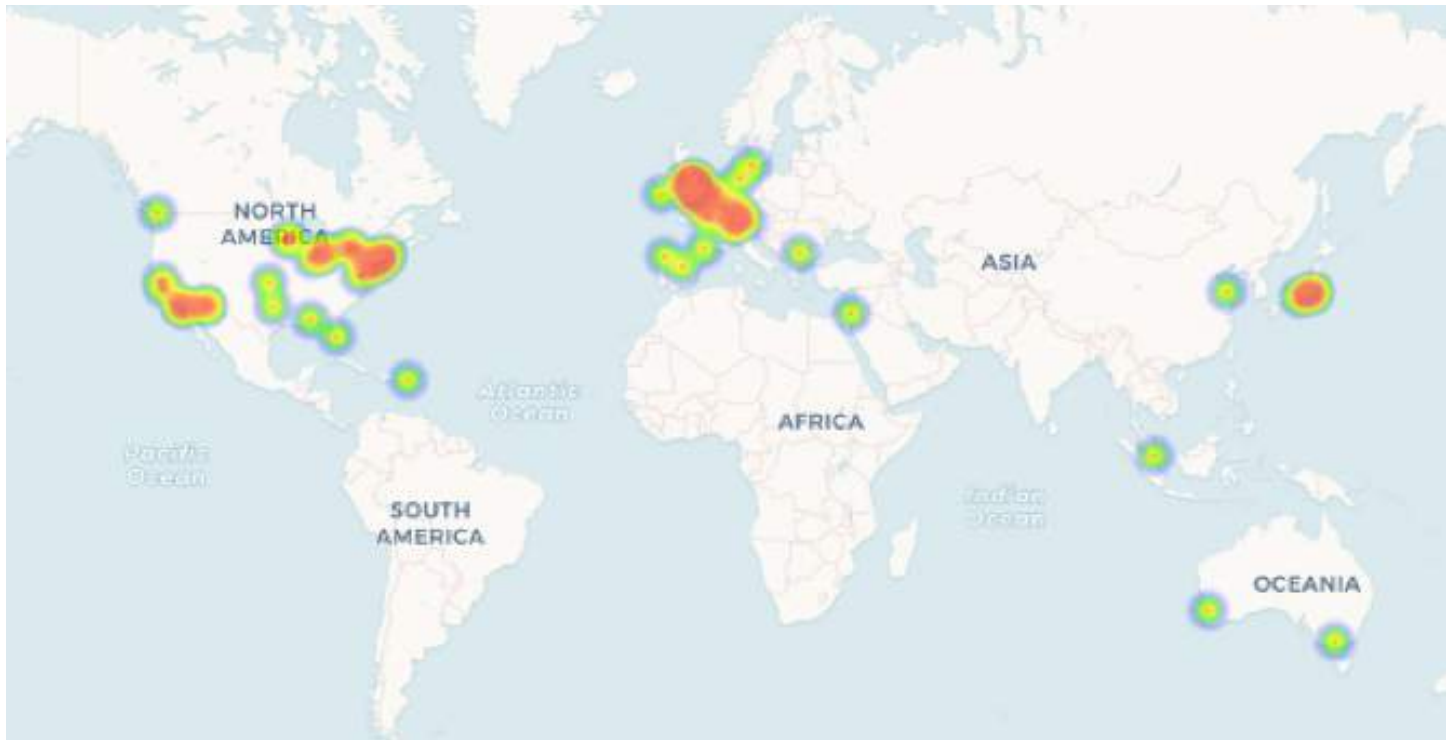
- Technology Transfer: IN-PART's digital platform serves 250+ research institutes/universities by targeting their inventions and discoveries to over 5,500 R&D companies in the network.
- R&D Collaborations: Discover, an open innovation platform operated by IN-PART allows corporate R&D teams to leverage the university network through Industry Call for Opportunities campaigns.

### Global Market Penetration Results

- 9,620 reads of promotional newsletter emails containing TTO technologies
- 1,453 direct emails to pre-screened industry contacts
- 388 industry contacts that reviewed TTO technologies (below)
- 18 industry contacts providing direct feedback
- 14 industry introductions
- 13 submissions to Discover campaigns



## TTO Global Market Penetration



AUTM Innovation Marketplace (AIM) is a web-based portal with more than 19,000 searchable university technologies available for licensing. TTO staff are AUTM members so this portal is available to upload technologies from the TTO portfolio.



Ximbio is the world's largest non-profit dedicated to life science research reagents and part of the technology transfer licensing team of Cancer Research UK. The TTO has a master license to ensure that disclosures from our researchers are connected to this well-resourced partner and sharing research reagents and tools with the global research community.



BIO Ventures for Global Health is a non-profit that connects biotechnology and pharmaceutical companies, governments, non-profits, and universities in addressing global health issues. The WIPO Re:Search program is a partnership that allows the Trust and UPR to share IP and connect industry assets with university researchers to accelerate new drugs, vaccines, and diagnostics for neglected tropical diseases, malaria, and tuberculosis.



WIPO GREEN is an online global technology exchange platform to address climate change by connecting providers and users of environmentally friendly technologies to catalyze green technology innovation and diffusion.



## Performance Indicators FY2021

PERFORMANCE METRICS	TOTAL
<b>Research Expenditures (FY2019)</b>	\$121,074,000
Principal Investigators	477
<b>Technology Transfer Office</b>	
Year Established	2016
Staff (FTEs)	4.0
<b>Invention Disclosures</b>	26
Supported by Federal Grants	21
Disclosures with Female Inventors	23
<b>Evaluation</b>	
Screening Reports	28
Total Active Portfolio	70
<b>Intellectual Property</b>	
New Patents Filed	6
US Provisional	2
US Nonprovisional	2
PCT/Foreign	2
Office Actions	7
Patents Issued	3
Patent Expenses	\$70,053
Patent Expenses Reimbursed	\$38,204
<b>Marketing</b>	
Technologies Marketed	27
Targeted Companies	388
<b>Licensing</b>	
CDA/NDA	2
Option	11
Licenses	4
Active Licenses	5



## FUTURE PLANS

### Capacity Building

- Hire Operations and Compliance Manager
- Hire Technology Transfer Intern (up to two)
- Complete TTO office renovation at UPR Mayagüez
- Conduct a series of workshops and events for scientists and researchers

### Life Science/Healthcare Startup Acceleration

- Southeast XLerator Network, year four implementation and educational programs for targeted researchers on university campuses; access to and support from XLN programs, including mentors, SBIR advisory support, and venture capital networks.
- Build upon FY2021 pilot HSI (Hispanic-Serving) institution “EnTRUST” effort to increase participation of researchers/inventors in innovation and technology transfer programs.

### Therapeutics and Medical Device Acceleration

- In cooperation with Columbia University, build upon 2021 TAP pilot and incorporate medical devices into the bootcamp for 2022. Cooperate with the Grants Program to ensure project review and funding are consistent with Trust practices.

### R&D Collaborations

- Support the Research Institute through promotion of university-industry collaborations using IN-PART’s “Industry Call for Opportunity” and Discover platform as outreach to University Partners.
- Support new campus initiatives, such as UPR’s Center for Advanced Wearable Technologies, supported by NSF, by engaging industry and mentoring faculty on IP-related issues.



Puerto Rico  
Science, Technology  
& Research Trust

# RESEARCH & DEVELOPMENT

CDBG-DR FUNDS



Powered by:



Puerto Rico  
Science, Technology  
& Research Trust

## RE-GROW PR URBAN AND RURAL AGRICULTURE



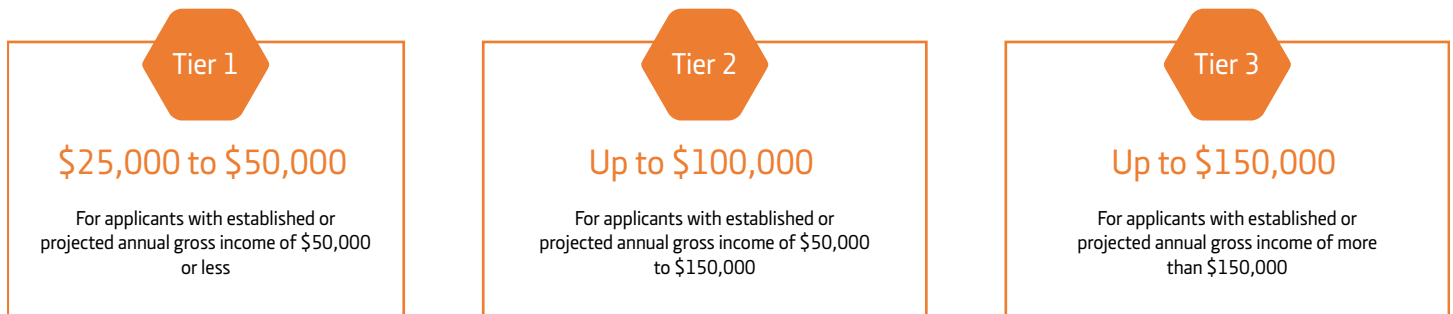


## Program Description

Re-Grow Puerto Rico Urban and Rural Agriculture (also known as 'Renacer Agrícola' in Spanish) is a program powered by the Puerto Rico Science, Technology & Research Trust, subrecipient of the CDBG-DR funds administrated by the Department of Housing for the recovery and development of Puerto Rico, after the hurricanes Irma and Maria. **The program was designed to spur economic recovery specifically in the agriculture sector with an allocation of ninety-two million five hundred dollars (\$92.5 million), from which the Puerto Rico Science, Technology and Research Trust (also known as 'The Trust') currently administers thirty million (\$30 million), through a subrecipient agreement executed in August 2020.**

The Re-Grow Puerto Rico Urban and Rural Agriculture (RGRW) Program provides access to grants ranging from twenty-five thousand dollars (\$25,000) up to a hundred and fifty thousand (\$150,000) to small and medium-sized agricultural enterprises and non-governmental organizations that are involved in sustainable agricultural activities. With these incentives, along with capacity building and technical assistance, RGRW will address the unmet economic development needs of food producers and encourage a long-term sustainable revitalization.

### Grant Tiers



Producers who are eligible to apply can do so through an online application at [regrowpr.org](http://regrowpr.org). Eligible entities can be existing, re-starting or a start-up. Applicants can receive free technical assistance through the program Contact Center via phone, email, in-person support through seven (7) Help Centers established in different municipalities across the island.

### Mission

RGRW exists to promote and increase food security island-wide, enhance and expand agricultural production related to economic revitalization and development activities through grants (up to \$150k) and capacity building.

### Vision

A revitalized agriculture (propelled by CDBG-DR Funds) that enable producers across Puerto Rico to contribute to food security and sustainable economic growth.

## Milestones and Achievements

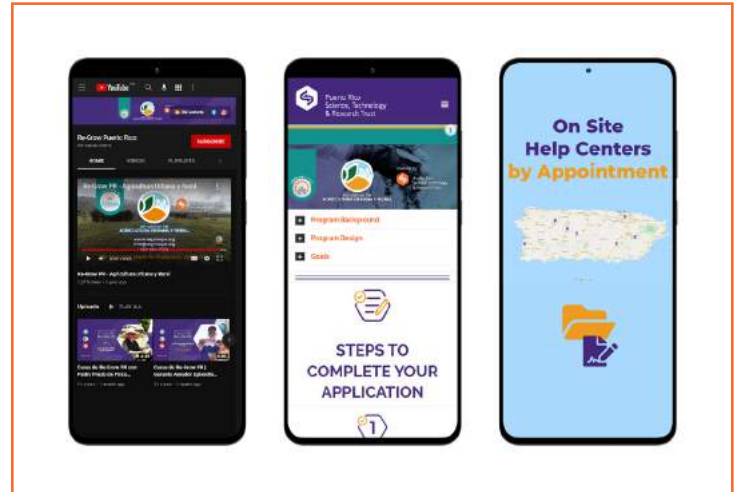
### Launch and Evolution

RGRW opened the call for applications and the Help Center on September 2, 2020. The **official launch of the Program took place on September 11, 2020**, at an event in conjunction with the Puerto Rico Department of Housing and the Governor's Office at a farm in Adjuntas. Since then, the Program began to receive applications through [www.regrowpr.org](http://www.regrowpr.org) along with the Help Center, that was available to help and provide guidance by telephone and email on the Program's requirements and application.

The program achieved local recognition and acceptance, even though this launch occurred in the midst of the COVID-19 pandemic. **During the first three (3) months of the program, over 400 applications were received, and 2,362 calls were received assisted in the Call Center.** This accelerated growth that prevailed in the following months also revealed deeper needs of food producers and potential applicants.

The average farmer in Puerto Rico is 59 years old, and most challenged in technological skills and/or internet access. These factors, exacerbated by a pandemic that limits in-person contact, presented significant challenges for applicants to submit accurate documentation as required by the federal program. To address this matter, The Trust and the RGRW team amped the production of resources and solutions to facilitate and ensure a successful application process for food producers.

- Video Tutorials: How to apply to Re-Grow PR Step by Step
- Templates to standardize the evaluation of Agriculture and Fisherfolks Management Capacity
- Templates to present financial statements and video tutorials
- Webinars and Virtual events



As COVID-19 restrictions were minimized, the program was able to open seven (7) on-site Help Centers, where applicants can receive orientation, one-on-one technical assistance to complete the application, present and digitalize documents, among other services, all free of charge. The centers are located in San Juan, San Lorenzo, Camuy, Cayey, Utuado, Jayuya and Cabo Rojo were made available thanks to a strategic partnership the Trust has developed with the San Lorenzo Municipality, the Farmers Association of Camuy and the Ana G. Mendez University. To build awareness of the on-site Help Centers, a media tour was completed in local press and radio, both media channels that ensured affinity and reach among farmers.

## On Site Help Centers by Appointment

Outreach events were also held across the island once COVID-19 restrictions allowed these activities after February 2021. These events were facilitated in collaboration with community leaders, organizations and local agencies of the agriculture and fishing sectors. Parties who were interested in a Re-Grow PR orientation could also request one by filling out the **Re-Grow PR Tour** form. During these events, attendees were informed of the program requirements, the application process, evaluation timeline, free resources to complete the documentation, among other topics. Most events also provided technical assistance on-site with the support of Intake Specialists.

Some of the collaborators: Servicio de Extensión Agrícola, Recinto de Mayagüez, Agro-Mujer, Para La Naturaleza, Agroempresarias de Puerto Rico, Dewey College, Municipio de San Lorenzo, Fundación Bucarabón, Mercy Corps, Asociación de Farináceos del Este, Bosque Modelo, ProCafé, Unidos por Utuado, Asociación de Agricultores Camuyanos, Distrito Caribe, Operation Hope, Asociación de Agricultores de Puerto Rico, FEDEMAR, among many others.



As services and reach were amplified, the granting of awards was also moving forward. **After just six (6) months of launch, in March 2021, the first three awardees participated in a ceremony in Orocovis to celebrate this important milestone.** The farmers who received the subsidies represented agriculture activities such as livestock, vegetable farming, hydroponics, aquaculture, among others.



**From March to October 2021, RGRW reached a total of \$6,344,119.00 in funds awarded and 105 awardees; a group of resilient and hardworking food producers that represent the diversity of the agricultural and fishing sectors in Puerto Rico.**

## Events



## Testimonials



**Farmer Pedro Prado from Finca de Abuelo Miguel:** “Accessing the Re-Grow PR funds gives us a great boost to complete several projects that we had on the agenda for a while. We have eggs, chicken, and other meat cuts for sale. We want to produce more, but to keep the products in best condition we needed a bigger refrigeration system. Now we have a mobile storage container refrigerator where we can accommodate these products that are food for the people of Puerto Rico. That is the important thing, that we can eat healthy food produced locally”.



**Farmer Angel Berrocales from Finca Ñeco:** “I have been interested in farming for years. My family is full of farmers, and I was always interested (in agriculture). I saved money, and little by little and I managed grow Finca Ñeco to where it is today. But I started the year that (Hurricane) Maria came and destroyed the crops. I couldn’t recover right away because it required an investment. However, I was able to make changes to the crops I was producing to incorporate fruits that were more sellable at my local town”.



**Farmer Leonel Torres from LTA Agriculture:** “Under LTA Agriculture I have three (3) different lands to develop. In one of the farms we are going to plant 1,000 breadfruit trees where the tractor (acquired with CDBG-DR funds from Re-Grow PR) is a key piece. We know that it will be a tremendous help for us who do all the work on the farm. We are incredibly grateful with Re-Grow PR for professionalism and guide through the entire process”.



**Fisherman Gerardo Amador:** “I catch different types of fish, but my focus is queen snapper (cartucho in spanish) y red snapper (chillo in spanish). To fish them I must know the depth level that I am on. For that I use a Depth Finder. With the funds from Re-Grow, I’m going to have a better and newer one. Also, like many other fishers, I must move my boat to different ports around the island in early hours. So, I am very happy that with the vehicle acquired I am going to travel and tow by boat safely”.



**Rancher Miguel Vega:** “My company is a family company that has been serving Puerto Rico for more than 15 years. Not even on the hurricane we stopped producing milk for the families of the country. We lost a lot on those days, but we kept working. Programs like Re-Grow PR that give a hand to the (food) producers of the Island that have gone through very difficult moments are very much needed”.



## Public Interest and Improvements

The Puerto Rico Department of Housing, as administrator of the CDBG-DR recovery funds, and the Trust, as sub-recipient, have participated in several public hearings cited by the Community Agriculture Committee of the House of Representatives of Puerto Rico. The purpose of the hearings was to learn about the administration of the funds, the evaluation process, and the awarding of grants. They have also served as forums for the advocacy for improvements to the program and the flexibilization of requirements established by PRDOH, in favor of access to the funds.

In addition to appearing at hearings and maintaining an open-door and transparency approach, The Trust has facilitated the improvement of program implementation requirements and processes such as:

- Elimination of requirement of a credit score of more than 550 points for owners of 25% or more
- Amendment on required documentation for fishermen. Instead of requiring a purchase and sale or lease agreement to establish a place of operation, the Program Guidelines have been modified to allow for the to allow fishers to submit their vessel's marquee vessel tag and/or fishing statistics as alternate documentation to this requirement.
- Expansion of services for technical assistance and orientation
- Hiring of staff to expand capacity in key departments such as Intake, Case Management, Underwriting, among others.
- Continuous analysis and optimization of processes to impact the awarding of grants and access to funds.
- As a result of these significant improvements, RGRW continues to show the ability to adapt and address the needs of the food producers and the agriculture sector associated with the program.

## Impact Metrics (From September 2020 to October 2021)

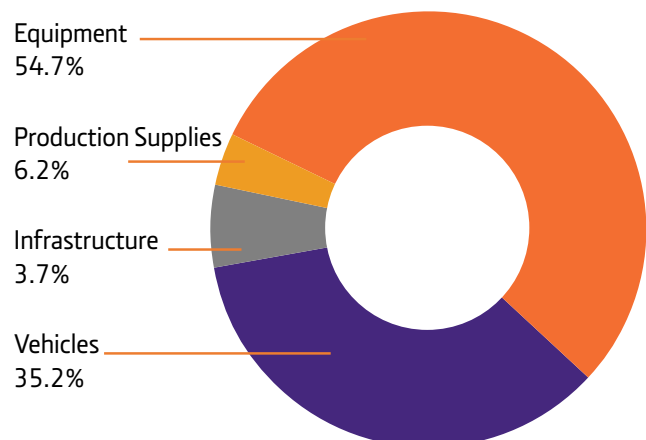
### Awards



### Total Funds Awarded by Category

# \$6,344,119.00

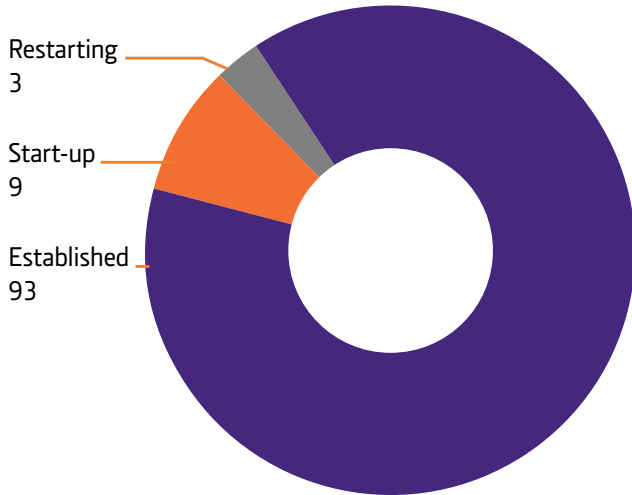
Equipment	\$3,472,113.00
Transportation Vehicles	\$2,238,743.00
Production Supplies	\$396,624.00
Infrastructure	\$236,639.00
Land	\$0





# Total Awardees: 105

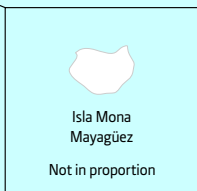
### Awardees by Status of Entity



### Awardees by Type of Entity

Small farms and/or farmers	69
Fisheries and/or aquiculture	19
Agricultural microenterprises (5 employees or less)	7
Producers, manufacturers, distributors engaged in production or distribution of local food	5
Small agribusiness that support the activities and the production of small farmers and/or livestock	5

## Awardees by Municipalities



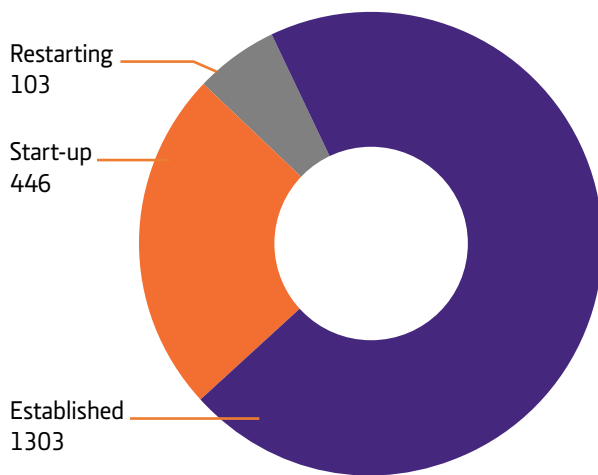
Caribbean Sea

## Applications

A total of 1,852 applications were received during this period. Most of these applications completed an initial stage of review that resulted in the determination of eligibility and/or the request of pending documentation. In addition to the applications received, a total of 2,075 applications have been initiated, but have not been submitted to be evaluated.



### Applications by Status of Entity



### Applications by Type of Entity

Small farms and/or farmers	1,358
Fisheries and/or aquiculture	192
Agricultural microenterprises (5 employees or less)	147
Producers, manufacturers, distributors engaged in production or distribution of local food	81
Small agribusiness that support the activities and the production of small farmers and/or livestock	66
Community organizations involved in activities of production and/or distribution of food	8

## Applications by Municipalities





## Call Help Center

The Call Help Center is a key component of the program since it serves as the main information hub for food producers engaged in the application process. The contact center is powered by a group of **Intake Specialists who provide assistance via phone at the number +1 (787) 936-7755**. Since the launch of the program in September 2020, **the Help Center has been available Monday to Friday, from 9:00 a.m. to 6:00 p.m.**

Category of Service provided	Inbound and Outbound Calls
Application Intake *Assistance for completing any of the application processes.	973
Application Status Follow up *Inquiries related to status of applications through the different evaluation stages	3,683
Program Orientation *General questions or doubts about the Program that are addressed and answered	4,514
Application Assistance *Assistance with specific portions of the application	819
Pending document submission *Assistance to submit or follow up pending documentation	14,237
Other	598
<b>TOTAL</b>	<b>24,824</b>

The same way, the program information email has been available since the launch of the program. This digital extension of the Help Center that citizen can benefit from by emailing to [info@regrowpr.org](mailto:info@regrowpr.org) serves to answer questions, process documentation and for complementing phone interactions by sending additional information of the program. **Since the launch of the program as of June 2021 4,433 emails have been answered from the [info@regrowpr.org](mailto:info@regrowpr.org).**

## On Site Help Center

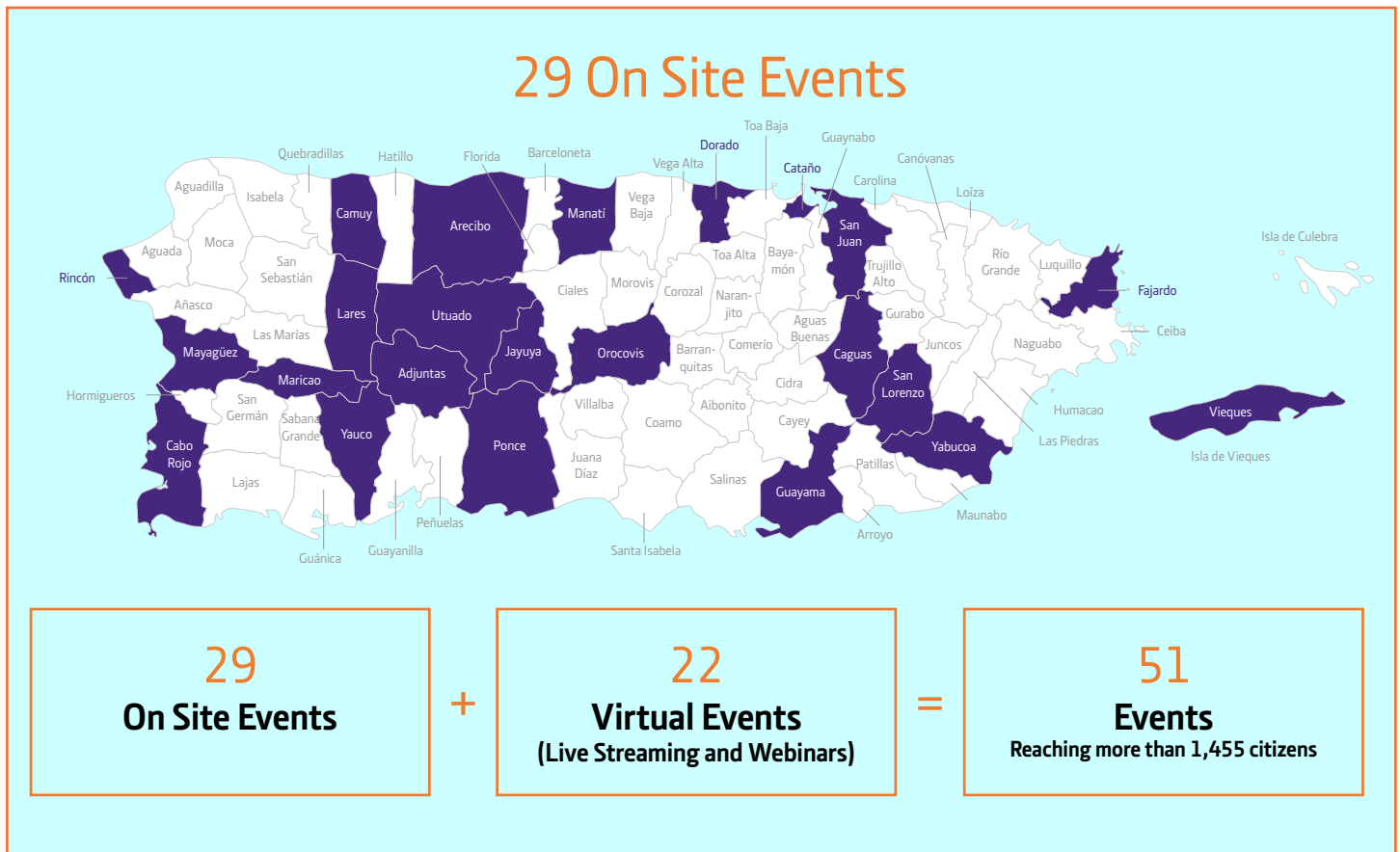
As the restrictions the government of Puerto Rico implemented to control the cases of CO-VID19 were getting more flexible the opening of Re-Grow PR physical Help Centers surged in May 2021. The importance of physical Help Centers is that they serve as first option to many food producers who need technical assistance in their application process. **Staff from our Intake team visit the seven physical Help Center that located on San Juan, San Lorenzo, Cayey, Camuy, Utuado, Jayuya and Cabo Rojo to offer orientation, technical assistance, document scanning, among other services.**

Number of people attended per help center from May 2021 to October 22, 2021:

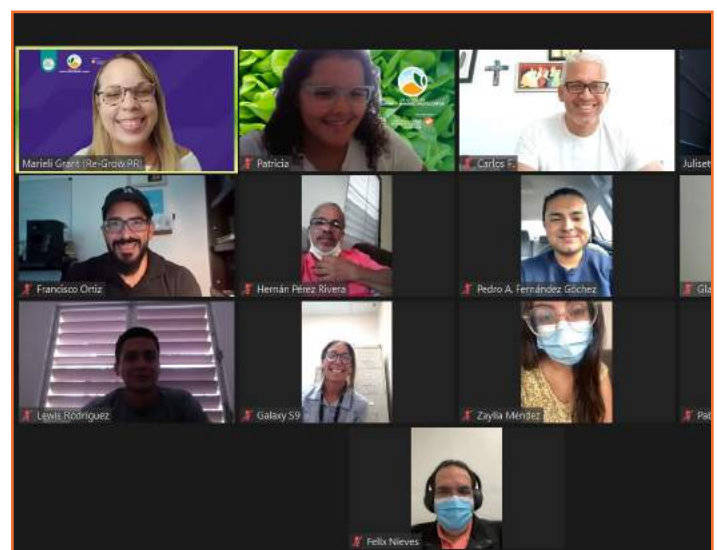
On Site Help Center	People attended
Cabo Rojo	84
Camuy	118
Cayey	12
Jayuya	109
San Juan	69
San Lorenzo	27
Utuado	62



## Outreach Events



As part of outreach efforts and with the purpose of providing information and assistance to the public **RGRW has held more than 51 events, impacting more than 1,455 citizens.** The modalities of these events have ranged to physical, virtual and hybrid formats to comply with COVID-19 regulations.





## Re-Grow PR Team: Going far together

The RGRW team is comprised of thirty (30) professional and competent individuals who have demonstrated a high level of commitment towards program goal achievement to benefit the agricultural sector and the island's food security development. Our exceptional team has adapted quickly to respond to program requirements, responsibilities, and expectations. The RGRW team is composed of members with a diverse set of backgrounds and skills creating a strong and dynamic work environment.

### Our team includes:

- Application Intake Team
- Case Management Team
- Financial Analysts Team
- Legal, Compliance & Procurement Team
- Marketing & Communications Team
- Management Team

## Future Plans

Moving forward, RGRW will be strengthening strategic collaborations and working with new partners to expand the capacity of the program and serve more food producers and agribusinesses. The program will also be capitalizing on the experience, assets, and expertise of the Trust to provide technical assistance for the challenges of the future.

- The future of RGRW is being set to accomplish:
- Increase and maintain a consistent number of awards.
- Develop and kick-off the program technical assistance and capacity building component to strengthen awardees skills, knowledge, and resources. Technical assistance will not only address their capacity needs but will also leverage the expertise of the Trust to bring innovative solutions to the agriculture and food production economic sectors.
- Provide support services to awardees to guarantee program compliance and post-award monitoring and administration activities.
- Develop and strengthen partnerships with key organizations such as the Department of Agriculture, SBTDC, among others.
- Host new regional events to continue providing technical assistance to current and potential applicants.
- Evaluate the opening of new Help Centers to increase and expand outreach capabilities for the community.
- Design and develop new tools to facilitate the program application and evaluation process.
- Develop and provide on-going training and capacity building sessions for the team.
- Establish new collaboration and cohorts with other programs at the Trust.
- Continue the execution of the subrecipient agreement in compliance with federal and state requirements and policies.





Puerto Rico  
Science, Technology  
& Research Trust

**RESEARCH &  
DEVELOPMENT**



CENTER FOR TROPICAL  
**BIODIVERSITY**

A program of Puerto Rico Science, Technology & Research Trust



## Description of the program

The Center for Tropical Biodiversity (CTB) was established in 2015 to guide the efforts of conservation and exploration of Puerto Rico's unique geography for benefits that can be scientific, societal or economic. Within the purview of the Center are the development of searchable collections of biological specimens, the conservation of biodiversity resources and the commercialization of biodiversity-derived products.

## Mission and Vision

The mission of the Center is to contribute to the advancement of basic and applied research associated with the preservation and intelligent utilization of biodiversity resources. Puerto Rico is the home of diverse natural ecosystems and possesses advanced infrastructure for scientific research: the makings of a regional leader in biodiversity research and commercialization.

## Our main goal

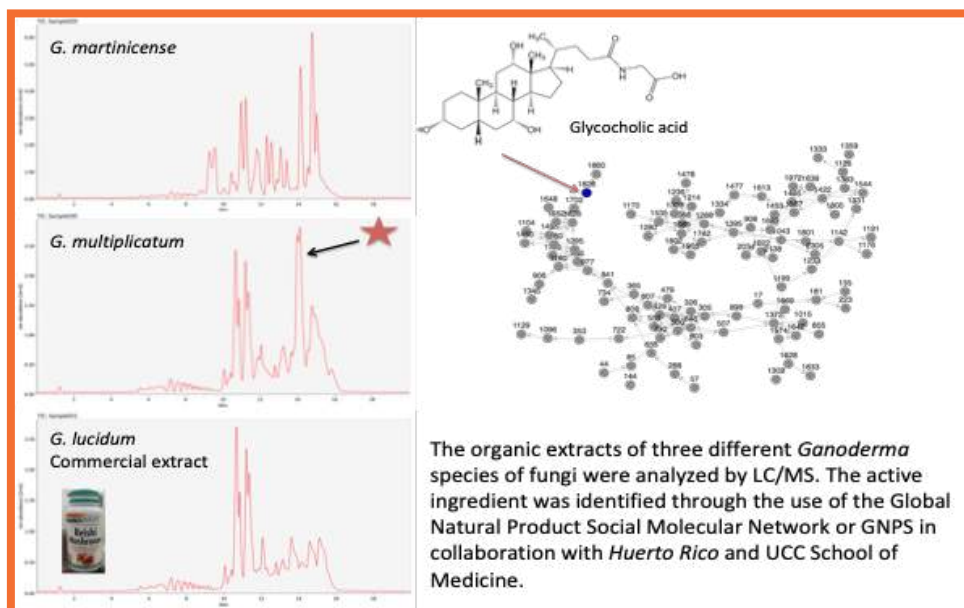
Over the last century, Puerto Rico has enjoyed a rich tradition of scientific research centered on its unique natural environment. There have been numerous projects aimed at observing and cataloging Puerto Rico's rich biodiversity with the goal of understanding how organisms interact with their surroundings. Lacking through the years has been a local policy to guide and coordinate these efforts, which were often driven by the curiosity of individual researchers in our many universities.

The CTB was established precisely to provide legal and regulatory guidelines under which our local ecosystems can be explored for scientific or economic benefit and protected to ensure sustainable use of the biodiversity resources. Additionally, the CTB coordinates efforts to develop natural compounds as products for a variety of applications.

## Achievements for 2020-21

As the CTB strives to bridge biological diversity with economic development, we report several areas of impact during the past year:

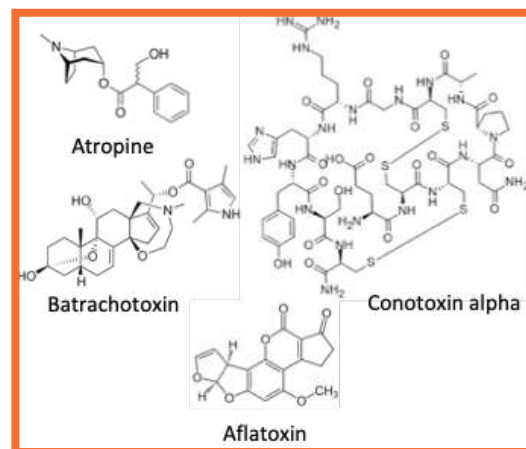
- 1. Identification of bioactive natural products from tropical species of Ganoderma mushrooms.** The mushroom *Ganoderma lucidum* has been in use in Asian traditional medicine for the prevention and treatment of certain cancers. Although the Asian variants of *Ganoderma* have been used and studied extensively for their therapeutic potential, there are numerous species from the tropics, some of them endemic to the Caribbean. A collaboration between local Agrotech company Huerto Rico Inc., the laboratory of Dr. Michelle Martínez-Montemayor at Universidad Central del Caribe, and the Center for Tropical Biodiversity has identified several compounds in extracts of commercial and home-grown species of *Ganoderma*. The extracts were analyzed by mass spectrometry and the resulting data was deconvoluted and compared against publicly available data from the Global Natural Product Social Molecular Network (GNPS). This implementation of the GNPS is the first time that chemical data sourced in Puerto Rico is available through this important database. The GNPS analysis yielded several hits including a compound of interest similar to Glycocholic Acid, a bile salt that delays cancer proliferation.



This type of analysis could also be implemented to establish a quality control system for nutritional supplements, as a way to ensure that local suppliers and customers are obtaining product with a minimum concentration of the bioactive ingredients.



2. **Proteome-wide target identification for natural extracts** - a proposal to the Department of Defense (DoD). Some of the most toxic and incapacitating compounds known to mankind are natural products: Ricin is a lectin produced in the seeds of the castor oil plant, conotoxins are potent neurotoxins made by marine cone snails and batrachotoxins are powerful neurotoxic alkaloids made by some species of beetles and frogs - not to mention that the most carcinogenic compound known to man, aflatoxin, is also a natural product made by some fungi. Natural products can also be extremely useful as medical countermeasures: the plant alkaloid atropine is standard-of-care to counter the effects of nerve agents on muscle excitation and contraction. Also the plant alkaloid Huperzine, a reversible inhibitor of acetylcholinesterase, has shown efficacy as pretreatment against nerve agent toxicity and consequently as a drug candidate against Alzheimer's Disease.



**CDI LABS**

**HuProt Array**

Fluorophore binding to hydrophobic pockets of native proteins

8-anilino-naphthalene-1-sulfonic acid

Organic extracts

Extract interferes with fluorophore binding.

Extracts from endemic and endangered toxic plants such as *Stahlia monosperma* and *Hippomane mancinella* and from toxic cyanobacteria of the *Symploca* genus will be tested for proteome-wide screening. We will also crude extracts from sargasso and macroalgae.

In this pre-proposal submitted to the Defense Threat Reduction Agency (DTRA) of the DoD, we aim to screen locally sourced natural product extracts on a human proteome array made by CDI Laboratories in Mayaguez, PR, which contains more than 20,000 proteins printed on a microscope slide. This label-free methodology will yield valuable information on numerous extracts, some of which will be found to contain rare compounds capable of binding to known protein targets, including targets of existing drugs and toxins, thus providing an early glimpse into function that is currently lacking in all screening regimes. This project will be in collaboration with CDI Laboratories with numerous researchers including those from the UPR School of Pharmacy, Humacao Campus, and the Interamerican University Metro Campus and its

**Natural Product Online Repository (NatPORT)**

Visited to the natural product database for Florida Flora and the Caribbean

The structures and origins for several hundred compounds have already been deposited in the NatPORT database in the PNG format. Efforts are underway to migrate to the SVG format for clearer definition of structural information.



Bayamon Campus.

- 3. The Natural Product Online Repository (NatPORT):** a searchable database of Puerto Rico's natural chemicals. Through efforts from the CTB, a number of species have been identified in the ecosystems of both the Coquí Llanero project and the Mangrove Termite project. Many of these species have been found to produce biologically active compounds that could be further developed as pharmaceutical or other types of products. Furthermore, we have also identified many natural chemicals that have been isolated from Puerto Rico's rich marine biodiversity as part of research efforts in the universities. In order to organize these chemical compounds, the CTB is in the process of creating the first database of chemical compounds that are either isolated from marine invertebrates or potentially made by tropical microorganisms. A prototype of the searchable NatPORT has been made available and is being populated with over 400 compounds of known structure and origin, all sourced in Puerto Rico. At the moment, we are in the process of polishing the look, feel and navigability of the NatPORT for easy use. Once released, the CTB Natural Product Database will be available to companies and other ventures searching for lead compounds for development. If a company is interested in a specific chemical compound, the CTB will refer the contact information to the Technology Transfer Office (TTO) so that they can supervise the process of sharing samples and specimens.
- 4. A voice for ecosystem conservation.** Amid the recent public debate on the need to strike a balance between development and conservation, the CTB weighed in with an Op-Ed piece in *El Nuevo Día* highlighting the importance of ecosystem conservation for research, innovation and the development of new products. In collaboration with Lupe Vázquez and the communications office, we were able to publish this article in record speed for a timely intervention.



## PUNTO DE VISTA

Por Abel Baerga

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miércoles, 4 de agosto de 2021

### La conservación de los ecosistemas y la innovación

*Neftalí Ríos, Catedrático del Recinto de Humacao de la UPR, es co-autor de esta columna*

En días recientes el pueblo ha sido testigo de pugnas en las que figura la excesiva intervención humana en ecosistemas frágiles, seguida naturalmente por la alerta ciudadana que clama por la conservación de estos espacios. La piscina del condominio de Rincón, evidentemente construida en lo que hoy es zona marítimo-terrestre, vulnera un nicho natural para el desove de tortugas marinas en peligro de extinción.

Por otra parte, en el llano de Toa Baja se denunció la utilización de maquinaria pesada para "drenar" el humedal, irrumpiendo de esta manera en el hábitat crítico de otra especie en peligro de extinción: el coquí llanero. Sin embargo, cuando los científicos comenzamos a hablar de conservar espacios para tortugas marinas amenazadas y coquíes en peligro de extinción, escuchamos también cómo los reclamos se despachan, a veces en tono de burla, categorizándolos de obstáculo ante la urgencia de desarrollo económico.

Más allá de ser una responsabilidad ciudadana y gubernamental, **la conservación de ecosistemas frágiles representa una fuente de desarrollo científico y económico para el país y para el mundo.** La biodiversidad de Puerto Rico y del resto del Caribe es, y ha sido, escenario para descubrimientos de impacto global.

## Future Directions

- 1. Going live with NATPORT.** The CTB has started the long process of building a database of chemical compounds found either in marine invertebrates or potentially made by tropical microorganisms. This database currently in the last stages of development, and almost ready for broad availability. This next year we will make this database available through a searchable format and we have already enlisted the help of our CIO Mr. Cesar Piovanetti and he has committed the necessary resources needed to bring this database to the public. Importantly, the CTB Natural Product Database will be available to companies and other ventures looking for lead compounds to develop. If a company is interested in a specific chemical compound, the CTB will refer the contact information to the Technology Transfer Office (TTO) so that they can supervise the process of sharing samples and specimens.

- 2. Expanding on the services offered by the CTB.** There are numerous services that are either currently offered (stereoscope for high-quality images) or under

development (MALDI-ToF; GNPS). In order to expand the user base for these services, the CTB will organize online workshops to increase the user base for the services that are provided. We will begin by hosting a workshop for the implementation of GNPS (Social Molecular Network) in Puerto Rico. The idea is to maximize the amount of chemical data deposited from Puerto Rico's biodiversity in this GNPS database. We have contacted Dr. Marcy Balunas and Robert Samples from the University of Connecticut to give a workshop on the establishment of a GNPS pipeline using Waters Instrumentation.

- 3. Business Development Pipeline.** The CTB NATPORT Database described above will be the cornerstone of a business development effort that will establish links with potentially interested parties for the development of products. In the past, the CTB had been an active participant in the BIO International Conference as part of the Puerto Rico Delegation. In BIO, we made numerous contacts with potential business partners for the initiative. This last year, InvestPuertoRico adopted the BIO International Conference as one of the four main platforms for showcasing Puerto Rico's vast potential in the life sciences sector. The CTB has begun conversations with InvestPuertoRico's Michael Gay so that natural products and biodiversity are included in Puerto Rico's value proposition.



4. **Bluetide Initiative - Bluetide Puerto Rico, Inc.** is the private non-profit organization in charge of planning, designing, and implementing initiatives to develop Puerto Rico's "Blue Economy": or economic development through marine and maritime activities. Bluetide is currently drafting the blueprint for the expansion of marine commercial activities: one of these activities is marine biotechnology and bioprospecting. Bluetide has contacted us at the CTB to help draft a program for marine biotechnology centered on the development of natural products, aquaculture and biomaterials.



**Puerto Rico Delegation to the BIO International Conference 2019**



Center for Biodiversity Samples Lab



Center for Biodiversity Samples Lab



*Huerto Rico: Ganoderma Mushrooms Project*



*Huerto Rico: Ganoderma Mushrooms Project*



*Huerto Rico: Ganoderma Mushrooms Project*





Puerto Rico  
Science, Technology  
& Research Trust

RESEARCH &  
DEVELOPMENT



# Cultural Heritage Innovation Program



## Program Description

The Cultural Heritage Program (CHIP, from now on) runs with both the assigned portion budget from legislation and from external funding opportunities. The program is composed by the Director, and two (2) specialists, one in the content and context of the projects, Alitza Cardona, and Shirley McPhaul, that complement the development of the functionality image of the program's framework. This pathway seeks to implement the Sustainable Innovation in Culture model (from now on SIIC), a model born from the "Positive Virus" an original model created by the director in 2019, as the proposal as a core holistic view and future development of this cultural program.

CHIP was developed in 2019 with the objective of impact the cultural and creative industrial sector by means of innovation, technology, research, and a scientific approach. The goal is to deliver new opportunities to Puerto Rico's communities to participate in the achievement of their wellbeing by a sustainable conceptualization model that could allow us, in a limited territory, to be more resilience and stronger in the incoming climate changing years.

Cultural Heritage in their manifestations, tangible intangible and natural is one of the most important values and assess that we have, and we need to preserve, conserve, and enjoy them in a way that living in a Caribbean Island such as Puerto Rico became a natural think for all, not only for the powered sectors. Culture, recognized since 2013 as the pillar of sustainability, means a lot in this model and conceptual framework that this program have the challenge to prove it.

Doing this, our challenge is to contributes to the Puerto Rico's reconstruction using the best resources and hands to create a new economy based on the proper communities self-sustainability. We can do this, only what we need is to synchronize those best resources and distribute by an equal and balanced program investing in our education workforce development focusing our most valuable cultural assess: Our tropical condition and creativity.

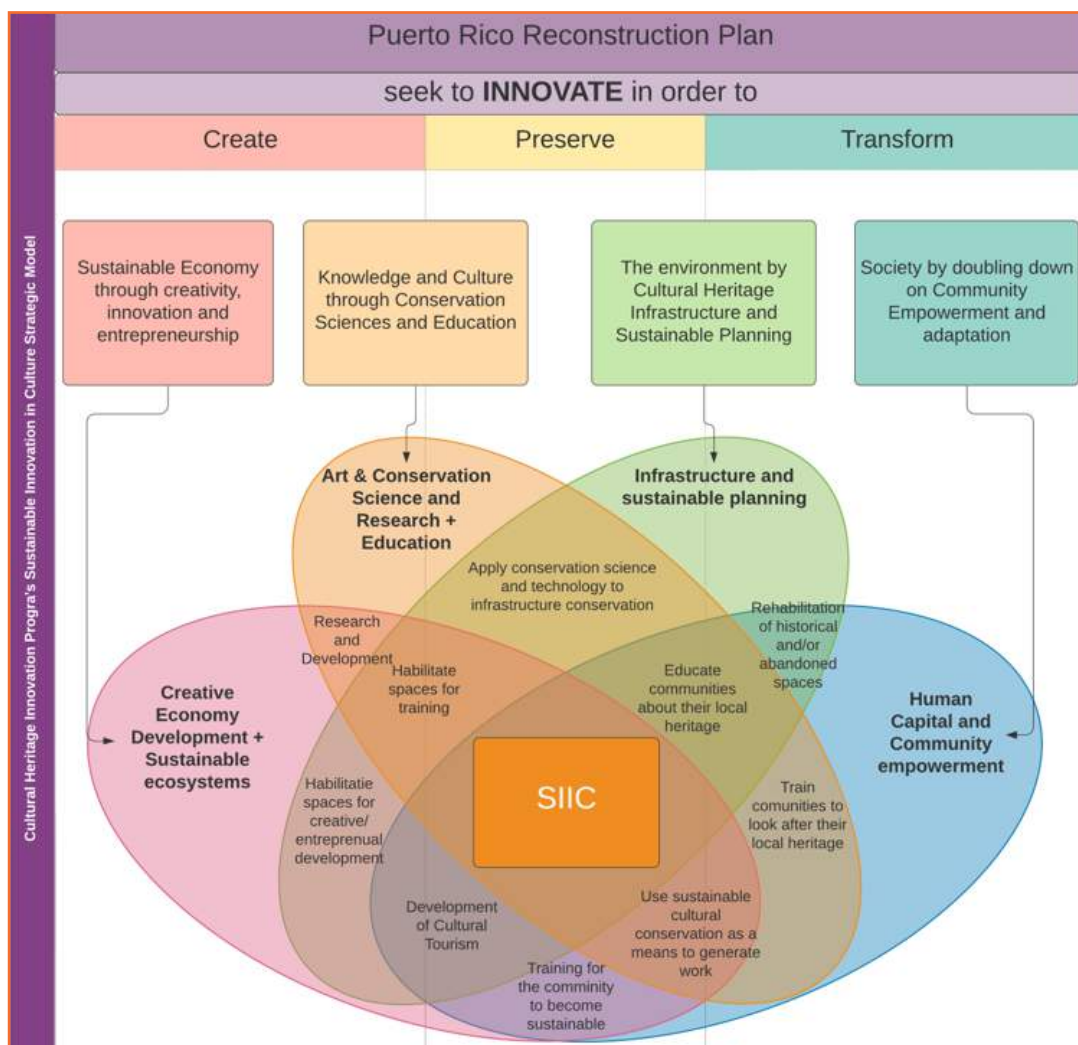


Figure 1. The Sustainable Innovation in Culture (SIIC) model conceptual visualization in 2021 ( McPhaul, 2021)

Our objectives and mission and vision are clear and aligned within the Puerto Rico Science Technology and Research Trust has been established as shown in figure 1.

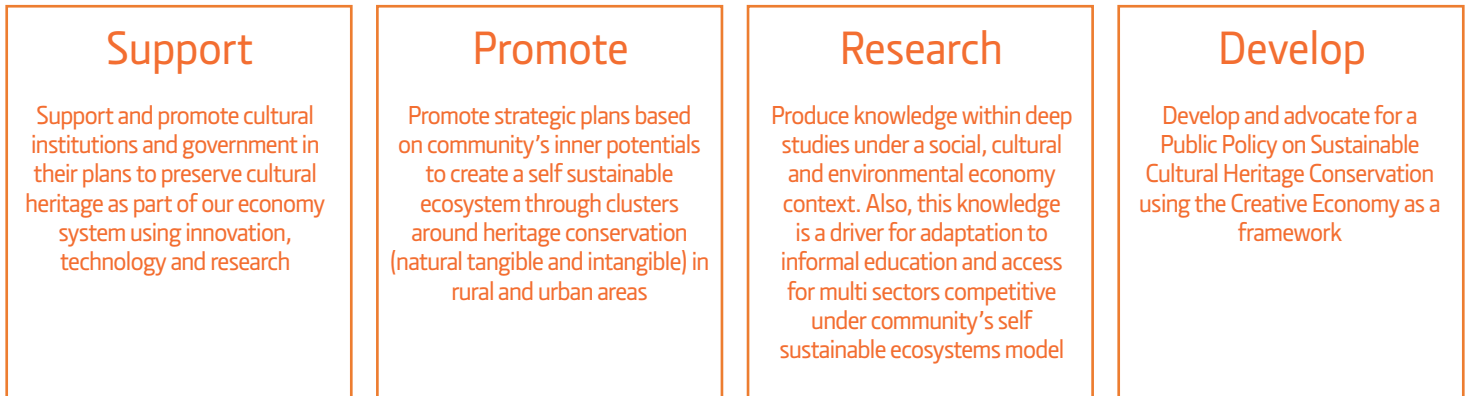


Figure 2. CHIP objectives revised in 2021.

### Mission & Vision:

The Cultural Heritage Innovation Program's mission is aligned to the PRSTRT one, but specifically we have a commitment to implement the public policy in terms of research, innovation and technology applied to cultural heritage conservation and the creative economy sectors within communities' wellbeing.

With the vision to set Puerto Rico as a leader of local to a global sustainable heritage conservation culture, following UNESCO and ICCROM guidelines for the development of a unified global policy based in culture as a 4 pillar of sustainability.

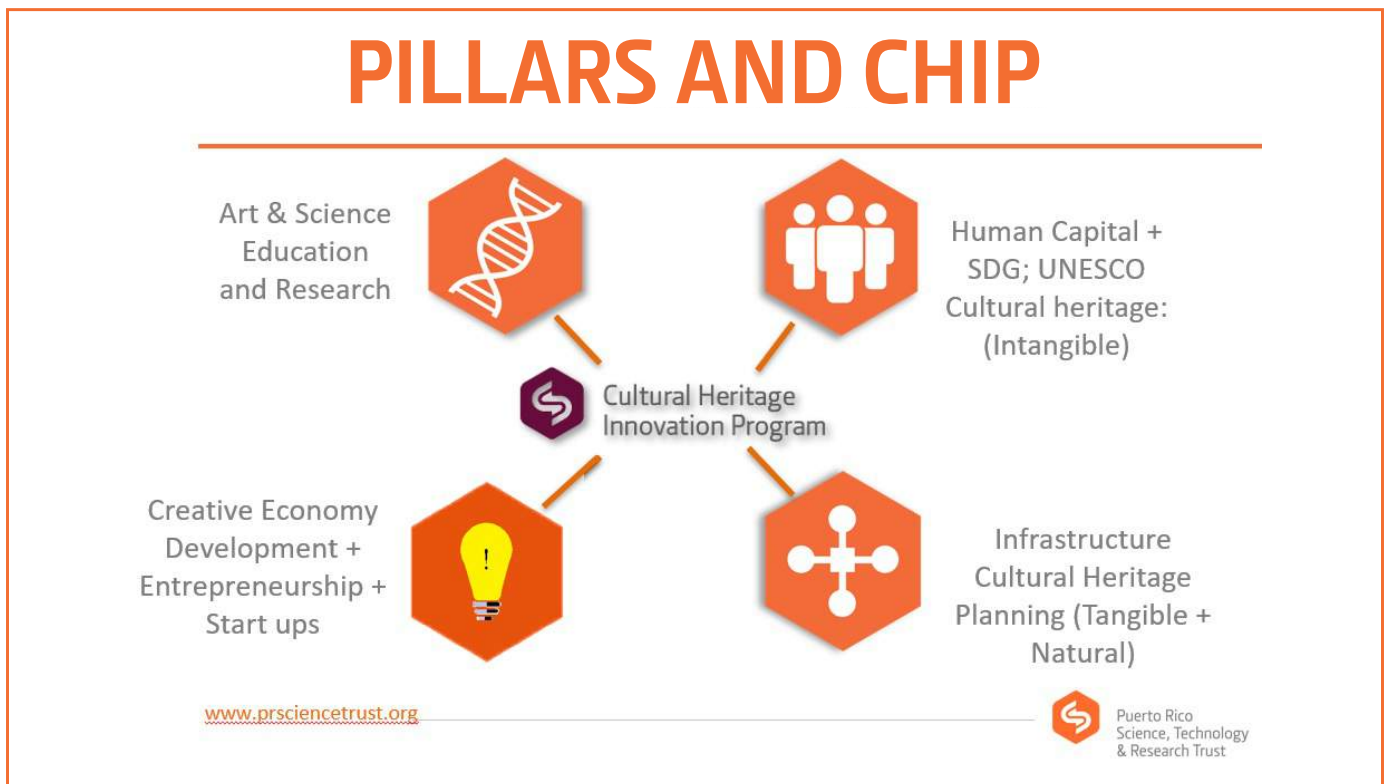


Figure 12. The Sustainable in Culture Model (SIIC), the core motor of CHIP



## The Model and the SDG;s

CHIP program is like a virus, but a positive one. It has a body designed by some holistic theories in sustainable planning, the ecology of the new millennium and the fractal theory as ecosystems. The director started to build this idea since 2015. "A Positive Virus (ecology) could be a living system that provide the opportunity to infect and deliver some kind of fractal, along with the adversity of Climate changes in the future. a functional framework capable or reproducibility and expand in infinite relations, without a distortion of its matrix". But that matrix needs to have the proper axes or reproducible materials that in a integrated function works as an engine."

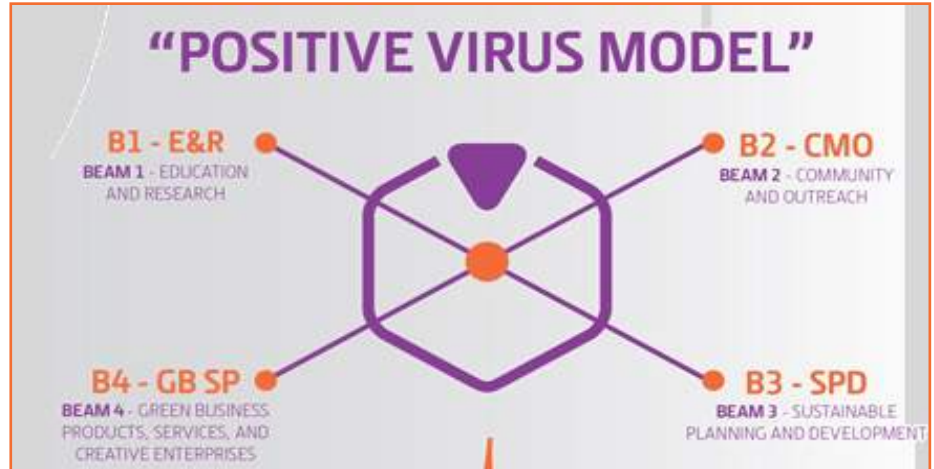


Figure 3. A detail of the Positive Virus concept in 2019.

My first vision of this matrix was to adopt it the concept pillars of the in vogue sustainable concept. Figure 2 shows the original concept of the positive virus and figure 3 a reconceptualization from with the CHIP staff, and the route to design a final concept of this model, that for now it became our SIIC Model.

## The Pillars, the model, and the Disasters

The model have four core pillars: P1: Education and Research, P2: Community Action and Wellbeing; P3/: Sustainable Planning and Tourism and P4: Creative Economy and Ecosystems, These pillars are represented by the most important sectors that could integrate a sustainable core plan to deploy in an specific sector. When they are articulated, creates a intersection area that overlap with another but not lost the sense of its morphology or contact primary function that is to be "delivered" "and change" in order to survive. In that way we aligned education – community-planning and economy in a single equation for the cultural and creative sectors.



Figure 4. The SIIC Model's pillars

That is the sense of a virus, and when COVID -19 pandemic arose us in march 2020, seems that a particular way to spread a positive thing to survive was to adopt technology and innovation into a social architecture of our lives. The cultural sector and the tourism seemed death in front of the idea that we create a cultural and heritage economy mostly dependent on a presential relationship. Museums, parks, and recreational cultural activities were shutdown.

## The Model and the SGDS alignment

Along with the remaining effects of María (2017) and the Seismic episodes in January (2020), the positive virus mutate into another system, this one aligned with a strong social transformation, the Sustainable Development Goals, and the new COVID-19 Pandemic way of

live . Under this pathway, we seek to reconstruct our program into a possible technology- access mechanism to deliver to our partner the continuity of our intentions for develop plans and projects in the cultural and creative sector. In parallel we invest in the incorporation of cultural heritage conservation’s international guides adopted into international agreements that underscore our way to achieve a stronger model exporting from local to global and vice versa.

In the way we are not part of UNESCO, under the consideration of the proper principle of humans’ rights, we are capable to adopt these guidelines. As UNESCO seeks to reach as much countries in the world, the intentions and framework of the AGNDA 2030 is particularly compatible with our challenges: This agenda:

“[...] recognizes that sustainable development strategies should respond in an integrated manner to the complex challenges of today. UNESCO is approaching the implementation of the 2030 Agenda in an integrated manner across all its areas of competence (education, natural sciences, social and human sciences, culture, communication, and information), capitalizing on its multidisciplinary expertise and intersectoral mandate. It is also taking an integrated approach across its modalities of work by more closely interlinking its normative and country level operational work and supporting closer integration across the pillars of the United Nation’s work, including the recent push for stronger humanitarian-development linkages”

In this sense the SIIC Model has been aligned with the SGD to create a powerful framework for a social – culture transformation model:

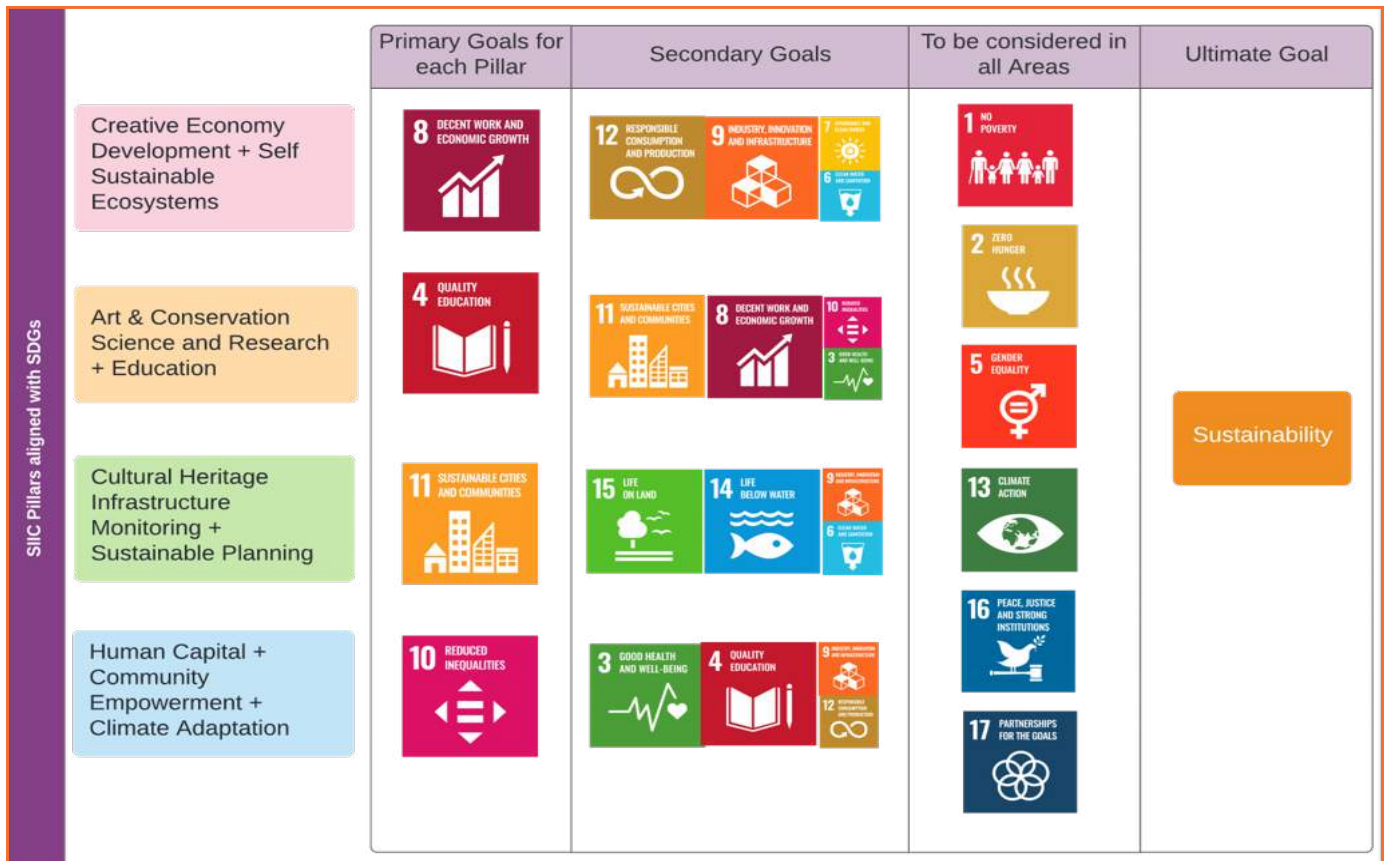


Figure 5. SIIC model and the integration of SDGs (McPhaul 2021)

The synergism created by the different pillars relations between partners and CHIP areas of interest are the next step of the process of alignment of intentions to produce, develop, complement, or take into the next level any project. CHIP has been developing 4 strategic areas:

## The Strategic Area 1: Oso Blanco

This strategic area pursues the integration of education and innovation through social significance and representation. As Oso Blanco is identified as conceptual body of historical significance, heritage is developed through its continuous manifestation of cultural and economic adaptability while integrating an array of relational forms including infrastructure, economic development, and social justice.

## Goal:

Our goal through this strategic area is to deconstruct sociocultural significance through its relational components by identifying and integrating the voice and practices of its community of actors while making them an active part of its culturally significant dynamics. The integration of the mission stems from the Oso Blanco heritage development through the administration and conservation of the remaining historical structure and collection pieces as main cultural and material resource.

### Objective:

Our objective is to develop heritage as an active component of culture where economy stability is achieved through ongoing sustainable solutions, that impact its sociocultural environment through education by means of participatory practices. The development of this strategic area includes the identification and development of projects which integrate UNESCO's sustainable objectives and guidelines on the following:

- Industry innovation and infrastructure
- Reduced inequality
- Quality of education.
- Economic growth
- Gender Equality

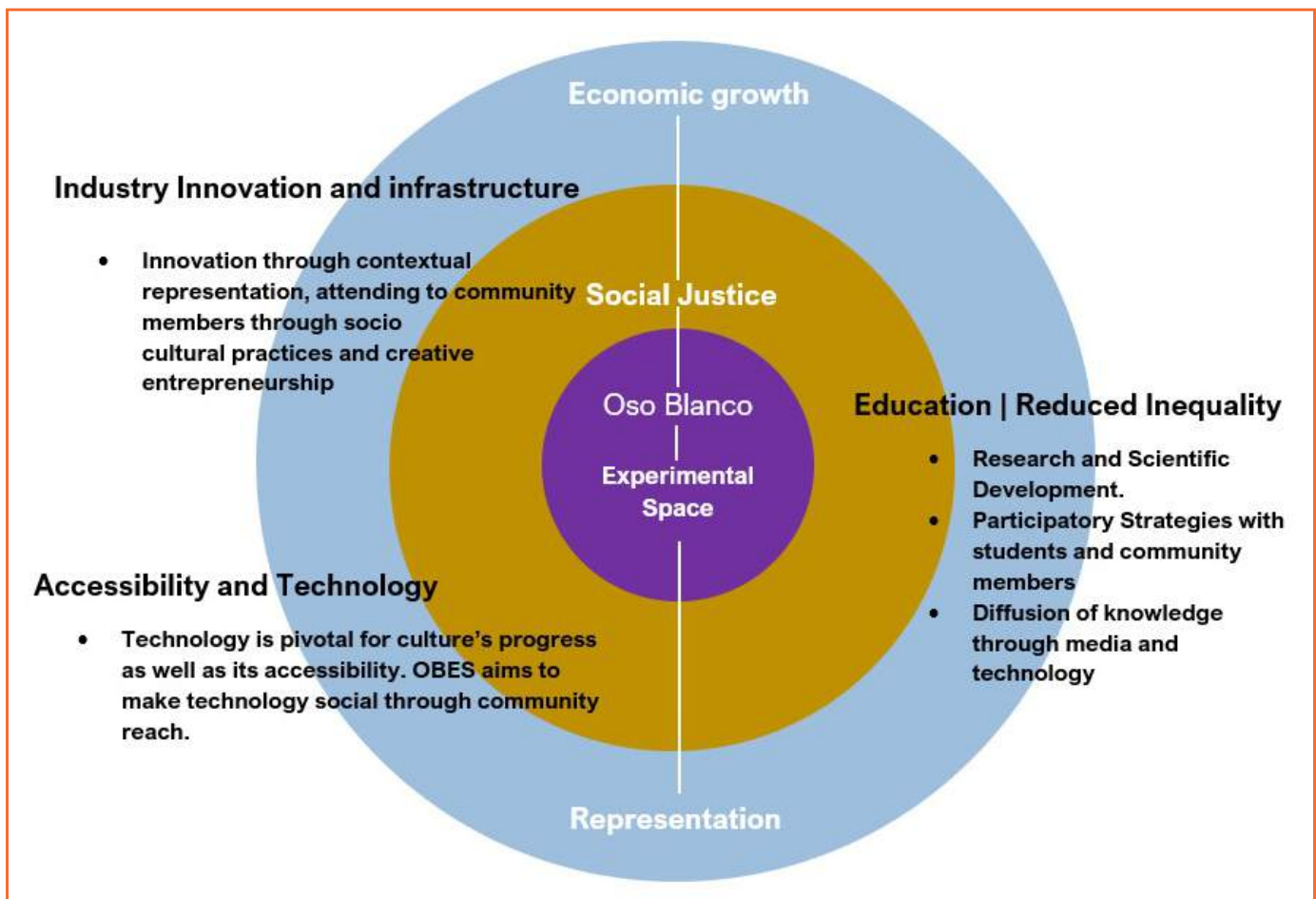


Figure 6. Diagram of the components of relationships and outcomes from Oso Blanco's strategic area (Cardona 2021)

## Deliverables:

Weekly Reports by the strategic area lead and director.

Identification of economic support every six months through grant assessments and workshops.

Yearly report on progress through identification of needs, research, and development

Yearly report on conservation lab and exhibition space attendance, program activities and maintenance.

## Strategic Area 2: Digital Research and Creative Economy

We started to research again the creative sector under the view of a new approach: the digital market. Many of the reports generated resumes how important is this segment under the creative industries sector. Of all The Seattle Report of 2019 (Seattle, 2019) I smore comprehensive and was our reference to start our research. We plan to start our strategic plan in October 2021.



Figure 7. Some examples of recent reports over the creative economy sector.

### Goal 1:

Deploy and adopt the Sustainable Innovation in Culture Model in Puerto Rico and develop the creative economy regy clusters under our Strategic Plan.

### Objectives:

Develop four stages of performing the new approach to the creative sector accordingly to the new strategic plan and the result for the Abexus research

Identify the first creative category to start the development of the clusters in this case the creative -technology sector

### Deliverables:

Define and design metrics and statistic background

Define the Narrative and identification of the Creative Sector with Statistics and new Mapping (ABEXUS)

Develop platform to support both a marketplace and workforce development for services and products

Create a Directory within series of clusters with a matrix or Hub center for support and capacity building



Prioritizing the category with the most potential development (Interactive Technology and digitization systems)

At the time of our development, some works will be placed at the next level such as PR Creativo 18 in which we have a solid base to start a new vision of our digital creative sector development.



Figure 8. A composite of our creative partners under the Creative strategic area. (Lugo, 2021)

## Goal 2 plan for Digital Creative Economy, Culture and Research Strategic Area

The purpose of merging the “Digital Humanities” and “Creative Economy” areas of interest into one “Digital Creative Economy, Culture and Research” can be summarized in the following objectives:

Prioritize the exportation of intellectual property in the form of digital products that represent both an opportunity for economic growth and a source of cultural dissemination.

Stimulate the production of talent for “creative digital exportation” that’s up to par with international competitors.

Insert Digital Humanities research and practice as part of the creative sector development

Leverage the synergy between humanities subjects (literature, history, art, philosophy, etc.) and digital cultural production (film, animation, videogames, VR and AR experiences) by stimulating the access to training and resources.

### Deliverables:

Initiation plan for Digital Creative Economy, Culture and Research Strategic Area .

In order to start immediately with this strategic area, we have identified the Interactive Technology and Media sector as our starting point. This includes (but it’s not limited to) videogame development, Virtual and Augmented Reality experiences, mobile applications, software engineering, blockchain (specifically NFTs featuring art and games) and web development.



Bring awareness to the economic opportunity this sector represents for Puerto Rico.

Research and define the sector in terms of our local current reality and the projected potential: the sector in terms of Lat Am and Caribbean regions; the sector in terms of the United States; the sector in terms of the global economy.

Design/Ideate.

We propose a website dedicated to the Creative Sector to promote articles about the digital creative industry in Puerto Rico. Also, create meet-ups or other monthly activities for people to meet and network within a plan for a local Interactive Digital Media Conference such as GameJam/Hackathon

Approaching entrepreneurship and business start ups.

Parallel 18 could help us to create a track from Interactive Technology and Media

while Colmena 66 to integrate this topic into their program. Also, STEM Program to ideate a curriculum for Digital Media literacy.

## Strategic Area 3: Cultural Heritage Emergency and Environmental Risk Monitoring

### Goal:

This strategic area seeks for the establishment of a unified emergency response, environmental and risk assessment system by means of technology and innovative approaches and using a multi-dimensional and professional cooperation for the whole heritage inventory in Puerto Rico. AS part of many collaborations of CHIP, specially from the director who is member of HEART, a coalition trainee conservationist professional from FEMA and Smithsonian to create First Responders on disasters affecting Cultural Heritage and museums artifacts. Also Dr. Lugo was participating in the first assessment of damage under the RAND company, were that data produce the different Course of Actions (Coa's) in the Reconstruction plan of the Cultural sector. Finally, Dr. Lugo is also a member of an international first responder (Culture cannot wait) under crisis and conflict circumstances.



Photo 1. Historic Buildings affected in San Juan by Hurricane María (left) and by Earthquakes in Ponce (right)

We also follows UNESCO and ICCROM guidelines to complete a strong knowledge in order to prepare preventive, mitigation, or continuity plans. We also participate in the revision of the hazard mitigation plan for Puerto Rico, especially pronouncing the ack of technology and innovation in the monitoring and risk assessment of our cultural heritage inventory.

## Objectives:

To establish a national content and context of the identification of risks and hazards for cultural heritage in Puerto Rico.

Analyze and document the status and condition of all heritage within their risk possibilities of damage and attributes to create a unified system for monitoring

Layer the risk and hazards factors to the conservation and status condition for each heritage site by communities' regions and deploy a local hazard mitigation

## Deliverables:

Both objectives and deliverables areas supported by the methodology establish by ICRROM as a global strategy to unified efforts under a unified language (response system).

Develop a multitask team to perform diagnosis, preventive and mitigation and risk assessment analysis reports of cultural heritage in Puerto Rico using -state of the art- technology

Create a unified geodata base and mapping system for recognition and monitoring of historic sites, locations.

Maintain a conservation status profile of each heritage item and filter the information for communities and public access

Connect the emergency and cultural heritage first aid to the framework o the local PREMA response chain.

Finish and monitor the emergency plans for cultural heritage institutions, centers, archives, and tangible intangible or natural heritage.



Figure 9. Example of 3D scan of Hacienda Mattei's Sugar mill as a new technology approach in sustainable conservation.

## Strategic Area 4: Culture and Wellbeing

Habits constitute the most basic components of the dynamics of culture. Practices develop through the identification of necessities and coherent solutions that adapt to the production of sense within contextual transformations, conveying social and environmental change. Achievable social acceptance of scientifically proven solutions that aid social development, can be pursued as an integral part of the ethical measures employed to strategic scientific adaptations and sustainable modes of education while considering socially embedded cultural practices.

Today, more than ever education and the recognition of cultural practices can be employed as a tool to identify social integration of emerging scientific solutions to ongoing socio cultural and environmental changes. Though the study of the social landscape and its environmental conditions, groups and their representational significance can be characterized to socially adapt emerging and sustainable solutions. Science and technology can be socially integrated by means of representation, interpretation and adaptation while seeking to provide further exploratory means of education that attend visionary methods of productions able to pursue a sustainable future.

### Goal:

Our goal is to identify creative and socially adaptable solutions to ongoing economic and environmental changes, including social transformations.

### Objectives:

Our objective is to serve the scientific and cultural groups in providing accessible means of adaptation to social practices to innovation, while undertaking ethical and socio-cultural integrations of scientifically proven solutions to ongoing cultural and environmental changes. The development of this strategic area includes the identification and development of projects which integrate UNESCO's sustainable objectives and guidelines on the following:

- Partnerships
- Good health and well-being
- Sustainable cities and communities
- Responsible consumption and production
- Reduced inequalities
- Quality of education

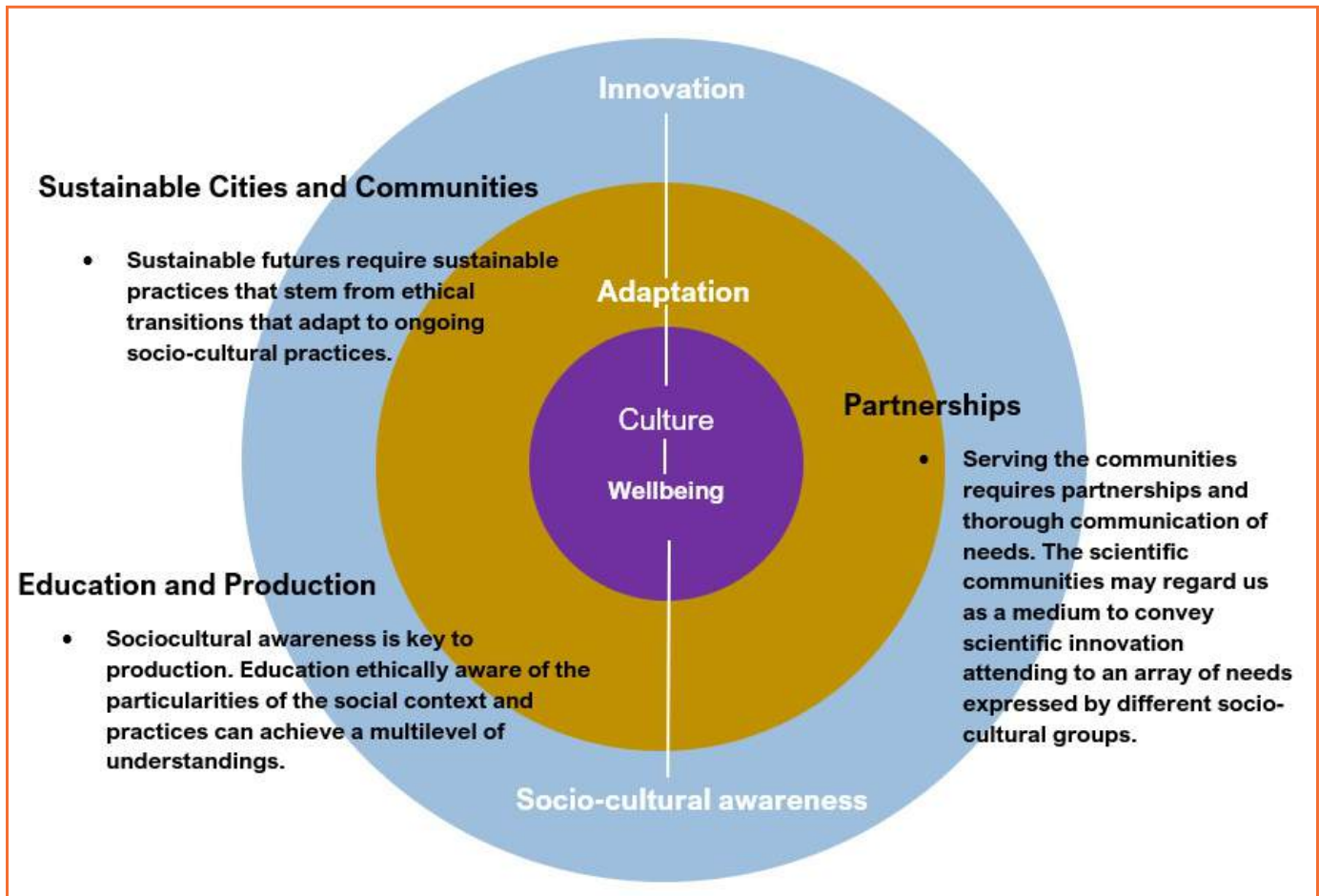


Diagram of the components of relationships and outcomes from Culture and Wellbeing strategic area (Cardona 2021)



Figure 11. Robert Wood Johnson Foundation “Culture of Health elementals. (RWF, 2021)

## Achievements in 2021

### Grants:

#### USDA NRCS

On January 2021, we sign an MOU and a Notice of Grant and Agreement Award # NR1F3520001C001 with the USDA-Natural Resources Conservation Services for \$213,318.52. The award was granted fundamentally to support and finance an exploratory survey of 142 farms projects proposals in compliance with Section 106 of the US SHPO. The Scope of Work established the recruitment of three (3) teams consisting in one (1) Archaeologist (Certified SOI) and one Archaeology field technician to cover 142 farms around the island. Also, along with the inspection and surveying field works, each team must develop 142 reports to the NRCS Archeo. Official in order to submit the finals report to SHPO. This award create several PRSTRT team such as HR Team, leading by Camelia Jiménez, IT-GIS Team, leading by César Piovanetti, which provide support in technology and innovation in archaeology, Finance Team, leading by Gilberto Márquez, supporting us in all finance and budgeting reports and process, the EH&S Team, which support us in the compliance of safety and security, and the Administrative Team, leading by CHIP’s Director, which organize, report, contact, deliver and approves all procedures as the award’s Recipient Contact Person And at Last but more important the Archaeology Team leading by Archaeo. Tamara González, with a string background and over 25 years of experience and SOI certified.

After several challenges in the starting year of this project we prove to adjust some gaps that were undertaking as the operational procedure started to provide the field surveys. Our achievement in this award, more than be a recipient, took another leveraging importance:

#### The Occupation and labor adoption of a free field such as Archaeology

This was the first time that the PRSTRT took a professional field such as archaeology, traditionally and area of expertise very free from occupational and labor procedures, EH&S and such, and convert it into a sub program under CHIP. The process still in progress covert archaeologist in PRSTRT employees capturing their safety, occupational labor compliance and given them a systematic tool for the accountability of their time and effort such as being integrated to the ADP System payroll systems.

#### The first steps for Precision Archaeology in Puerto Rico

Under this project, the PRSTRT had produced one of a few (if any of this kind) models for the first steps of creating a Precision Archaeology, a new competitive field in archaeology where the traditional surveys and field works tools introduce a complementary technology and Innovation equipment and systems that create extraordinary GeoBase and Mapping in offline data acquisition. In conjunction with GIS, IT GIS Team has been providing a documentation geographic System using SURVEY 123 using Bluetooth GPS and tablets for better precision and documentation.





## **The documentation of new archaeology sites**

This is one of the expected results during the survey of 142 private farms in Puerto Rico. Even though the achievement in this award, despite the new archaeological sites founded, the Archaeology Team has been successful in validate existing archaeological data.

## **The contribution to develop a Workforce in Archaeologist in Puerto Rico.**

As we experience during the recruitment process, archaeologist in Puerto Rico are scarce, especially with experience in field work. To provide an opportunity in the workforce development grant under, we expected to develop a series of professional certifications in Archaeology, "Archaeology Innovation Technician" and "Precision Archaeologist". This will be part of PRSTRT-CHIP UAGM Gurabo MOU.

## **Natural Hazard Center Grant**

"Cascading disasters, gender and vulnerabilities in the southwest of Puerto Rico" is a research project subsidized by the National Science Foundation and the University of Boulder Colorado. This research project was awarded 44,330 USD on September 2020, for a 6-month research collaboration between (4) principal investigators: Waleska Sanabria PhD, Gabriela Torres PhD, Jane Henrici PhD, and Alitza Cardona MA .

## **Public Health, Gender and Vulnerabilities amongst community members after a disaster event.**

Puerto Ricans, especially those living in the southwestern region of the island, live disproportionately among worsening natural hazards and with risk factors that lead to multiple compounding disasters. Since 2017 these events have proliferated, and their damages endure. In addition, disasters are overwhelming the already weakened Puerto Rican healthcare system, which has an inadequate workforce and is in debt. This, in turn, contributes to southwestern Puerto Ricans' distrust of government and private sector disaster response and recovery. To understand the impact of these cascading disasters in the southwest region of Puerto Rico, this study used a gender and intersectional approach to disasters analyzing the idea that multiple oppressions of social identity co-occur among members of racial and gender minority groups, and that discrimination and inequality are compounded along geographies of class and disability status. We use a gender and intersectional lens on disaster to build on that scholarship, examining the effects of power relations and discriminatory conditions during worsening disaster conditions and in the conventional responses to them. In the case of the disaster-impacted residents in the southwestern part of Puerto Rico, this lens contributes to a better understanding of healthcare difficulties. By studying disasters using a gender and intersectional approach, we can deepen what is being learned about the ways disasters affect residents of southwestern Puerto Rico and provide recommendations about how to better prepare and respond

## **Space transformations and foresight of change in the context of the South-West of Puerto Rico.**

Alitza Cardona's contribution to this project aimed to convey the impact of space, and its transformation, to access resources such as public health services. The use of drones, drawings, and spatial use of language within ethnographical interviews helped to identify the significance and impact of the transformations of space before, during and after a disaster event. Space as well as policy employment are indicators of social imprint, as well as accountability and responsibility of tasks delivered by individuals during and after a disaster event. The characterization of socio-cultural operations, as well as those delivered through "autogestion" are indicators of sociocultural manifestations of significance, that can communicate future aspects of integrations and social modeling that can enable adaptation to resources, management, and risk mitigation.

# **MOU and Agreements:**

## **USDA NRCS**

Along with the award an MOU was agreed and renew recently between two institutions to continue our efforts and commitment to preserve both the natural and cultural resources:

"Through this MOU the parties will work together to meet common goals supporting the conservation of natural and cultural resources by collaborating on projects that deploy technology, innovation, and research to support the development of a sustainable cultural agriculture community conservation framework to improve the economy of the agricultural sector without compromising natural and cultural resources for future generations."

## **Graduate School of Planning-UPR Río Piedras.**

Signed on December 2020, but started in January 2021, the Graduate School of Planning of the University of Puerto Rico, Río Piedras, and the PRSTRT agreed to develop and internship for students in this graduate level. As it proper stated:





“Through this MOU the parties will work together to meet common goals supporting the conservation of natural and cultural resources by collaborating on projects that deploy technology, innovation, and research to support the development of a sustainable cultural agriculture community conservation framework to improve the economy of the agricultural sector without compromising natural and cultural resources for future generations”.

The internship will provide experience to the students while they collaborate in different projects of CHIP and or other programs needed, while supporting us in the application of, but not limited to: Geographic Information Systems (GIS) in different projects ahead. This is a significant achievement by CHIP while the entire Island will be under a reconstruction plan, where planning and sustainability are our core elements to contribute to this reconstruction. The agreement was highlighted in a press communicate in April 15th, 2021.

## Forest Services at El Yunque

Recently in August 30, we signed an agreement 21-PA-11081600-296 with the United States Forest Services for the documentation Level II sect. 106. of 2 historic places following our Sustainable Model and technology and innovation resources. The Agreement sets a budget of \$15,432.83 where we obtain the benefit of having field data and results of two additional pilots for our proposal in Cultural Heritage Risk Monitoring Plan (2022-2032) at a National Scale, searching for a grant of \$200 MM.

## Metrics:

We deliver our metrics accordingly to the contact and participation of CHIP with our partners during year 2021. As a main concern, CHIP has been developed a step-by-step process in which each partner who wants to collaborate with the program needs to align their ideas, projects, or objectives since CHIP’s model, mission and vision, and with the strategic areas developed by us. Keeping this in mind, in year 2021, we added 21 partners new partners:

ID	PARTNERS	TYPE OF PARTNER	PILLAR ALIGNMENT	STRATEGIC AREA ALIGNMENT
	from 2020		SIIC MODEL	
1	FUNDACION ISMAEL RIVERA	COMMUNITY CENTER	COMM. ACTION & WELLBEING	CULTURE AND WELLBEIGN
2	LA GOYCO	COMMUNITY CENTER	COMM. ACTION & WELLBEING	CULTURE AND WELLBEIGN
3	PROF. MAYRA SANTOS	WRITER	EDU& RESEARCH	DIGITAL RESEARCH AND CREATIVE ECONOMY
4	TESORO LEXICO	WEBSITE	COMM. ACTION & WELLBEING	DIGITAL RESEARCH AND CREATIVE ECONOMY
5	ESCENA Y	SERVICE AND PRODUCTS	CREATIVE ECON	DIGITAL RESEARCH AND CREATIVE ECONOMY
6	PATRIA TOURS	SERVICE AND PRODUCTS	CREATIVE ECON	DIGITAL RESEARCH AND CREATIVE ECONOMY
7	MATERIA MADURA	SERVICES AND PRODUCTS	CREATIVE ECON	DIGITAL RESEARCH AND CREATIVE ECONOMY
8	ESPACIO A	COMMUNITY	EDU& RESEARCH	CULTURE AND WELLBEIGN
9	SOCIAL KEY	FORGOOD SERVICE	COMM. ACTION & WELLBEING	OSO BLANCO
10	VICENTE GASCO	3D DESIGN	CREATIVE ECON	DIGITAL RESEARCH AND CREATIVE ECONOMY
11	GIGABOTS	COMMUNITY	EDU& RESEARCH	DIGITAL RESEARCH AND CREATIVE ECONOMY
12	PRGDA	COMMUNITY	CREATIVE ECON	DIGITAL RESEARCH AND CREATIVE ECONOMY
13	Geomark LLC	PROF SERVICES	EDU& RESEARCH	DIGITAL RESEARCH AND CREATIVE ECONOMY
14	Asociacion de Residnetes de Trastalleres	COMMUNITY SERVICES	COMM. ACTION & WELLBEING	CULTURE AND WELLBEIGN
15	Archired	COMMUNITY SERVICES	SUST, PLANN& RISK MONIT.	DIGITAL RESEARCH AND CREATIVE ECONOMY
16	LIGA DE CIUDADES	COMMUNITY SERVICES	SUST, PLANN& RISK MONIT.	DIGITAL RESEARCH AND CREATIVE ECONOMY
17	MUNICIPIO DE GURABO	GOVERNMENT	SUST, PLANN& RISK MONIT.	CULTURE AND WELLBEIGN
18	MUNICIPIO DE TOA BAJA	GOVERNMENT	SUST, PLANN& RISK MONIT.	SUSTAINABLE PLANNING AND TOURISIM
19	Library of Congress	EDUCATION AND RESEARCH , TECHNOLOGICAL	EDU& RESEARCH	DIGITAL RESEARCH AND CREATIVE ECONOMY
20	Graduate School OF Planning- UPR RP	EDUCATION AND RESEARCH , TECHNOLOGICAL	SUST, PLANN& RISK MONIT.	DIGITAL RESEARCH AND CREATIVE ECONOMY
21	UAGM GURABO	EDUCATION AND RESEARCH , TECHNOLOGICAL	EDU& RESEARCH	SUSTAINABLE PLANNING AND TOURISIM
22	Smithsonian Foundation	ART, EDUCATION SPONSOR	EDU& RESEARCH	CULTURAL HERITAGE EMERGENCY AND MONITORING
23	Prince Claus Funds	ART, EDUCATION SPONSOR	EDU& RESEARCH	CULTURAL HERITAGE EMERGENCY AND MONITORING
24	Andrew W. Mellon	ART, EDUCATION SPONSOR	EDU& RESEARCH	OSO BLANCO
25	US Army PR National Guard	SAFETY EMERGENCY RESPONSE	SUST, PLANN& RISK MONIT.	CULTURAL HERITAGE EMERGENCY AND MONITORING
26	PR Emergency Management Office	SAFETY EMERGENCY RESPONSE	SUST, PLANN& RISK MONIT.	CULTURAL HERITAGE EMERGENCY AND MONITORING
27	DMO	TOURISM ECONOMY	CREATIVE ECON	SUSTAINABLE PLANNING AND TOURISIM
28	Universitat Politecnica de Valencia	EDUCATION AND RESEARCH , TECHNOLOGICAL	EDU& RESEARCH	OSO BLANCO
29	Universitat de Barcelona	EDUCATION AND RESEARCH , TECHNOLOGICAL	EDU& RESEARCH	OSO BLANCO
30	Ars Electronica	CULTURE, ART AND EDUCATION	CREATIVE ECON	DIGITAL RESEARCH AND CREATIVE ECONOMY
31	GUANICA CAMP	SUPPORT EARTHQUAKES	COMM. ACTION & WELLBEING	CULTURE AND WELLBEIGN
32	YAUCO CAMP	SUPPORT EARTHQUAKES	COMM. ACTION & WELLBEING	CULTURE AND WELLBEIGN
33	GUAYANILLA CAMP	SUPPORT EARTHQUAKES	COMM. ACTION & WELLBEING	CULTURE AND WELLBEIGN
34	FINCA TOA BAJA	AGRICULTURE ECO	COMM. ACTION & WELLBEING	SUSTAINABLE PLANNING AND TOURISM
35	GURABO TURABO VALLEY COM, ASSESST,	COMMUNITY SERVICE	COMMUNITY SERVICE	SUSTAINABLE PLANNING AND TOURISIM

Table 1.0 CHIP partners list from 2020-2021 organized by pillar and strategic area

As we advance into our method for collaboration and project development, we design some objectives and deliverables into metrics achieved by our status within each of our partners. In this case six (6) metrics were developed accordingly to the progress made with each partner to finish our collaboration into a funded proposal project.

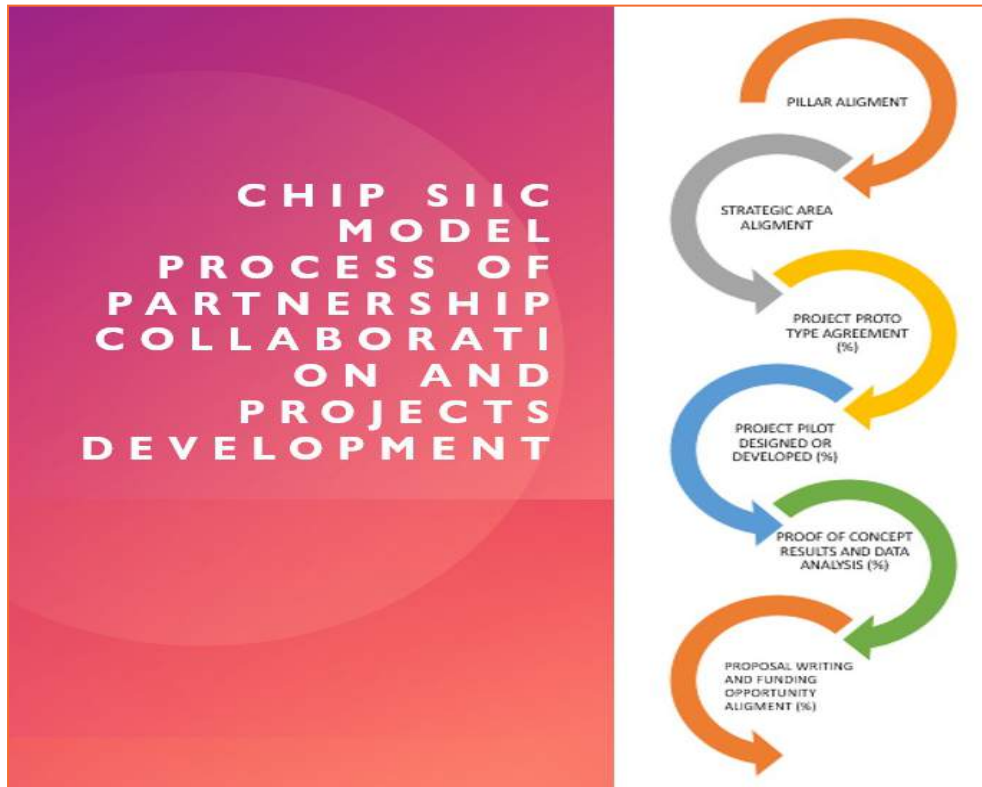


Figure 13. CHIP Partnership Methodology for projects development under the SIIC

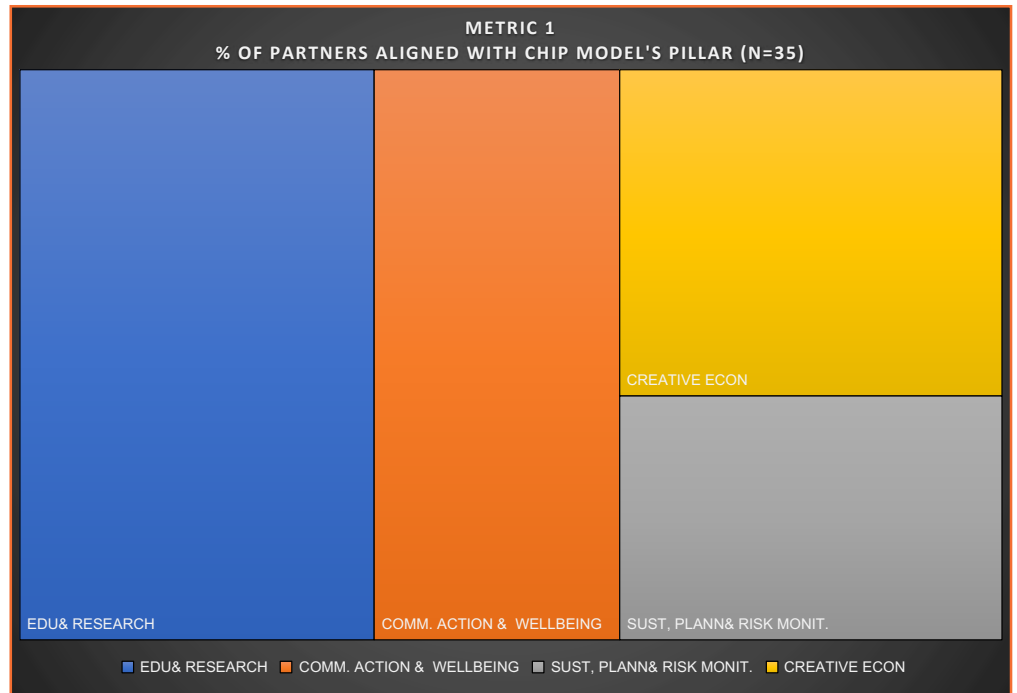
**Metric 1: Percent of Partners aligned with the Model Pillars :**

This metric measured the percent of partners that aligned with our model. At mid-August, 2021, data showed that from or models pillars a 37.1% were aligned with Pillar 1: Education and Research, 25.7 % aligned with Pillar 2: Community Action and Wellbeing, a 17.1% was aligned with Pillar 3: Sustainable Planning and Tourism and 22/9 % was aligned with Pillar 4: Creative Economy.

**Metric 2: Percent of partners aligned with a Strategic Area:**

This metric measured the percent of partners that aligned with one strategic area from CHIP’s structure. The strategic areas (SAs) are defined by now are as follows:

- SA1: OSO BLANCO
- SA2: DIGITAL RESEARCH AND CREATIVE ECONOMY
- SA3: CULTURAL HERITAGE EMERGENCY AND MONITORING
- SA4: CULTURE AND WELLBEIGN.





At mid-August, 2021, data showed that 11.4 % of partners were aligned with SA1; A 40 % aligned with SA2; 25.7% was aligned with SA3 and A 22.9 % was aligned with SA4.

### Metric 3: Pilot designed and status percent:

This metric measured the percent of partners and a current status of a pilot design or pilot/ prototype of the incoming project already discussed with CHIP, accordingly to our process flow. At mid-August, 2021, data showed that 2.9% of partners have a pilot designed or discussed with CHIP with a 50-70% complete, while 97.2% have a pilot with a 75-100% completed.

### Metric 4: Pilot or prototype designed or developed with CHIP

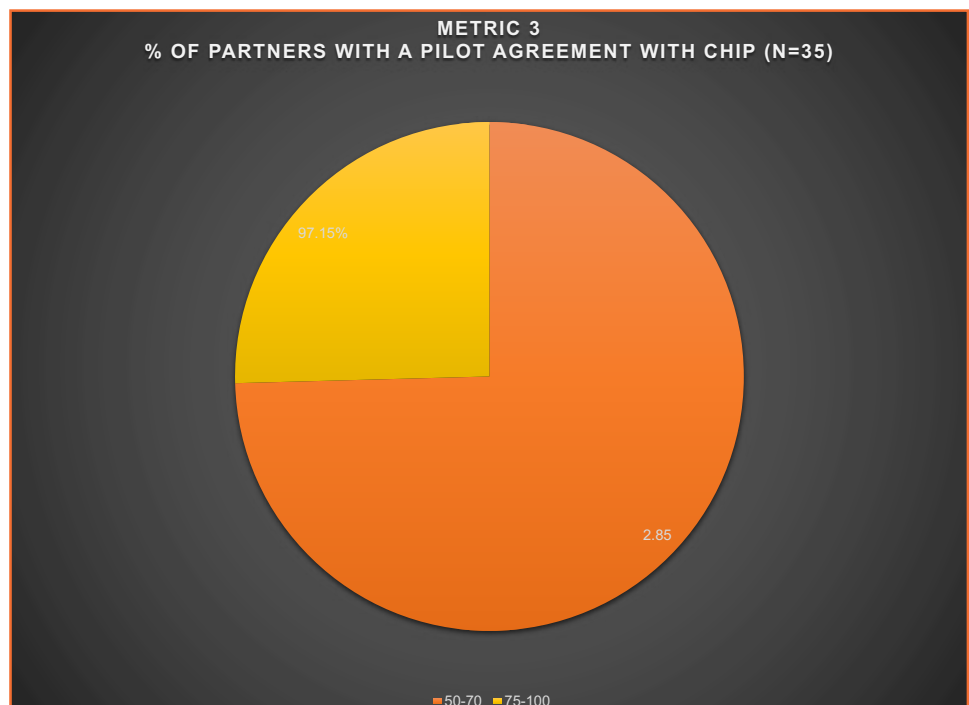
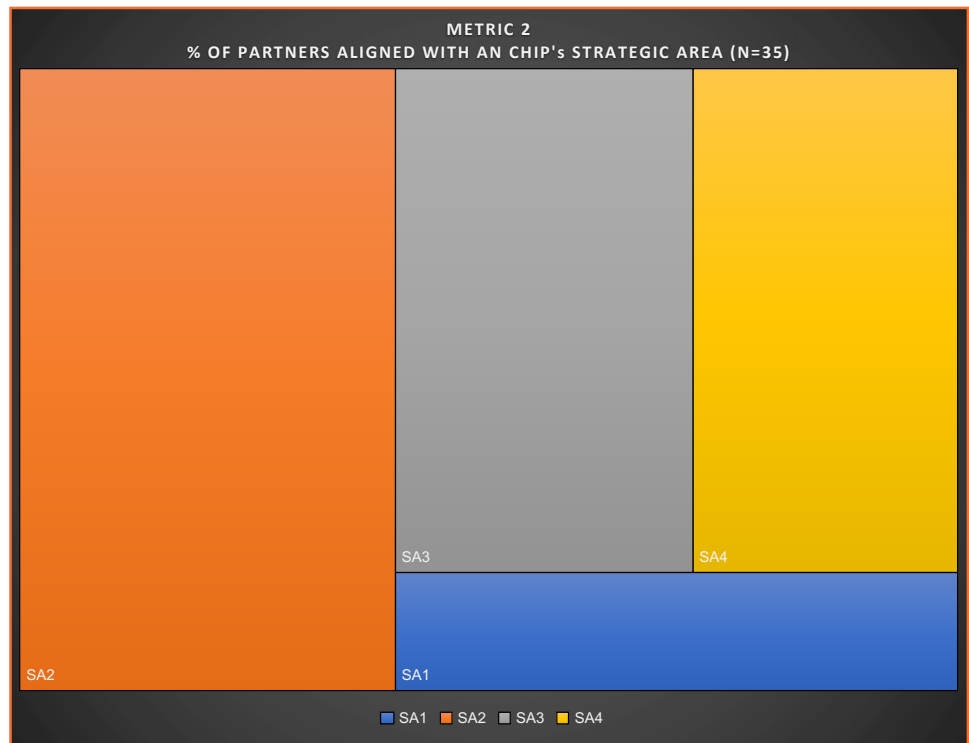
This metric measured the percent of partners and a current status of a pilot design or pilot/ prototype of the incoming project already with results or data analyzed or pending to analyze with CHIP, accordingly to our process flow. At mid-August 2021, data showed that 31.4 % of partners have a pilot designed or developed with CHIP with a 24-45% completed, while a 68.6% of partners have a pilot designed or developed with CHIP with a 75-100 % completed.

### Metric 5: Pilot or prototype with results or data with CHIP:

This metric measured the percent of partners and a current status of a pilot with already data and results or analyzed, pending analyzed data, preliminary data and results or else. of the incoming project with CHIP, accordingly to our process flow. At mid-August 2021, data showed that 34.3 % of partners have a pilot with results or data with a 24-45% completed, while a 22.9% of partners have a pilot with results or data with a 50-70% completed, and a 48.6% of partners have a pilot with results or data with a 75-100% completed.

### Metric 6: Partners with a project proposal draft and funding opportunity aligned with CHIP:

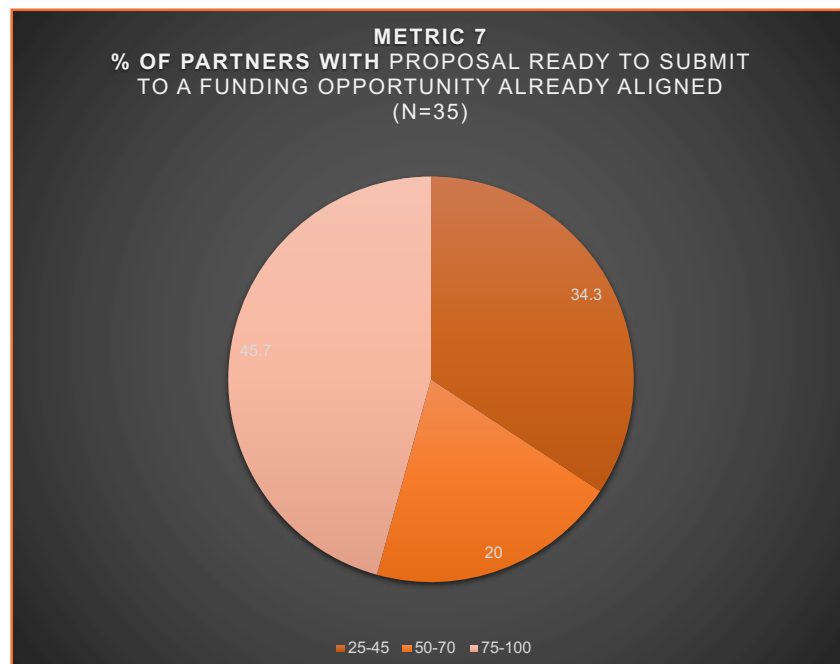
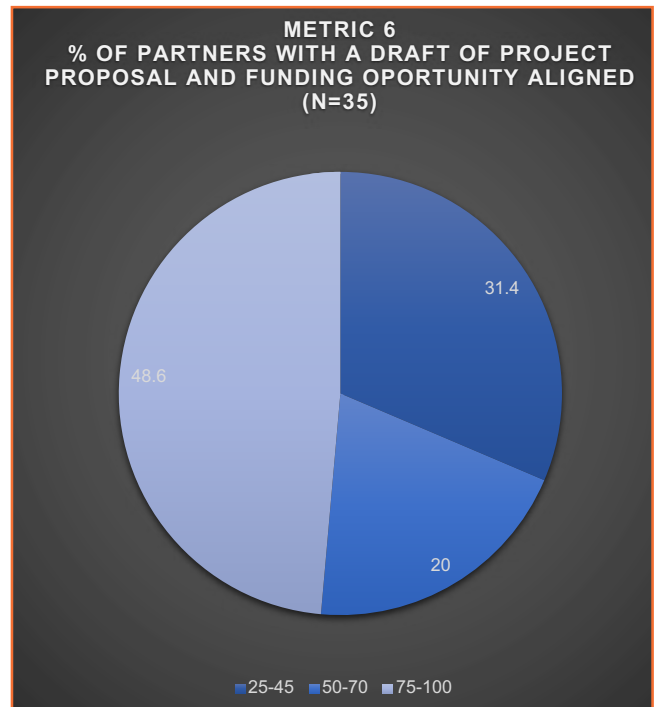
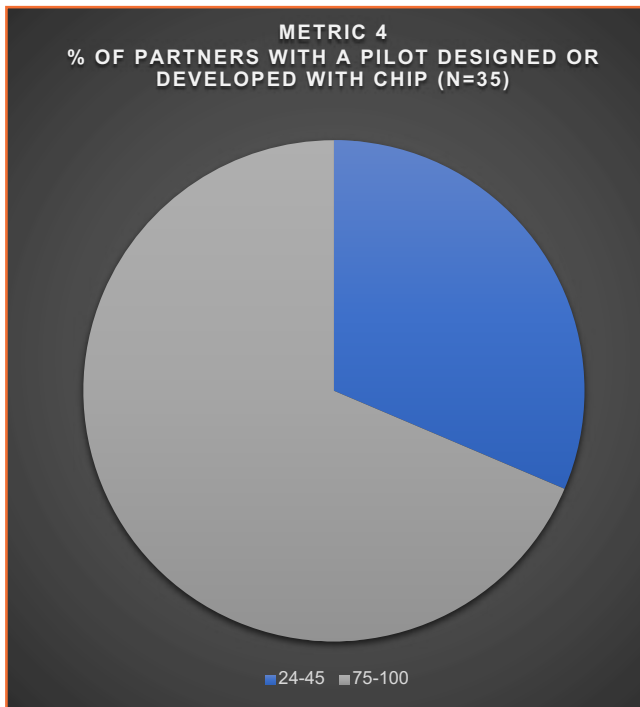
This metric measured the percent of partners and a current status of a pilot design or pilot/ prototype of the incoming project already with results or data analyzed or pending to analyze with CHIP, accordingly to our process flow. At mid-August, 2021, data showed that 31.4 % of partners have a pilot designed or developed with CHIP with a 24-45% completed, while a 68.6% of partners have a pilot designed or developed with CHIP with a 75-100 % completed.





### Metric 7: Partner with a project and proposal draft and funding opportunity aligned:

This metric measured the percent of partners and a current status of a partner that already have a project designed with results and data and a draft of a proposal with a funding opportunity identified and aligned. At mid-August, 2021, data showed that a 31.4 % of partners have a draft of proposal and at least a funding opportunity aligned with CHIP with a 24-45% completed, while a 20 % of partners have a draft of proposal and at least a funding opportunity aligned with CHIP and a 48.6 of partners have a draft of proposal and at least a funding opportunity aligned with CHIP with a 75-100 % completed.





## Future Plans

### General projects:

We under score a series of projects that are either in process and others in a planning stage for prepare a proposal. Here is a list of the projects currently discussed, planned, organized, and or agreed at Mid-August 2021. It is important that we are under the reconfiguration of the program, and we will start from home. This includes the reconfiguration of our web page, the development of a Program Management System and the future relocation to the Oso Blanco new Facilities. Under the Oso Blanco project, there is an expected and exceptional process with the restoration of the items of Oso Blanco that will be a live or public experience while we will be documenting and working with international professionals. Also, the current agreements such as NRCS and the one with the Graduate School of Planning will continue as normal, but improving in their purpose and results. Digital Humanities and the creative sector has been merged with the intention to develop more the creative sector by means of projects under this area that has been properly completed step by step, with the conditions of having a pilot and or a proof of concept, before starting or be engage in a former grant.

### List of Projects for the Future by strategic area:

The Cultural Heritage Program is a program of the Puerto Rico Science, Technology and Research Trust.

Strategic Area	Name	Brief SOW	Status
Oso Blanco	Restoration Process	Conservation Plan with International experts	95%
Oso Blanco	New Facilities design	Pre-Feasibility Stage and final layout discussion with Architecture Firm.	15%
Digital Humanities and Creative Economy	Ai and Machine Learning applied to Historic Materials	Digitization of Historic Archives Materials in Municipalities	Pilot (2) design 75%
Digital Humanities and Creative Economy	Unified Risk and monitoring Assessment of Cultural Heritage Sites	High Tech for digital documentation and exploitation of historic sites and provide preservation data	Pilots (2) 80%
Emergency Response and First Aid for Cultural Heritage	Integration of a GIS Data of Cultural Institutions Emergency plans to PREMA Framework	ACEPR -CHIP Collaboration plan for supporting CH fast response	Pilot (1) 70%
Culture and Wellbeing	Social Index Score Card Survey for Pr. Communities (5 years)	Draft proposal for Robert Wood Johnson Foundation Grant	Pilot (1) 50%
Culture and Wellbeing	Space Transformations after a Disaster Event in the Context of Puerto Rico	Draft proposal- Research by AC, for Journal of Space and Culture	in progress





Puerto Rico  
Science, Technology  
& Research Trust

RESEARCH &  
DEVELOPMENT



# Caribbean Center for Rising Seas

Affiliated with: **RISING  
SEAS  
INSTITUTE**  
SMART SOLUTIONS FOR FUTURE FLOODING

A program of:  Puerto Rico  
Science, Technology  
& Research Trust





## Description of the program

The Caribbean Center for Rising Seas (“CCRS”) is a program of Puerto Rico Science, Technology, and Research Trust being launched in the fall of 2021 to develop the knowledge and best practices so that buildings and infrastructure are designed and constructed to be resilient to traditional hurricanes as well as accelerating sea-level rise this century resulting from climate change. The plan is for Puerto Rico to be a model for this adaptation approach in the Caribbean region and elsewhere. The Caribbean Center for Rising Seas program is being created under the direction and leadership of John Englander, leading oceanographic expert on sea level rise and president of the Rising Seas Institute, a non-profit organization ([www.risingseasinstitute.org](http://www.risingseasinstitute.org)).

## Mission

Preparing Puerto Rico and the Caribbean to adapt and thrive in the new era of increasing flood risk from storms, tides, and sea level rise. This new program of the Puerto Rico Science Trust will further establish Puerto Rico’s leadership and stature as a center of excellence and innovation. The comparable strategic advantage of Puerto Rico’s topographic elevation and geologic attributes will become a reference point for other small island nations. The Caribbean Center for Rising Seas will become a research and education instrument through which capacity might be developed, thereby facilitating and unlocking competitiveness for coastal regions in the coming decades.

## Vision

The Center’s vision focuses on “resiliency + adaptation”, promoting design guidelines and best practices for the built environment to better prepare communities for increased flooding. The vision entails four primary areas of focus: Creating Safe Advanced Flood Estimates (SAFE™); Working with the built-environment professions; Establishing a policy center for smart building codes; and doing outreach to promote 100-year flood-safe communities.

While there are myriad efforts addressing important issues in the face of the challenges of climate change, the center focuses on the critical issue of sea level rise, an arguably unstoppable effect of the climate crisis. This is an issue that will have a historically unprecedented impact generations into the future. We need to establish a critical perspective on resiliency that is realistic and paves the way for adaptation. We will engage in a process of building awareness that sustainable practices and technology will not stop sea level rise. The center will be the coordinator of the Trust’s vision regarding climate change as a source of information, a reference point about resilience and adaptation. The center does not seek to be a decision maker but a trustworthy source of information. The center should be seen as a leader and sought for guidance in establishing priorities of research, development, and recommending smart public agency policy. We will bring people together to think about the implications of sea level rise and the possibilities for adaptation in the future. Despite the increased concern over rising sea level, as is observed in the general literature, there is a lack of consensus and specifics about how much sea level rise to plan for. This is one of the key concerns which the Caribbean Center for Rising Seas will address.

## Achievements

1. The Caribbean Center for Rising Seas Program was launched in September of 2021.
2. Fernando Pabón Rico, a licensed architect and urban designer and our first full time team member, has now been onboarded. He has been connecting with several key personnel of the trust and the Rising Seas Institute. His skills, knowledge, and contacts will be very valuable to the Caribbean Center for Rising Seas. An additional three staff members are being recruited.
3. The Advisory Committee for the Caribbean Center for Rising Seas was onboarded and consists of:
  - Antonio J. Colorado ‘Tito’ lawyer, entrepreneur, and former Puerto Rico Resident Commissioner;
  - Dr. Tim Fox, CEng FIMechE; Lead author “Rising Seas: The Engineering Challenge” report November 2019
  - Dr. Gredia Huerta Montañez, MD, FAAP, pediatrician, researcher, director of Clinicians for Climate Action Puerto Rico chapter, and current or former member of, among others, CDC, EPA, PR Dept. of Health advisory committees;
  - Ex oficio: Juan Alicea PE, president of the Colegio de Ingenieros y Agrimensores;
  - Ex oficio: Arq. Margarita Frontera Muñoz, president of the Colegio de Arquitectos y Arquitectos Paisajistas de Puerto Rico.



4. UPR-Mayagüez hosted a major lecture by John Englander on Thursday September 16 titled “Unstoppable Rising Seas Level: The Engineering Challenge of the Century will Change Our Entire Society” over Zoom and Facebook live.
5. Caribbean Center for Rising Seas team members Gilberto, Fernando, and John are working with Sebastián Vidal, Andreica Maldonado, and Ricardo Burgos through an ad-hoc committee to coordinate and communicate about the broad scope of climate change and sea level rise issues.
6. The NASA ARSET program for small island nations asked the Executive Director, John Englander, to give the Opening Keynote of their 3 day webinar for Analyzing Natural Hazards on Small Island Nations. This is the program that Gilberto Guevara and Annie Mustafá participate in through the Response Innovation Lab. John made the case that precise sensing data is important to track the accelerating rate of SLR (sea level rise) but showed that surprisingly, it does not help to do projections about future sea level. It was very well received with some 700 participating on the call.

## Impact Metrics

- a. Number of attendees at John Englander’s recent talks related to Puerto Rico:
  - February 27th, 2019: “Rebuilding Higher for Storms, Tides, and Sea Level Rise” part of Caribbean Strong: Building Resilience with Equity – over 400 attendees
  - June 3rd, 2019: MEETUP: A Conversation with John Englander on Proposed Caribbean Sea Level Rise Institute in Puerto Rico – 145 attendees (105 external);
  - June 4, 2019: The Challenges of Sea Level Rising in Puerto Rico conference held at CIAPR - 120 attendees
  - October 30th, 2019: “Climate Change Is Not a Problem: It’s 5 Separate Problems” part of No Escape: The Reality of Climate Change Here and Now, a conference held at Fundación Luis Muñoz Marín - 200 attendees
  - June 24, 2021: At What Point Managed Retreat? Resilience, Relocation and Climate Justice: Redefining Managed Retreat: Incorporating Transformational, Multi-Benefit Ecological & Equity-Rich Solutions for Watershed Management: held at Columbia University Earth Institute – approx. 2,700 virtual attendees
  - August 4-6, 2021: Bluetide Caribbean Summit 2021 in Fajardo – Networking Event – approximately 150 attendees (over 2000 virtual attendees);
  - August 18, 2021: NASA ARSET Satellite Observations for Analyzing Natural Hazards on Small Island Nations: Assessing Pre-Storm Conditions and Post-Storm Impacts: Sea Level Rise - (approximately 700 virtual attendees);
- b. Interactions with professionals, academics, government officials:
  - Contacts have been established at professional associations including the Colegio de Ingenieros y Agrimensores de Puerto Rico (CIAPR) and the Colegio de Arquitectos y Arquitectos Paisajistas de Puerto Rico (CAAPPR);
  - Contacts have been established at academic institutions including UAGM and UPRM;
  - Contacts are expected to be established at local and federal government agencies including locally the DRNA, DDEC, COR3, DV, PRCCC, and federally the USACE, FEMA, NASA, EPA, NOAA, NSF, NIST, EDA, White House, US Global Change Research Program (USGCRP), DOD, DOI, USGS, and others;
- c. John Englander’s book Moving to Higher Ground: Rising Sea Level and the Path Forward. The Science Bookshelf, 2021. copies circulating in Puerto Rico: 45 +
- d. Various marketing and outreach materials have been produced including a flier, banners, and a program webpage: [www.caribbeancenterrisingseas.org](http://www.caribbeancenterrisingseas.org), <https://prsciencetrust.org/ccrs/>



## Future Plans

- Translating to Spanish John Englander's book *Moving to Higher Ground: Rising Sea Level and the Path Forward*. The Science Bookshelf, 2021.
- Establishing a policy center for smart building codes, performance, and safety metrics;
- Doing outreach and advocacy to promote 100-year flood-safe communities. This will involve a series of workshops and engagements with professionals in order to see results in terms of how buildings are assembled;
- Positioning Puerto Rico as a model and leader for this adaptation approach in the Caribbean region and beyond;
- Engaging key actors such as industry leaders and businesses in Puerto Rico and the wider Caribbean region;
- Engaging key actors in media in Puerto Rico and the wider Caribbean region;
- Producing a library/database of solutions and key data;
- Expanding the program's network of collaborators and advocates;
- Nurturing a collaboration framework within the Puerto Rico Science, Technology, and Research Trust around the topic of resiliency and adaptation to climate change;
- Establishing a course with UPR Mayagüez through Moodle platform that is eligible for Continuing Education Credits;
- Creating Safe Advanced Flood Estimates (SAFE™);
- Working with the built-environment professions through meetup events, lectures, conferences, forums, workshops, and other activities;
- Identifying and applying for public sector funding and grant opportunities;
- Establishing short (30 yrs.), mid (50 yrs.), and long term (100 yrs.) settlement and infrastructure adaptation goals.





# The Challenges of the Sea Level Rising in Puerto Rico


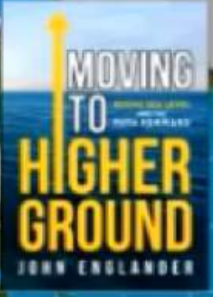
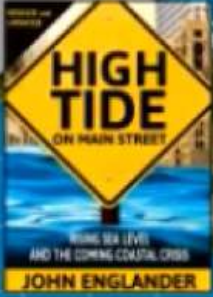
by John Englander, oceanographer.  
*Author of High Tide on Main Street: Rising Sea Level and the Coming Coastal Crisis?*

**Save the Date**

Tuesday, June 4, 2019  
8:30 am - 11:00 am  
Teatro Colegio de Ingenieros y Agrimensores de PR  
500 Calle Ing. Antolin Nin Martinez, San Juan, 00918



The Challenges of Sea Level Rising in Puerto Rico conference held at CIAPR



John Englander

Moving to Higher Ground



National Aeronautics and Space Administration

**Rising Waters: 4 Time Horizons**

John Englander, Executive Director of the Caribbean Center for Rising Seas

Rising Waters: 4 Time Horizons

**ADVISORY BOARD agenda meeting**

CaribbeanCenterRisingSeas.org

Thursday, September 9th of 2021 11:00am-12:00pm

<b>WELCOME REMARKS</b>	<b>JOHN ENGLANDER</b> OCEANOGRAPHER & EXECUTIVE DIRECTOR OF CCRS
<b>PRESENTATION</b>	<b>LUCY CRESPO</b> PRSTRT CEO
<b>ADVISORY MEMBERS</b>	Mr. Antonio Colorado Dr. Tim Fox Dr. Gredia Huertas Arq. Margarita Frontera President of Colegio de Arquitectos y Agrimensores Juan Alicea PE President of the Colegio de Ingenieros y Agrimensores
<b>PROGRAM STAFF</b>	Arq. Fernando Pabón, AIA, CAAPPR Operations director CCRS Esq. Gilberto Guevara Senior Director PRSTRT

The Advisory Committee, Introductory Meeting

El Rector del Recinto Universitario de Mayagüez, Dr. Agustín Rullán Toro, se complace en invitarle a la charla:

**"UNSTOPPABLE RISING SEA LEVEL: The Engineering Challenge of the Century will Change Our Entire Society"**

**POR: JOHN ENGLANDER**  
Oceanógrafo experto en el aumento en el nivel del mar, director ejecutivo del Centro Caribeño sobre el Aumento en el Nivel del Mar y presidente del Rising Seas Institute.

**Autor de:**  
-High Tide on Main Street: Rising Sea Level and the Coming Coastal Crisis. The Science Bookshelf, 2012  
-Moving to Higher Ground: Rising Sea Level and the Path Forward. The Science Bookshelf, 2021  
El evento contará con traducción al español y transcripción del audio.

**Jueves 16 de septiembre del 2021 10:15 AM (EST) zoom**

RisingSeasInstitute.org CaribbeanCenterRisingSeas.org

UPR Mayagüez hosted "Unstoppable Rising Seas Level: Facebook live.



Puerto Rico  
Science, Technology  
& Research Trust

ANNUAL  
REPORT

FISCAL YEAR  
2020-2021

Public  
Health





Puerto Rico  
Science, Technology  
& Research Trust

**PUBLIC  
HEALTH**



# Puerto Rico Public Health Trust







## Executive Summary

The Puerto Rico Public Health Trust (PRPHT) is the fastest growing program of the Puerto Rico Science, Technology and Research Trust (PRSTRT), due to its organizational identity of promoting public health in the communities of Puerto Rico, including Puerto Ricans in the diaspora. Its structural development includes the creation of programs aimed at disaster management, communities, telemedicine, telehealth and innovation and research, among others. The purpose is to protect people's health, promote healthy lifestyles and improve the state of health and well-being of the population through health promotion and protection programs, as well as disease prevention.

Only two years after its creation and due to its outstanding participation in the COVID-19 pandemic and other events of impact on the Island such as the earthquakes and Hurricane Maria; PRPHT has managed to develop a level of credibility that has allowed it to implement its vision of serving as a trusted ally that works with public and private companies to identify and execute community-driven, evidence-based solutions. In the process, it has been able to educate the community through its multiple interventions in traditional, digital, and social media. Through its virtual/social platforms it provides information, conferences, trainings and provides the necessary skills to improve the effectiveness and delivery of specialized remote medical services to the most vulnerable populations through its Telemedicine and Telehealth programs.

Its rapid execution in core issues has allowed it to strengthen its relationship with the Government of Puerto Rico, working directly with the Department of Health in the management of the COVID-19 pandemic, with the participation of two members of our team in the Scientific Coalition of Puerto Rico, which is the body responsible for providing the recommendations of the opening of the country according to the data and scientific evidence. They have also developed partnerships with the Department of Education in which they will print 10,000 copies of the third edition of the Achú Regresa a la Escuela activity book, to educate elementary school children on how to protect themselves from the virus in the school environment.

In addition, the PRPHT stood out for making important collaborations with organizations and private companies such as Mercy Corps, Ciencia Puerto Rico, Banco Popular de Puerto Rico, Mc Donald's, among others; aimed at preventing and educating about the pandemic and especially promoting vaccination.

This year the organization also held its first Puerto Rico Public Health Summit with local and international speakers on the theme The New Era of Public Health: Challenges, Contributions and Trends after COVID-19, to talk about the challenges of the pandemic, the lessons learned and what lies ahead after the virus that continues and evolves every day.

These public health challenges are precisely what give value to the entity and as the Public Health Institute of Puerto Rico are committed to achieving the highest levels of physical, mental, and social well-being of the population according to the existing knowledge and resources. It has become evident that public health is vital for this generation to eradicate the pandemic we are living through. While is not clear about the emotional, social, and long-term consequences of this pandemic, they will be contributing with knowledge from research, community work and health promotion.

Currently PRPHT continues to evolve with the insertion of programs, grants and new initiatives that have allowed them to increase their staff and contractors to 41 persons. The organization is assisted by various consultants, academics, scientists, epidemiologists, and public health experts to align the strategies of its programs and services, considering current situations and anticipating future public health challenges to offer solutions to the communities of Puerto Rico.

## Priorities

The Puerto Rico Public Health Trust (PRPHT) priorities improve public health capacity, systems, and outcomes by fostering innovation, leveraging resources, and building partnerships to improve the public's health.

- Emergency preparedness, response, and recovery
- Chronic disease: diabetes, obesity, etc.
- Opioid addiction epidemic
- Climate change
- Health equity
- Mental Health
- Emerging Public Health Situations



## Telemedicine Program

The Puerto Rico Public Health Trust (PRPHT) hosts a Telemedicine and Telehealth Programs. During the last twelve months the Telemedicine Program growth has been continuous and consistent. Our program seeks to provide timely access to specialty care services and distance learning programs for primary care physicians. Target groups are vulnerable populations living in remote areas and health providers serving the community unmet needs. This year the Telemedicine program developed a Distance Learning Program aimed at educating healthcare providers on telemedicine practices, appointments, and the use of equipment in facilities to provide access to specialized healthcare services. The PRPHT Telemedicine Program is funded by USDA.

### Initiatives

Some of the Telemedicine Program initiatives that were developed during the past year include:

1. Deploy Telemedicine Equipment in 48 health facilities in Puerto Rico.
2. Development of the specialized Provider Network to provide clinical services to patients in remote and vulnerable areas.
3. Elaboration of the Calendar of weekly Virtual clinics to offer clinic services.
4. Create a Distance Learning Program to train primary care physicians in Telemedicine practices and the use of the equipment. More than 50 physicians participated in the first session and continue in bi-weekly meetings to clarify doubts and reinforce their knowledge.
5. Development of Training Modules on Telemedicine hardware and software for primary care physicians, specialists and tele presenters (nurses).
6. Made Telemedicine Presentations of telemedicine licensing to various groups of physicians and allied health professionals.
7. Training and Education resources for the Telemedicine Program with the development of the Policies and Procedures Manual, Provider Manual, Appointment Management Manual. Digital library and hard copy of manuals to foster a long-lasting and sustainable program.
8. Prior to the launch of the program, established Partnerships with several health networks which we confirmed with the signing of 45 Memorandums of Understanding (MOUs) including: Medical Groups (IPAs), Health Centers 330 and Business Partners.

## Collaborations

- Clinton Global Foundation Initiative: Member of the Health Disparity and Inequities in Puerto Rico discussions. Area of contribution: Providers and Telemedicine.
- Telehealth Southeastern Telehealth Resource Center: Establish a partnership with Georgia Telehealth Resource Center.
- AAPR: Propose amendment to Telemedicine Act #60 from August 2020 recognizing the PRSTRT as co-chair of the Telemedicine in Puerto Rico Initiatives with the Secretary of Health.
- VOCES: Provided Telemedicine Program training to leaders from “Patient First Coalition” seeking to increase knowledge and skills on service delivery through telemedicine and distance learning.
- Medtronic Foundation: Provided telemedicine curriculum for Community Health Workers
- World Health Initiative: Provided Teladoc equipment for three health facilities. Make available physicians from the diaspora to provide mentoring, education and training to Primary Care Providers working in remote facilities.
- T-Mobile: Provided 20 tablets with internet to support IPAs immunization program island wide.



## Accomplishments

### Telemedicine Evolution

- 2019- Program Launch
- 2019- Grant Awarded
  - USDA 2019- \$500,000 Virtual Specialty Clinics (3 facilities)
- 2020- Professional Certifications
  - ECHO Immersion Program Certification
  - HIPAA Certification
- 2021- Grants Submission (USDA & HRSA)
- 2021-Grants Awarded
  - Telemedicine by Specialists (12 facilities)
  - Direct Relief 112,000
  - USDA 2021- 1 million – Virtual Specialty Clinics (20 Facilities)
- 2021- Telemedicine Infrastructure- Provided telemedicine equipment to 45 health facilities located in remote areas
- 2021- Trainings
  - Telemedicine Training to 600 physicians across the Island.
  - Teladoc software application certification for 22 specialty physicians
- 2021- Collaborations
  - Telemedik Equipment
  - Applivio Appointments Services
  - Speakers at various telemedicine webinars in and outside Puerto Rico



### Metrics Impact

- Reduce turnaround time for specialty appointments from 160 days or more to 45 days or less.
- Completed the MOU & BAA agreements of 15 organizations. 30 facilities are in progress.
- Completed Specialty National Network with 20 specialists.
- Delivered Forty-Five (45) state of the art equipment to each participating facility.
- Provided telemedicine required education training to more than a thousand (1,000) physicians and other health allied professionals.
- Completed Telemedicine Program documentation and resources.
- Completed patient readiness assessments in 19 health facilities, for a total of 190 individuals.
- Distance Learning Community: Sessions were performed every other week; staff from 45 health facilities are participating.

### Future Plan

- Continue Strengthening telemedicine program across the Island.
- Provide interoperability infrastructure to support Health Information Exchange.
- Integrate payers and Managed Care Organizations in program development and sustainability.
- Develop evidenced based information about Telemedicine activities in Puerto Rico.

## Community Health Promoters' Capacity Building Program

The Community Health Promoter Capacity Building Program (CHPs) is funded by Medtronic Foundation and leverages existing relationships, training resources and best practices, to strengthen the capacity of CHPs in Puerto Rico. This program is being implemented in the municipalities of Cataño, Loíza, Juncos, Humacao, Ponce and Villalba. Our main goals are to improve health outcomes, including mental health and Social Determinants of Health, and strengthen emergency preparedness and response among underserved, medically fragile with chronic care management needs population.





## Initiatives

- Medtronic Foundation Global Innovation Fellows
- Triple S Initiative
- Community Advisory Committee
- Successful virtual engagement with the Medtronic Foundation Global Innovation Fellows (GIFs) in virtual mode. This team reviewed and proposed different strategies available to sustain CHPs work, interventions, and patient's health outcomes. We have drafted an initial sustainability strategy plan based on recommendations made by Global Innovation Fellows during the past quarter. The UGA economic evaluation team is reviewing the report and translating it into a detailed plan. <https://prsciencetrust.sharepoint.com/:w/s/MedtronicFoundationRockstars/EcMjeWCjoDVIq2HhBtT2tsEBs2sVx4mZ3NRAF-z-6lrMdw?e=3ihvxh>
- We are meeting with SSS, the largest health insurer in Puerto Rico, to discuss strategies and initiate plans to integrate CHPs into the payment structure for insurers.
- Programs Community Advisory Committee met on January, February, March, and April 2021. Next meeting will be in October 2021. [https://prsciencetrust.sharepoint.com/:p/s/MedtronicFoundationRockstars/ERStPxx21\\_BDt1AbCOYVnxYBYoLxOUajj36aB7r-Hrq\\_lg?e=GLC4X2](https://prsciencetrust.sharepoint.com/:p/s/MedtronicFoundationRockstars/ERStPxx21_BDt1AbCOYVnxYBYoLxOUajj36aB7r-Hrq_lg?e=GLC4X2)
- 20 CHPs are currently working facilitating access and connection for patients with their health care teams or social services coordinators at the participating health clinics. These CHPs will receive programs second phase training during the period comprising from September 15th through October 15th, 2021
- A total of 181 additional participants have been recruited and had at least one intervention during Q4. Increasing the total to 593.
  - MedCentro (Ponce and Villalba): 430 patients
  - Ponce: 382
  - Villalba: 48
  - COSSMA (Humacao): 101 patients
  - Neo Med (Juncos): 26 patients
  - Health Pro Med (Cataño): 36 patients
- For patients in Loíza, being served by CHPs from non-profit Taller Salud, Concilio de Salud Integral de Loiza, Inc., has identified the first 300 patients for the program and we are expecting to get baseline data once the data agreement has been signed.
- Reports are being collected on all patients and being reported monthly. We are following the participants from all the other centers. The participants from the other clinics are still less than the 6-month measurement.
  - We are tracking 366 enrolled patients at the time of this report. From currently available data, from the sites at Ponce and Villalba (193 patients), 21.2% showed DM improvement and 45.6% showed HTN improvement. From the 190 patients diagnosed with asthma, 95.3% reported prescribed medication use.
- Dashboards have been created for the program. The dashboard facilitates collection of program data, comprehensive analysis, field workflow coordination and program management among other aspects. The dashboards will facilitate the proper documentation and reporting of all program activities. They will also improve the ability to share data with others and for timely and efficient program evaluation.
- We are currently developing presentations based on program models, and curricula, aiming to inform the public, health center staff and other stakeholders' the roles performed by CHPs at their respective sites.
- Healthcare insurer Triple-S, via their Community Health Promoter Program Coordinator, Ivelisse Fernández, has asked for a meeting with PRPHT to explore our current curricula and collaborative training opportunities. Meeting is being coordinated to be held in September 2021.
- Neo Med clinic and COSSMA have developed closed circuit TV capsules that inform patients about Promotores program and their services. <https://www.youtube.com/watch?v=h6RyarsgB6o>
- APHA abstract describing this program was submitted and accepted as a poster.
  - Abstract Title: 508633 Creating a community health workers program in Puerto Rico after a disaster; Integration and collaboration
  - Session Title: - CHP Section Roundtable: CHP Models Addressing Health Disparities
  - Session Date/Time: Tuesday, October 26, 2021, 12:30 p.m.
  - Authors: Santos Rivera, A., Fernández Acosta, F., López Berrios, M., Vélez Vega, C. M., Cordero, J. F., Torres Zayas, H., Vega Quesada, G., Otero Morales, S., Agosto Arroyo, L., Rosario Pabón, Z., Ayala, I., Miller, S. The presenter will be Field and Training Supervisor Héctor R. Torres Zayas.



## COMMUNITY ENGAGEMENT PROGRAM

The Community Participation Program is the foundation of the Puerto Rico Public Health Trust (PRPHT). It is aimed at promoting health promotion and public health best practices in Puerto Rico's communities. It is an entity that is characterized by creating connections between community leaders to make things happen. The program makes community initiatives visible and identifies opportunities to meet the needs of its residents and support them in their initiatives according to their interests.

### Initiatives

#### Education:

##### Talks for schools

Children are powerful agents of change, having the correct information and facts about COVID-19 helped diminish students' fears and anxieties. The Community Engagement Core (CEC) through September to December 2020 delivered prevention talks to elementary level students. During this period the CEC educator impacted:

- More than **600 students** from **12 schools** in nine municipalities.
- **49%** average of students increase in knowledge according to a pre and post test conducted
- According to the results, elementary level students who attended the COVID-19 prevention talk **become advocates for disease prevention and control at home and their communities** by talking to others about what they learn.

##### Educational talks for communities and faith-based organizations

Misinformation during COVID-19 has become a major barrier to control the pandemic. Everyone has a right to know about risks to their health and have the best information to influence their decision making on their health and well-being. The CEC to minimize the adverse effects of the infodemic and strengthen the public health response to COVID-19 we offered workshops to:

- More than **1,500 people** including community leaders, community-based organizations, faith-based organizations, and youth groups.
- Recognizing the lack of technological literacy in many communities, the CEC team offered technical support and in person training on how to use platforms like Zoom or Teams. Digital and health literacy contribute to disparities in the access of health information.
- The COVID-19 pandemic has highlighted that health equity is still not a reality as it is disproportionately impacting some of the poorest communities in Puerto Rico. Therefore, the CEC has been delivering protective equipment to communities that need them.
- More than **5,000 face masks** and hand sanitizer have been delivered. We also participate in health fairs and Coviveos of the Department of Health talking about COVID-19 prevention

##### Vaccination Efforts

We have also brought COVID-19 vaccination events directly to the communities; recognizing the lack of access and mobility that many residents of vulnerable communities in Puerto Rico have. This in collaboration with the Colegio de Médicos Cirujanos de Puerto Rico (CMCPR) to bring vaccination clinics to vulnerable and remote communities around the archipelago.

In this project, our team provided the community's field expertise identifying the communities and coordinating with community leaders, municipalities, and organizations to arrange the successful vaccination clinics.

- As part of our efforts, **we have reached dozens of the most vulnerable rural and urban communities in Puerto Rico** in the following municipalities: Naguabo, Yabucoa, Maunabo, Luquillo, Guánica, Añasco and San Juan.

##### Suicide Prevention

The PRPHT and the Commission for Suicide Prevention of Puerto Rico have an established partnership to provide workshops and webinars on the topic of suicide prevention in Puerto Rico, both for the general population and targeted groups, such as community leaders.

- Our collaboration with the program was focused on the **community mobilization of leaders and health promoters** to participate in two workshops directed towards them and deliver educational material about suicide prevention in the communities of Ponce, Santa Isabel, Humacao, Las Piedras, Caguas, and San Juan.

## Risk Communication

The COVID-19 pandemic is not only a health crisis; it has been accompanied by an infodemic that may be just as dangerous as the virus. When emergencies arise, such as the COVID-19 pandemic, people need timely, accurate, up-to-date health information they can trust. Risk Communication and Community Engagement (RCCE) focuses on informing and engaging the communities on how to reduce their risk, behavior change and better protect themselves. RCCE is one of our priorities during the pandemic.

The CEC, in collaboration with two non-profit organizations Ciencia Puerto Rico (CienciaPR) and Mercy Corps, launched a community engagement-risk communication campaign called “Cuidate Cuidame”. We distributed a survey to understand people’s doubts and concerns about COVID-19 prior to designing the campaign. The survey was answered by 1,060 people from the 78 municipalities across the Puerto Rican archipelago. As part of our community engagement strategy and to reach people with limited Internet access, the team also administered the survey through phone calls. Survey results and subsequent face-to-face interviews with community leaders provided a deeper understanding of the challenges we needed to address, what themes and topics needed to be covered, and the appropriate risk communication and social marketing strategies for the campaign. One of the strategies we implemented was the use of influencers. The use of influencers as a successful social marketing strategy has been well documented in the literature. Messages proclaimed by social media influencers are often perceived as more reliable and compelling, and people are more likely to follow recommendations from their favorite influencers. Information presented by influencers can affect their audiences’ beliefs, opinions, attitudes, and behaviors. “Cuidate, Cuidame” matched Puerto Rican influencers with scientists and public health experts to discuss topics including traveling and celebrating the Holidays safely, how to socialize with others, and engaging in physical activity and sports during the pandemic, among others. Influencers included social media personalities, a former Major League Baseball player, and a beauty queen. These conversations allowed audiences to connect topics of great importance to their culture, identities, and daily lives, and effectively communicating public health issues with a focus on COVID-19 prevention and risk mitigation.

## Rumor Tracker

The Rumor Tracker is a collaborative project between Mercy Corps, Ciencia PR, Ciencia en tus Manos and the PRPHT. It consists of community and social media listening about the rumors and misconception in the COVID19 and vaccination discussions in our communities and social media. The project has the participation of community leaders and health promoters that are listening to the COVID19 rumors being spread in their communities. Our organizations have created educational materials and strategies for various social media outlets and for the community leaders to use within their neighborhoods. The PRPHT provides community engagement and coordination expertise; the leaders and promoters collect the rumors; and both work together to develop strategies to stop rumors and spread information in their communities. As part of the project, several workshops and webinars for community leaders have been organized about the rumors and misconceptions of the vaccination process.

## Media presence

- Lanzan segundo libro para enseñar a los niños a protegerse del COVID-19. Metro - September 4, 2020 <https://www.metro.pr/pr/noticias/2020/09/04/lanzan-segundo-libro-ensenar-a-los-ninos-a-protegerse-del-covid-19.html>
- Achú “Puts on the Mask” to protect from COVID-19
- The Weekly Journal by El Vocero - September 8, 2020 [https://www.theweeklyjournal.com/business-gallery/ach-puts-on-the-mask-to-protect-from-covid-19/article\\_d6cdf88-f231-11ea-8c3e-0388ea27900f.html](https://www.theweeklyjournal.com/business-gallery/ach-puts-on-the-mask-to-protect-from-covid-19/article_d6cdf88-f231-11ea-8c3e-0388ea27900f.html)
- Lanzan segunda edición de Achú
- El Vocero - September 9, 2020 [https://www.elvocero.com/actualidad/lanzan-segunda-edici-n-de-ach/article\\_332cefcf-eec7-11ea-8b7c-db3097a510c2.html](https://www.elvocero.com/actualidad/lanzan-segunda-edici-n-de-ach/article_332cefcf-eec7-11ea-8b7c-db3097a510c2.html)
- Atención niños: Achú regresa con más para prevenir el Covid-19
- La Perla de Sur - September 9, 2020 <https://www.periodicolaperla.com/atencion-ninos-achu-regresa-con-mas-para-prevenir-el-covid-19/>
- Interview of the Christmas prevention Campaign
- Walo Radio - December 21, 2020 <https://waloradio.com/yabucoenos-crean-cancion-navidena-sobre-las-medidas-para-evitar-la-pandemia/>
- ¿Qué tienen que ver el periodismo, la educación, la salud pública y la auto-gestión comunitaria? (Interview)
- Que es la que hay Radio Isla - March 25, 2021
- Vital el rol comunitario en la prevención
- April 4, 2021 - El Nuevo Día <https://www.pressreader.com/puerto-rico/el-nuevo-dia/20210404/281956020586828>
- Nuevo impulso a la vacunación. El Nuevo Día - June 25, 2021. <https://www.pressreader.com/puerto-rico/el-nuevo-dia/20210625/281651078076159>



## Community Engagement

### Comunidades Haciendo que las Cosas Pasen Virtual Summit

During March 2021, our team in collaboration with the Naguabo Somos Todos community-based organization celebrated the Comunidades Haciendo que las Cosas Pasen Virtual Summit. Community leaders (224) from 50 municipalities all over the Archipelago participated in diverse discussion groups about a wide range of public health, community development, and environmental topics. The discussion was specifically centered on the following themes: resiliency, environment, entrepreneurship, agriculture, leadership and public health. The Summit provided a space where community leaders, and organizations and professionals working with communities could connect and discuss the needs, challenges and achievements of many community-based projects that are ongoing in Puerto Rico. Through this event we were able to:

- Highlight the protagonist role of communities in the development of projects for the advancement of public health in Puerto Rico.
- Bring focus to the power and reach of the community leaders and how they are getting things done in their community projects.
- Create social networks of collaboration between the diversity of community-based projects around the island.

The future goal with the Comunidades Haciendo que las Cosas Pasen project is to ignite these discussions so that the community leaders' groups developed in the summit, can become community lead think tanks to which we would provide with the coordination and education tools to impact and create policy in Puerto Rico.

## Lunes de Líderes

Ever since the month of July 2020, every Monday we highlight the story of a community leader, the projects, dreams and struggles of its community. In each profile we present the life story of the leader, highlighting the ordeals and triumphs they confront to drive positive change in their communities. The profile puts special emphasis on the projects that each community has developed, and the success stories behind them. We share in every profile we highlight, their community's dreams and vision for the future. Our commitment to this project is to bring attention and focus to the people that are on the field, giving their all, making good things happen in their communities.

## TELESALUD

Programs led by the Office of the Chief Medical Director in collaboration with other programs within the PRSTRT & the PRPHT

### INICIATIVAS

- a. Coronavirus Relief Fund: Telemedicine for Puerto Rico Program Grant
  - Telehealth for Nursing Home Program
  - Puerto Rico Patient Registry Program
- b. AHRQ ECHO Nursing Home COVID-19 Action Network – Puerto Rico Hub

### COLLABORATIONS

- American Association of Retired Persons
- Agency for Healthcare Research & Quality – Human Health Services
- Alianza Contra Enfermedades Crónicas
- AppLivio
- Asociación de Dueños de Centros de Cuidado de Larga Duración
- Centers for Disease Control & Prevention
- Centers for Medicare & Medicaid Services
- Colegio de Médicos Cirujanos de Puerto Rico
- Departamento de la Familia de Puerto Rico
- Departamento de Salud de Puerto Rico
- ECHO Institute – University of New Mexico
- Federación de Dueños de Centros de Cuidado de Larga Duración
- Institute for Healthcare Improvement
- National Network of Public Health Institutes
- Project Outcome
- San Juan Bautista School of Medicine
- University of Georgia School of Public Health
- University of Puerto Rico – Medical Sciences Campus



## ACCOMPLISHMENTS

- ECHO Institute – UNM online Immersive Training completion as part of preparation for NNHCAN Program.
- Negotiate an exceptional inclusion and compensation for creating a cohort of LTCFs from Puerto Rico that due to lack of CMS-accreditation would have been unable to form part of the network. Those facilities being the primary beneficiary for our hub, the program would have been ineligible for funding. However, our cohort received full funding, and extension into a second phase of the program, which culminated on 8/27/21. This was done in collaboration with AHRQ's Office of the Subsecretary, the ECHO Institute – University of New Mexico, and the unwavering support of the Puerto Rico Hurricane Response Hub team.
- Garnered the support of key opinion leaders from within the LTCF community, all of whom have signed agreements and shown excitement to have their institutions be part of our program. In further efforts to achieve LTCF community buy-in, demonstrated our program and equipment for the best facilities in the island and made early adopters of the most successful and prominent LTCFs in Puerto Rico. Currently in the process of meeting with health insurance companies to discuss the program, long-term potential solutions to telehealth and telemedicine, identification of common goals, and opportunities for future collaboration.
- Have developed Continued Education Curricula for physicians, nurses, and other health care professionals that will soon be subject to licensure in telemedicine to continue to provide remote services after current moratorium on requirement expires.
- In a joint-effort with PRCCI, partnered with DACIMA to use their cloud-based platform to develop the Puerto Rico Patient Registry Program, which will begin with the COVID-19 Patient Registry, a tool that will inform public health interventions and policy while simultaneously serve as a repository of information that addresses the greatest concerns of COVID-19 survivors and novel relevant information that could benefit registrants. Platform is scheduled to launch before the end of September 2021. As part of the contractual negotiations with DACIMA, with the PRCCI-PRPHT team, training PRSTRT information technology personnel for subsequent independent development of questionnaire assessment tools using the platform was among the services included.
- Acting as the fiduciary entity for the Puerto Rico Department of Health, successfully applied and received internal official communication informing that proposal for CDC CCR cooperative program for CHW capacity building in Puerto Rico will be awarded funds approximately consisting of a total of \$9 million U.S. dollars, to be disbursed over the next 3 years.
- Opportunity for expansion of suicide prevention and mental health trainings and efforts by supporting the Comisión para la Prevención de Suicidios' efforts from within the PR Department of Health to develop proposal for Human Resources & Services Agency's Healthcare Workforce Burnout Prevention and Resilience Program as main collaborators, assigned with the roles of developing curricula for healthcare professionals, creating online courses, and, if possible, facilitating ECHO sessions, which encourages openness and participation for a dynamic and engaging content discussion.
- Request for Proposal opportunity for White Paper development about Social Determinants of Health approached from the lens of agism based on data of a recent study that collected information on the subject. If chosen, work could represent a great opportunity to actively contribute to health equity and awareness. It would also present an opportunity to strengthen relationship with AARP, that, in the context of currently ongoing and soon to begin point of care and community-based programs, could amplify awareness of our efforts through advocacy for persons of advanced age, while we are actively and in an innovative way, contribute to the advancement of the healthy aging decade plan by addressing common goals through future collaboration in matters that fall within the scope of the PRPHT. Memorandum of Understanding to further define and specify the nature of the intended collaborative efforts, not just with the PRPHT, but the PRSTRT at large, is currently being drafted by Mr. José Acarón for our review upon completion.



## IMPACT METRICS

### Telehealth for Nursing Home Program

- a. 107 LTCF resources and needs assessments completed
- b. 150/200 (75%) interested NHs visited and trained on use of TytoCare
- c. 47/200 TytoCare devices delivered
- d. AppLivio smart scheduling software designed specifically for LTCF business model is at the revision of second version of minimum requirements for approval prior to development stage, after adaptations and changes following interviews with target end-users, primary care physicians, point of care healthcare providers, and administrators.
- e. One abstract related to data from this project accepted for presentation at the 2021 APHA Annual Convention, CO.



## AHRQ ECHO Nursing Home COVID-19 Action Network – Puerto Rico Hub

- a. Phase 1: 16 weekly ECHO Sessions with cohort of Nursing Homes administrators and leaders.
  - Received Satisfactory evaluation by ECHO Institute session auditor.
- b. Phase 2: ## weekly ECHO sessions targeted at same group focused on mental health, wellness, resiliency, distancing measures, and vaccinations. Sessions' topics were mostly decided by participants to address the issues most important to them.
  - Received Satisfactory evaluation by ECHO Institute session auditor.
- c. Coordination of one individual interview as key informant to AHRQ about experience, needs, context in which program took place. Advocacy opportunity.

## Support to Initiatives within the PRPHT

- a. CASPER Project (2 waves, 1 additional smaller follow-up) – assistance with safety and best practices recommendations, clarification of questions during training sessions, staff monitoring, potential exposure management, facilitation of safety protocol compliance, and follow-up, as necessary.
- b. PRPHT Intramural Vaccination Clinics (2 days) – on-site to provide support if needed, information, and assistance in engaging nearby neighborhood bakeries, shops, and restaurants to seize the opportunity to vaccinate a greater number of people and simultaneously highlight the Trust's presence in the community.
- c. Community Engagement Program Teacher Focal Group – participated in small group conversations about current needs and concerns of teachers, their circumstances, ways in which they are managing the back-to-school period, and the current COVID-19 scenario, including SARS-CoV-2  $\Delta$  variant and its implications at school.

## FUTURE PLANS

- Launch of CDC CCR Capacity Building Program on 08/31/2021.
- Telehealth for Nursing Homes Program launch and related communications efforts to take be published starting Sunday September 5th, 2021.
- Patient Registry launch and related communications joint efforts with PRCCI's Dr. Amarylis Silva Boschetti scheduled to be done by mid-September 2021.
- Establishment of Continued Education Institute at the PRPHT aimed at continued education for public health and healthcare professionals by the end of September 2021.
- Support the PRDoH HRSA Healthcare and Public Safety Resiliency and Burnout Prevention Workforce Program proposal by contributing to writing, reviewing, gathering letters of commitment, and assisting with submission of proposal. If grant is awarded, the period would start on 01/01/2022.
- Meetings with health insurance KOLs to present program, platform, and equipment, and how it contrasts and surpasses with most currently available devices used, which lack any physical exam equipment and peripherals. Meetings with various health insurance leaders to take place by the end of September 2021.
- Conclusion of program includes completion of recruitment, training, delivery of equipment, starting telehealth clinical services, post-implementation periodic evaluation of the program, telehealth equipment use, satisfaction of physicians, point of care personnel, and residents, as well as the long-term payment and sustainability of the services provided for a two-year period. End of recruitment, training, equipment configuration and delivery, and enabling live visits in all sites to be performed by 11/31/2021. Maintenance evaluation, data gathering, analysis, and supported findings will be gathered for analysis for the rest of the duration of the program.
- Identifying, enquiring, and, if possible, coordination of formal training opportunities for future public health professionals by the end of the year.



## Operations Group

The PRPHT Operations continues to provide support for all the grants & programs with administrative needs such as purchasing, invoicing, SOPs, professional services contracts extension, agreements with municipalities, and others.

**Grants** - Supported and assisted on the preparation of the budgets and narrative of the submission of several grants' applications:

- RADxUP grants with Yale University to provide more COVID testing in Loiza, \$380K.
- We assisted on a grant to CDC for the opportunity to become a Collaborative partner for future CDC grants. The aim was to prevent the spread of future infectious diseases and or Pandemics like COVID-19 in Puerto Rico and the Caribbean. The review was to fund the proposal, but the funding was depleted.
- Assisted on submitting a successful grant to the USDA on Telemedicine for \$1M to bring telemedicine systems to 20 rural clinics across the Island, Vieques & Culebra.
- Assisted on submitting a successful grant to CDC for \$9M over 3 years to create and train a group of Community Health Workers, for the efforts of improving the health across the Island, Vieques & Culebra.
- A successful grant to HRSA for \$2,3M to improve the training of Physicians and Medical specialist across the Island on the use of Telemedicine systems.
- A not successful application to the CDC on a climate change initiative.

**Technical Support** - The online training events like the "Charlas Magistrales" on COVID, Brown Bag Lunch Series, Webinars for various programs, among other educational and/or online training.

## Achievements of the program:

### CASPER study for seroprevalence against SARS-CoV2 virus in Puerto Rico.

In collaboration with the Puerto Rico Department of Health (PRDoH) and the Center for Disease Control and Prevention (CDC), the operations team coordinated the purchases, deployments and retrievals of the materials needed to get blood samples throughout the 7 Health regions of Puerto Rico at the same time.

- CASPER I was done in late November of 2020, and we had 1195 interviews and collected 1906 blood samples.
- CASPER II was done in late February of 2021, and we did 1348 interviews and collected 1997 blood samples. CASPER-COVID19 Seroprevalence in PR

### Contact Tracing

The PRPHT led the contact tracing efforts that started in Villalba, and which spanned into 17 Municipalities. We worked continued with other municipalities until the fall of 2021, when the Puerto Rico Department of Health took over all the contact tracing efforts.

### Outcome Project

We continued our collaboration with the Outcome Project. Dr. José Bartolomei, Outcome Project CEO and Epidemiologist supported and strengthened our COVID contact tracing efforts.

### PRoDTEC

Assisted in the development of the Puerto Rico Diagnostic Test Evaluation Commission is a panel of experts coordinated by the Puerto Rico Department of Health to expedite the revision and approval of the use of in vitro diagnostic testing to detect the SARS-CoV-2 virus, responsible for the COVID-19 illness



## Publications

- Earthquakes Assistance - On February 2020 we assisted logistically in the survey of non-official camps of people fleeing their homes from the earthquakes in the southwest of the Island. A publication currently being prepared.
- CASPER I - November of 2020, we worked the logistic of the CASPER for COVID-19 Seroprevalence. This article has been submitted to Lancet.
- CASPER I - November of 2020, A second article from the CASPER is about the disaster preparedness from the visited homes. This article is in preparation.
- Contact Tracing – An article was submitted to the American Journal of Public Health (AJPH) on creating a COVID contact tracing effort in Puerto Rico.
- Contact Tracing – A 2nd article was submitted on the methodology and algorithms used in the Contact Tracing of this group.

## COVID Testing Workgroup

Over this last year we continued with the consortium of COVID-Testing Workgroup. The Clinical Laboratories associated with the group have gone from 300,000 tests last year to over 1,300,000 molecular tests. This is more than half of all the molecular tests done in Puerto Rico.

## PRPHT grants program

We assisted the Research group in the coordination of granting four 140K grants to promote research in Puerto Rico.

## HIPAA compliance

All the PRPHT Staff completed a HIPAA training and received a HIPAA certification. This has allowed the PRPHT program to be HIPAA Compliant.

## Summer Internship

The 2020 summer internship initiative with the University of Puerto Rico-Medical Sciences Campus and master's in public health COVID was successfully completed (many on the COVID emergency).

- 18 students completed their internship, which consisted of 8 groups that worked with Research Program (3 groups), Community Engagement (2 groups), HRHTAC (1 group), Communications (1 group) and Resource Development Team (1 group).

## KP4

We assisted in the coordination of purchases and installation of short-wave radios for the Puerto Rico Emergency Management Agency, including Vieques and Culebra.

## Death Certificate Course

We assisted in the creation of a Death Certificate Certification including disasters that is now required for physician's board certification.

## Presentations

Presented at the Northwell/PRSTRT COVID Response Symposium. At the Round Table on Vaccines and COVID at the Universidad Central del Caribe. Webinar on COVID and the workplace.

## CARES PRDoH Collaborations

We established an effective communication and collaboration with the Puerto Rico Department of Health creating and strengthening the COVID-19 pandemic response.

- Telehealth in nursing homes – We have been assisting in the logistics of purchasing, configuring, and delivering 200 Tytocare telehealth systems to nursing homes.



## RESEARCH PROGRAM

Marcos Lopez, Ph.D.  
Manager

### The Puerto Rico Diagnostic Testing Commission (PRoDTEC)

On February 4, 2020, the Secretary of Health and Human Services (HHS) declared a public health emergency in the United States (US) and its territories because of the emergence of SARS-CoV-2, the virus that causes COVID-19. The declaration was based on the potential impact of COVID-19 to the health and security of United States citizens in State and Territories or living abroad due to the SARS-CoV-2 virus initially detected in Wuhan City, Hubei Province, China, in 2019. This declaration also justified the enactment of emergency use authorization (EUA) of in vitro diagnostics for the detection and diagnosis of novel coronavirus SARS-CoV-2 subject to the terms of any approval issued under section 564(a) of Federal Food, Drug, and Cosmetic (FD&C) Act. Rapid and trustworthy detection of COVID-19 cases requires the availability of in vitro diagnostic tests to diagnose cases and monitor the outbreak.

Accordingly, the Food and Drug Administration (FDA), on February 29, 2020, issued a guidance updated on March 06, 2020, entitled “Policy for Diagnostics Testing in Laboratories Certified to Perform High Complexity Testing under CLIA before Emergency Use Authorization for Coronavirus Disease-2019 during the Public Health Emergency.” This guidance describes a policy involving laboratories employing tests developed and validated before the FDA issued a EUA to achieve rapid testing capacity in the US.

Also, on March 31, 2020, the FDA concluded that molecular-based laboratory-developed tests (LDTs) that are authorized for use by the singular developing laboratory are appropriate to protect the public health or safety (as described under the Scope of Authorization (Section II)) under section 564 of the Federal Food, Drug, and Cosmetic Act (Act) (21 USC § 360bbb-3), based on only on the current scientific evidence available. Under this EUA, FDA is authorizing tests coming from laboratories certified under Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 USC. §263a to perform high complexity tests for use in the single laboratory.

Nonetheless, the President of the United States, released on March 13, 2020, a “Memorandum of Expanding State-Approved Diagnostic Tests” (Memorandum). This Memorandum allowed the Department of Health and Human Services to promulgate policies that enable other states to authorize testing for COVID-19 similarly. Under this policy, because the States have oversight responsibility, “notification of SARS-CoV-2 test validation is not submitted to the FDA, and the laboratory does not submit a EUA request to FDA”. However, the states or territories must notify the FDA if they decide to choose this pathway for enabling test access.

Based on the situation faced by Puerto Rico of having a limited capacity for robust diagnostic testing for COVID-19, we propose the creation of the **Puerto Rico Diagnostic Tests Evaluation Commission (PRoDTEC)**. The PRoDTEC will first introduce and submit a protocol for accelerated evaluation of COVID-19 diagnostic tests that may be considered for use in Puerto Rico for approval by Puerto Rico Department of Health (PRDoH) during the COVID-19 emergency.

The PRoDTEC will have the responsibility of the accelerated evaluation of diagnostic methodologies and tests for COVID-19 during the public health emergency. The PRoDTEC will be composed of scientific leaders in the fields of biochemistry, molecular biology, clinical laboratory sciences, virology, pathology, epidemiology, and/or other pertaining areas pertinent for the diagnostic test to be evaluated. Upon completing the evaluation, the PRoDTEC will submit its recommendation to the PRDoH for immediate approval.

We had a meeting with the PRDoH Secretary, Dr. Lorenzo Gonzalez, and he approved the initiative. This project has been possible by the

**Q: What States or territories have chosen to authorize laboratories within that State or territory to develop and perform a test for COVID-19 under the policy outlined in Section IV.B of the Policy for Coronavirus Disease-2019 Tests? (Updated 8/4)**

A: As stated in Section IV.B of the FDA’s *Policy for Coronavirus Disease-2019 Tests*, a State or territory choosing to authorize laboratories within that State or territory to develop and perform a test for COVID-19 would do so under authority of its own State law, and under a process that it establishes. As noted in the guidance, FDA does not intend to object to the use of such tests for specimen testing where the notification of SARS-CoV-2 test validation is not submitted to FDA and the laboratory does not submit an EUA request to FDA, and where instead the State or territory takes responsibility for COVID-19 testing by laboratories in its State/territory during the COVID-19 outbreak.

The States and territories listed below have notified FDA that they choose to use this flexibility to expedite COVID-19 testing. As stated in the guidance, the FDA will not be reviewing the process adopted by the State or territory under this policy and is including this list here to provide transparency regarding the notifications submitted to FDA.

- Puerto Rico Department of Health
- State of Colorado
- State of Connecticut
- State of Maryland
- State of Mississippi
- State of Nevada
- State of New Jersey
- State of New York Department of Health Wadsworth Center
- Washington State Department of Health

*Figure 1 - Listing from the FDA showing the Puerto Rico Department of Health as a choosing to authorize laboratories within that State or territory to develop and perform a test for COVID-19 would do so under authority of its own State law, and*





collaboration between Dr. Jose Rodriguez Orengo (PRPHT), Marcos Lopez (PRPHT), Daniel Colon-Ramos (Yale University), and Eduardo O'Neill (CDC). Dr. Gonzalez requested us to move forward with the initiative and in less than 48 hours, Puerto Rico, as shown in Figure X, was listed as one of the states or territories that have chosen to authorized laboratories within that State or territory to develop and perform a test for COVID-19 under the policy outlined in Section IV.B of the Policy for Coronavirus Disease-2019 Tests.

We worked with Dr. Martin Montoya and Bryan Rivera to create a website, logo, and upload all the information.

PRoDTEC was instrumental in the review of three applications from clinical labs from Puerto Rico. It also received various requests from other entities. However, On August 19, the Department of Health and Human Services (HHS) announced a new policy concerning laboratory developed tests (LDTs). Under this policy, HHS has determined that the Food and Drug Administration (FDA) must engage in notice-and-comment rulemaking before requiring premarket review of LDTs. It was determined that the [FDA] will not require premarket review of [LDTs] absent notice-and-comment rulemaking, as opposed to through guidance documents, compliance manuals, website statements, or other informal issuances. Those seeking approval or clearance of, or an emergency use authorization (“EUA”) for an LDT may nonetheless voluntarily submit a premarket approval application, premarket notification or an EUA request, respectively, but are not required to do so, and FDA will adjudicate those submissions. Those opting to use LDTs in their laboratories without FDA premarket review or authorization may do so with the understanding that they would not be eligible for PREP Act coverage absent approval, clearance or authorization and would remain subject to regulation by the Centers for Medicare & Medicaid Services under the Clinical Laboratory Improvement Amendments of 1988. After this policy, PRoDTEC ceased its operations.

### **Participation in the Puerto Rico Science Coalition**

In November 2020, after the election of Pedro Pierluisi as Governor of Puerto Rico, two people from the Puerto Rico Public Health Trust (PRPHT) were appointed by Dr. Carlos Mellado, then nominee to be Secretary of the Puerto Rico Department of Health (PRDoH), to be part of the Puerto Rico Scientific Coalition (PRSC). The Coalition is an advisory group composed of scientists and physicians who have the responsibility of constantly analyzing the COVID-19 situation on the Island to issue timely recommendations to the PRDOH and the Governor of Puerto Rico.

The PRPHT appointees to the Coalition were: Dr. José Rodríguez Orengo, Executive Director and Dr. Marcos López Casillas, Research Director. Other members of the PRSC were Dr. Daniel Colon-Ramos of Yale University (Chair), Dr. Rafael Irizarry of Harvard University, Dr. Eduardo O'Neill of the CDC, Lillian Rodriguez of VOCES PR, Dr. Victor Ramos of the College of Physicians and Surgeons of Puerto Rico, and Dr. Victor Ramos of the College of Physicians and Surgeons of Puerto Rico. Victor Ramos of the Puerto Rico College of Physicians, Dr. Lemuel Martinez of the Puerto Rico Infectious Diseases Association, Dr. Kenira Thompson of PHSU, Dr. Iris Cardona of PRDOH, Fabiola Cruz Lopez, former Director of SMICRC PRDoH, among others.

### **COVID-19 Educational Presentations**

The Research Program (RP) program has been instrumental in providing information to the scientific community and the public regarding COVID-19, testing, herd immunity, immunity, and other topics. The PR area has made more than 40 virtual and face-to-face presentations in communities and public and private entities, including keynote speaking opportunities at the Puerto Rico Public Health Trust and the University of Puerto Rico, Río Piedras Campus. In addition, we have had extensive participation in the media including print, radio, television, and digital formats that have allowed us to educate the population firsthand.

### **Media Efforts**

Since the beginning of the COVID-19 pandemic the PRPHT has been very active in the media. As Research Manager I have taken on the responsibility of educating the population with data analysis and appearances in lives with David Begnaud from CBS, Jay Fonseca, Telemundo Puerto Rico (Dia a Dia program, Jay Fonseca and Telenoticias), Informe 79 Mega TV, Las Noticias Tele Once and ABC Channel 5 (Milly Mendez program), have helped to educate the public about differences in molecular vs. serological testing and the trends in COVID-19 cases. Op-ed and interviews in the press have occurred in media like the New York Times, El Nuevo Dia, El Vocero, Metro, Caribbean Business, Centro de Periodismo Investigativo, Primera Hora, among others. Radio appearances have also occurred in Programa Sin Tapujos WIAC 740 AM, Dime la Verdad Radio Isla 1320 Milly Mendez, Pegaos en la Mañana Radio Isla 1320 with Julio Rivera Saniel, Damaris Suarez Ahora Radio Isla, Jay Fonseca WKAQ 580, Normando Valentin NotiUno, Jugando Pelota Dura Ferdinand Perez NotiUno and Para el Record Debra Feliciano Ledee Walo 1320. All these opportunities were mostly made possible by the exceptional job performed by our Communications Director, Elizabeth Vale.

### **Puerto Rico Public Health Trust Grants Program**

With a vision to achieve sustainable health equity in Puerto Rican communities and improve their health quality of life through innovation, collaboration, and community engagement, was released the first Request for Proposals (RFP) Building the Science of Public Health for Puerto Rico.



As part of our effort during the pandemic of COVID-19 caused by SARS-CoV-2 and to promote public health and telehealth research in Puerto Rico, we are providing new avenues of funding for public health professionals and experts. We deployed an RFP for up to \$10,000 per project.

Eligibility for funding was based on the following main areas of research:

- Innovative projects whose study is focused on public health, telehealth and/or COVID-19 Projects.
- The development of an innovative product or service that could help maximize and optimize resources for public health and/or telehealth in Puerto Rico.
- Projects and research that integrate and study social and economic factors to generate a positive impact on public health in Puerto Rican communities.

The thematic areas of the projects were: secure external funding, to motivate and support researchers to obtain preliminary data to pursue additional local and federal funding for public health research and/or telehealth projects; change of topic, to motivate researchers to explore alternative public health and/or telehealth related issues that positively impact communities in Puerto Rico; and complete project and publish findings, to enable investigators to complete a research project in public health and/or telehealth to publish in peer review journals.

The following applications were funded:

### **1. FAMILY AUTO-CONTACT TRACING (FACT) OF SARS-COV-2 IN PUERTO RICO**

Principal Investigator: Robinson Rodriguez-Perez, Ph.D.  
Institution: University of Puerto Rico at Mayaguez

### **2. INTEGRATION OF TELEMEDICINE IN PUBLIC HEALTH ACTIVITIES TO PROMOTE COVID-19 PRE-DIAGNOSTIC IN PUERTO RICO**

Principal Investigator: Melissa Marzan-Rodriguez, M.P.H, Dr. PH  
Institution: Ponce Health Sciences University

### **3. INTERMITTENT SOCIAL DISTANCING TO CONTROL THE COVID-19 PANDEMIC IN PUERTO RICO: ROLE OF OUTDOOR POLLEN AND MOLD SEASONS**

Principal Investigator: Benjamin Bolaños Rosero, Ph.D.  
Institution: University of Puerto Rico, Medical Sciences Campus

### **4. FOOD ACCESS AND SECURITY, HEALTHCARE, AND GLYCEMIC CONTROL AMONG ADULTS WITH DIABETES DURING THE COVID-19 PANDEMIC**

Principal Investigator: Josiemer Mattei, Ph.D.  
Institution: FDI Clinical Research of Puerto Rico,

Projects closed on July 31st, 2021, and final reports are expected by the end of August 2021. We are planning a grantees symposium to share the results obtained through this initiative. Another RFP call is currently being planned.

## **Research Grant Applications**

During the COVID-19 pandemic, the Research Program (RP) contributed with their education and expertise in collaborations to submit grants to the National Institutes of Health. A total of five grants were submitted and four were funded. The following are the projects funded: "SARS-CoV-2 correlates of protection in a Latino-origin population". SARS-CoV-2 Serological Sciences (U01 Clinical Trial Optional), RFA-CA-20-039.

On July 23, a grant proposal was submitted with Dr. Carlos Sariol from the Medical Sciences Campus of the University of Puerto Rico and some other collaborators from Washington University in St. Louis and La Jolla Institute for Immunology, titled "SARS-CoV-2 correlates of protection in a Latino-origin population". This grant is an Emergency Awards: Research Projects in SARS-CoV-2 Serological Sciences (U01 Clinical Trial Optional), RFA-CA-20-039.



The request grant was for 3,091,010.00 for the whole project. The project aims to characterize the humoral immune response to SARS-CoV-2 in Puerto Rico by identifying the real prevalence of antibodies to this virus and its correlation with their neutralization capabilities, quality of the neutralization and disease outcome, to dissect the T cell's immune phenotypes and its correlation with the serological immune response, cytokine profile and disease outcome, and to establish the HLA and KIR genotype frequencies that modulate the development and durability of immune responses against SARS-CoV-2 infection and associated serological correlates. The proposal was submitted from the UPR-MSU. <https://grants.nih.gov/grants/guide/pa-files/PA-20-089.html>

“COVID-19 testing and prevention in correctional settings”. RADx-UP initiative: Notice of Special Interest (NOSI): Limited Competition for Emergency Competitive Revisions for Community-Engaged Research on COVID-19 Testing among Underserved and/or Vulnerable Populations. PI Dr. Emily Wang from Yale University. Total grant budget is \$3,500,000. My role is co-PI of the initiative. <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-20-121.html>

“Community-Engaged Research on COVID-19 Testing in the US Territories”. RADx-UP initiative: Notice of Special Interest (NOSI): Limited Competition for Emergency Competitive Revisions for Community-Engaged Research on COVID-19 Testing among Underserved and/or Vulnerable Populations. The Research Program along with Gabriela Algarín and Martin Montoya, developed a supportive collaboration with Dr. Marcella Nuñez-Smith of Yale University as co-PI of our component. Dr. Nuñez-Smith will work directly with the Eastern Caribbean Health Outcomes Research Network (ECHOHN), a research collaborative in four Eastern Caribbean islands, supporting several chronic disease research projects and enhancing health outcomes research and leadership capacity in the region; the flagship ECHOHN Cohort Study recruited and is following a cohort of community-dwelling adults (n=3000) to examine new risk and protective factors for chronic disease. Our role will be to impact a community in Loíza and provide them with COVID-19 testing. We will then be able to collect data prospectively and then model how different interventions affect transmission. The title of the application is: “Community-Engaged Research on COVID-19 Testing in the US Territories”. Total grant budget is **\$3,500,000**. My role is co-PI of the initiative. <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-20-121.html>

Puerto Rico COVID-19 Variant Surveillance Initiative – PRDOH/ARPA. The Puerto Rico COVID-19 Variant Surveillance Initiative (PRCVSI) is collaboration between the Puerto Rico Public Health Trust (PRPHT) and the Puerto Rico Department of Health (PRDOH). The PRCVSI will institute three core areas to establish a robust and dynamic molecular epidemiology surveillance program. Proposed core areas are (1) the COVID-19 biorepository, (2) COVID-19 high-throughput variant surveillance/ Nanopore sequencing and, (3) the viral variant neutralization evaluation. The proposed workflow changes over the process and time to an epidemiological intervention and characterization into a fast, smart strategy that will account for early monitoring and prevention of community spread of variants and transmission of potential SARS-CoV-2 variants on the Island. While the clinical impact of neutralization resistance performed in-vitro remains uncertain, results will highlight variants' potential to escape from neutralizing humoral immunity. The proposed surveillance strategy will allow the PRDOH to develop early protective interventions against the evolving epidemic. Total grant budget is \$15,600,000. My role is PI of the initiative.

## Special Projects

### Research Institute PRSTRT

The Research Program together with the Grants Program and the Intellectual Property Program led by Andreica Maldonado, and David Gulley respectively; initiated the planning for the creation of the Puerto Rico Science & Research Trust PRSTRT Research Institute. The project will incorporate the Biorepository and the implementation of the Symplectic platform and the flagship product: Elements.

Elements empower organizations to collect, analyze, showcase & report on all their scholarly activities. With automated data harvesting, plus rich researcher profiles, assessment & reporting functionality, and State of the art repository integrations, Elements is a comprehensive and authoritative scholarly information software solution.

### Future Trends

The Research program will continue to conduct data analysis and provide evidence-based information to help Puerto Rico overcome the COVID-19 pandemic with science and medicine. We will continue to seek grant opportunities to bring external NIH funding to PRPHT and other sources.

### HURRICANE HUB

The Puerto Rico Hurricane Response Hub-Technical Assistance Center (PRHRH-TAC) was the first program attached to the Puerto Rico



Public Health Trust, both part of the PRSTRT and funded by the National Network of Public Health Institutes (NNPHI). It was created in the aftermath of Hurricanes Harvey, Irma, and Maria to improve disaster epidemiology, post-disaster mortality assessment and environmental and occupational health recovery efforts in Puerto Rico and the Caribbean through training and technical assistance. Puerto Rico is one of five centers that were created in addition to those in Louisiana, Georgia, Florida, and Texas.

The PRHRHTAC ended its operations in May 2021, after completing its grant term; but it stood out for collaborating with a broad group of partners, solidifying alliances with federal agencies, local health departments, local governments, universities, professional organizations, and international, national, and local non-governmental organizations operating on the island.

## Achievements of the program in 2021:

### AHRQ ECHO National Nursing Home COVID Action Network

A partnership between AHRQ, the University of New Mexico's ECHO Institute and the Institute for Healthcare Improvement (IHI)—provides free training and mentorship to nursing homes across Puerto Rico to increase the implementation of evidence-based infection prevention and safety practices to protect residents and staff.

- a. In a 36-week program, about 34 nursing homes participated. The session includes a short lecture plus case-based presentations and discussion. Facilitated by small multidisciplinary teams of subject matter and quality improvement experts.
- b. The network's goals were kept SARS-COV-2 out of nursing homes. Early identification among residents and staff. Prevent spread between staff, residents and visitors. Provide safe and appropriate care to residents with mild and asymptomatic cases. Help nursing home staff implement best practice safety measures. Reduce social isolation for residents, families, and staff.

### Suicide prevention in disaster situations for health professionals

- a. PRHRHTAC in partnership with Suicide Prevention Commission of Department of Health offer a series of workshops aimed at medical professionals, nurses, emergency technicians, social work, counseling, and psychology professionals to identify danger signs, risk factors and protective factors that could trigger suicide attempts and intervene to prevent suicide attempts and suicides.
- b. The project had a duration of 5 months, and 1,567 health and mental health professionals were impacted.
- c. An overview can be seen on the dashboard: <https://gis.prsciencetrust.org/portal/apps/opsdashboard/index.html#/4fce65d288974718a9dee05ac7499a6e>
- d. Two online courses were created with the topics <https://academia.prsciencetrust.org/courses>
  - Suicide Prevention in Disaster Situations
  - The Role of the Media in Suicide Prevention

### Puerto Rico Community Assessment for Public Health Emergency Response for COVID19 and Disaster Preparedness in Seven Public Health Regions (CASPER)

Broad collaboration between Puerto Rico Department of Health (PRDoH), Ponce Health Sciences University, Centers for Disease Control and Prevention, The Puerto Rico Public Health Trust, and the Puerto Rico Hurricane Response Hub to assess disaster preparedness and seroprevalence for COVID19 in 1,617 randomly selected homes in Puerto Rico with up to 4 blood samples per home.

A workforce of approximately 300 interviewers, nurses, and field team leaders has been identified, trained, and contracted by the Hurricane Response Hub. The CASPER contractor workforce is an important public health resource that can be activated to do rapid community assessments for all types of hazards that may occur in the future. This effort will provide information on COVID19 vaccine readiness, disaster preparedness, and knowledge and attitudes towards COVID19.

#### The objectives of this project were to:

1. Obtain baseline prevalence data and monitor the distribution of SARS-CoV-2 in PR to support long term planning for the prevention and control of the pandemic.



2. Detect asymptomatic cases in the community to facilitate evidence-based public health intervention activities.
3. Assess household disaster and emergency preparedness and use of emergency kits.
4. Identify acceptable public health messaging options for communicating COVID-19 prevention and control efforts. Blood samples will be analyzed for IgM and IgG antibodies for COVID-19 providing a view of who is actively infected and who had an infection in the past. Two complete phases of this CASPER have been completed, and two or three future phases are planned.

### The major findings of the survey were as follows:

- 2.7% of the population in Puerto Rico had the SARS-CoV-2 infection.
- 55% of households are willing to get vaccinated against COVID-19.
- 38% of households have visual difficulty to read messages and 16% have impaired hearing.
- 33% of the households have language difficulty understanding English language public health messages.
- Most households have adopted appropriate prevention measures
  - 96.6% use masks
  - 85.6% avoid gatherings
  - 93.9% use hand-sanitizer
- 63% more stress was reported in a family member after the pandemic
- 26.3% of the households with a diagnosis of depression or other mental health
- Emergency plan 51.4% report have an emergency plan
  - 51.4% report have an emergency plan
  - 75.4% have a communication plan
  - 72.6% have designated meeting place outside de house
  - 67.2% have a designated area outside of the community if necessary

## Certification of Death with Emphasis on Disaster Related Death after Hurricane Maria in Puerto Rico

The Death Certification Working Group was formed in October 2019 during a launch meeting that included partners from Puerto Rico's Department of Health, Bureau of Vital Statistics, Academic Medical Institutions, the Puerto Rico College of Physicians and Surgeons, the USVI Bureau of Vital Statistics, the Centers for Disease Control and Prevention, the Hurricane Response Hub, NNPHI, and interested citizens.

Members of the working group committed to making a change in the policies governing the training of death certifiers in Puerto Rico. Together, the working group developed a new training curriculum in Spanish and English and this has been adopted by all medical schools in Puerto Rico. The Secretary of Health signed an administrative order requiring all physicians renewing their professional license to take this course for 3 continuing education credits. Now, death certifiers in Puerto Rico will understand the importance of this process, especially during a disaster. The working group has achieved a big step towards more accurate and timely reporting of death in Puerto Rico.

- a. Five institutions provide the course in English and Spanish for continuing education credits. More than 2,500 health professionals have completed the course. <https://academia.prsciencetrust.org/catalog/certification-of-death-courses>

## Communication & Marketing

Although for many the year 2020-2021 represented a year of pause, the Puerto Rico Public Health Trust (PRPHT) identified the need and responsibility, as the Institute of Public Health of Puerto Rico, to present communication solutions and guidance in the face of the COVID-19 pandemic.

The demand for communication and the challenges to achieve it created new opportunities and reinventions that allowed us to develop new communication channels and lead the country's message of prevention and education about the novel virus that brought the entire world to a halt. The development of collaborations and strategic alliances have been vital in charting the way forward during the emergency in line with our mission to achieve health equity in our communities through education, innovation, science, and technology. As part of our work in the second year of working in the PRPHT, we developed several collaborations to inform, educate and contribute to the change of habits during the pandemic. Some of these alliances were made with the government, organizations, community leaders and private sector, among others.



## Summary of Collaborations

### Mercy Corps & Ciencia PR

A concrete example of this effort was the one we carried out with Mercy Corps and Ciencia Puerto Rico with the “Cúidate, Cúidame” Campaign. The collaboration included a Memorandum of Understanding (MOU) between the parties for the launch, dissemination and implementation of a Risk Communication and Community Engagement Initiative for the COVID-19.

The objective of the project was to deliver preventive messages, aligned to this population, to address the continued increase in COVID-19 cases. It was identified that these messages should be 1) culturally and generationally relevant, 2) warning and educational (about the risks, in a clear and evidence-based manner), 3) that respond to current information needs, 4) that influence behavioral changes to slow down the number of coronavirus infections in Puerto Rico.

### The “Cúidate, Cúidame” initiative consisted of the following activities:

1. Social media campaign with prevention messages and suggested behavioral changes aimed at young adults in Puerto Rico.
2. Conversations on digital platforms between local public figures/influencers and professionals specialized in science about COVID-19.
3. Public relations efforts in local media to promote the campaign and its messages.
4. Use of the “Cúidate, Cúidame” concept and brand in the development of social media campaigns.

### The main objectives of the project are:

- Increase awareness of COVID-19 in Puerto Rico
- Address specific needs associated with COVID-19 in different populations in Puerto Rico.
- To induce changes in COVID-19 risk behavior in target populations.
- Promote efforts to decrease the COVID-19 infection curve in Puerto Rico.

### Dissemination Process

To maximize the reach of the message, we created a landing page to make the “Cúidate, Cúidame” campaign available to other organizations, academia, municipalities, and private companies, among others, therefore they could support us in the dissemination and distribution of the message. We also created the hashtag #CuidateCuidamePR to monitor reach and engagement on social networks. See in detail the communication pieces here: <https://sites.google.com/view/cuidatecuidamepr/home?authuser=1>

### Banco Popular de Puerto Rico

During the pandemic we created a strategic alliance with Banco Popular de Puerto Rico (BPPR) that consisted of clarifying doubts to its workforce about vaccination. The initiative included lectures to their employees in Puerto Rico and Virgin Islands with Dr. Marcos Lopez, Research Manager of PRPHT, creation of Q&A and support in the development of educational campaigns about COVID-19 and vaccination in social media, for employees and customers.

### McDonald’s Puerto Rico

The PRPHT joined a McDonald’s vaccination campaign to motivate people who have not yet been vaccinated to do so. The collaboration consists of the inclusion of our logo on coffee cups to create credibility in the message. Our contribution to this effort will include support from our scientific and health experts to gain access to communities and maximize vaccination. Content and social media exposure will be created during this process. This collaboration is ongoing.





## Main Communications Initiatives

1. **Death Certificate Training** – Organize and Manage the press conference coordination, artwork, press release and social media development.
2. **Echo Project** - Trained in Echo Project, moderate the third edition Hurricane Preparedness during the COVID-19 pandemic for 6 weeks. Promotion's development and dissemination in social media.
3. **Hurricanes Preparedness Guide 2020 & 2021** - Development of a Hurricane Preparedness Guide for 2020 considering the COVID-19 eventuality. It was revised this year for the 2021 Hurricane Season according to the evolution of the virus and the use of shelters during the pandemic.
4. **CASPER Project**- Develop all communications information, landing page, press conference, press releases and social media strategies, among others.
5. **Suicide Prevention in Disaster Situations Course**- Promotion and social media reach strategies.
6. **Salud Publica al Mediodía (SPM)**- Digital program that was developed with the purpose of bringing first-hand analysis of data on the development of the COVID-19 pandemic in Puerto Rico and the world, among other public health issues. After more than 100 episodes, the program was renewed with a new logo (SPM), a new season strategy and evolved to a weekly transmission to make it more dynamic and informative. The space has become a source of information for journalists, who quote us in their reports, and has had a loyal audience that weekly reaches 100 to 250+ views per episode.
7. **Puerto Rico Public Health Summit** - Development of the first institutional event of the PRPHT to create a distinctive event of our organization that will be recurrent annually. Due to the pandemic, it was in a hybrid format and because of the success of the summit, it will serve as a model for the development of events for other PRSTRT programs.

This report presents a summary of the initiatives that the Communication & Marketing area have done during the past year. As the Public Health Institute of Puerto Rico, we were able to capitalize on informing and educating the population about COVID-19, which has undoubtedly been the greatest public health emergency that this generation has experienced. We also gained the attention and respect of the media, becoming a reference and educational entity in the face of this novel virus.

This year we will focus our efforts on strengthening the foundation of the Puerto Rico Public Health Trust and will work to fund our initiatives and strategies. We will also be undertaking several initiatives aligned with our program priorities that are still under development, such as mental health and climate change, to diversify our efforts in Puerto Rico's communities. We will also begin to establish relationships abroad with Public Health organizations in other jurisdictions to reach out to Puerto Ricans in the diaspora, as our mission states.

## Puerto Rico Public Health Summit 2021 (Apr, 2021)







Puerto Rico  
Science, Technology  
& Research Trust

PUBLIC  
HEALTH



Puerto Rico Vector  
Control Unit



## Description of the program

The Puerto Rico Vector Control Unit (PRVCU) was established as of September 2016 as part of a cooperative agreement between the Centers for Disease Control and Prevention (CDC) and the Puerto Rico Science, Technology and Research Trust (PRSTRT). The PRVCU aims to leverage Puerto Rico's capacity to control the *Aedes aegypti* mosquito, the vector for the diseases zika, chikungunya, and dengue in Puerto Rico. The Unit focuses on strengthening the capacity for vector control in Puerto Rico as well as implementing vector surveillance, creating innovative information systems, carrying out vector control operations, and boosting community engagement through citizen mobilization and education programs.



Figure 1: Representation of the three core pillars established by the Unit to implement an Integrated Vector Management model for Puerto Rico.

## Mission & Vision

### Mission:

The mission of the PRVCU is to protect the people of Puerto Rico from the *Aedes aegypti* mosquito, while educating and empowering everyone to reduce mosquito populations across Puerto Rico dramatically and sustainably.

### Vision:

By 2022, Puerto Rico has a modern and dynamic territory-wide integrated vector management program that serves as a local and regional research, evaluation and training center.

## Main Achievements

### Strong capacity building and International Recognition

PRVCU has a staff of more than 60 employees divided into three main divisions: laboratory, community engagement and field. This diverse group of professionals have developed in the last few years to increase the knowledge and capacity of Puerto Rico related with vector management. This past year alone, our staff has taken over 40 trainings in diverse topics including vector control technologies, communication strategies, CPR and new laboratory procedures.

In March 2021, the PRVCU staff participated in the American Mosquito Control Association (AMCA) 87th Annual Conference where we coordinated a symposium about the Wolbachia projects in the USA and had 3 oral presentations and 3 posters. During the conference, two of our staff (Rafael Saavedra-Hernández and Reynaldo Morales) were awarded the Boyd-Ariaz Grassroots Award for the best non-supervisory vector control workers. Rafael also won the first place for his poster presentation. In addition, PRVCU was selected as the host for the 2025 AMCA Annual Meeting to be held in Puerto Rico for the first time.



**Marianyoly Ortiz**

Presentación

**José C. Sánchez**

Afiche

**Julianne Miranda**

Presentación

**Rafael Saavedra**

Afiche

Premio Especial:  
Boyd-Ariaz Grass  
Roots Award**Reynaldo Morales**Premio Especial:  
Boyd-Ariaz Grass Roots Award**Nicole Nazario**

Afiche



Presentación

Unidad de Control de  
Vectores de Puerto Rico

Un programa del:

Fideicomiso para Ciencia,  
Tecnología e Investigación  
de Puerto Rico

Another important recognition was the appointment of Dr. Marianyoly Ortiz, our Associate Director, to National Science Foundation (NSF) National Ecological Observatory Network, Mosquito Technical Working Group. This 9-member panel advises NSF on the national mosquito surveillance infrastructure used to monitor arboviruses in mosquito populations. Likewise, Nicole Nazario, our laboratory supervisor was awarded a science policy fellowship by the Entomological Society of America.

### Main Achievements in Vector Surveillance

Laboratory capacity has been established in San Juan and Ponce and working at full capacity since 2018 and 2019, respectively, to support surveillance activities as well as testing for alternate control technologies. Current direction of PRVCU is focused on positioning us as a service center for municipality programs and other collaborators to establish stronger relationships that can lead to effective vector control.

### Expanded Mosquito Surveillance to historical dengue hotspots

On November 2020, the CDC Dengue Branch requested PRVCU to consider adding municipalities with historical presence of dengue hotspots. The PRVCU started deploying 10 AGO traps in those municipalities around the Island identified by the CDC. The municipality selection was based on municipalities with high incidence of dengue confirmed cases using Census Tracts with the idea to detect the presence of an arbovirus early enough to take preventive actions. Female *Ae. aegypti* are collected, identified, and submitted for arbovirus testing weekly.



Description	July 2020 - July 2021	To date (January 2018-July 2021)
AGO captured chamber processed	73,225	266,708
Total Ae. aegypti female captured	623,912	2,215,981
Total pools tested for arbovirus*	37,918	41,714
Total pools positive for dengue	45	50

(Table 1). The additional municipalities included: Juncos, Maunabo, Trujillo Alto, Toa Baja y Yabucoa. We continue our surveillance in the metropolitan region including San Juan, Bayamón, Carolina, Guaynabo and Dorado, as well as other municipalities like Caguas and Ponce.

### Expanded Arbovirus Surveillance to other municipalities and the Marshal Islands

On March 2020, PRVCU inaugurated their diagnostic molecular laboratory for arbovirus mosquito testing at the San Juan Laboratory. The PRVCU laboratory is following the Mosquito arbovirus reverse transcriptase polymerase chain reaction (rRT-PCR) assay (MAPA) developed by the CDC-Dengue Branch. This is a multi-target molecular assay intended for the qualitative detection and differentiation of RNA from dengue, chikungunya and Zika viruses in mosquito samples.

This surveillance system has been expanded to include samples from all our main projects, including samples from the PR metro region, Caguas, Ponce Culebra, Juncos, Toa Baja, Maunabo, Yabucoa and Caguas. In collaboration with CDC, PRVCU implemented and validated a mosquito superpooling method that allows us to test 10 traps in one single pool (vial), which reduces the test cost significantly. A single mosquito pool can cost \$10 while a superpool costs \$3.50.

In addition, the laboratory is now able to determine the dengue serotype (DENV-1, 2, 3, 4) if a mosquito superpool is positive for an arbovirus. This protocol follows the guidelines established by the CDC- Dengue Branch, creators of this technique. Table 1 shows a summary of the mosquitoes processed and the number of pools tested for arboviruses.

Given the international recognition of the PRVCU, samples from the U. S. Marshall Islands were received to be tested for arboviruses in the PRVCU molecular laboratory. We expect this service to continue for this and other islands.

### Deployed PRVCU personnel to conduct vector surveillance in the US Virgin Islands

In April 2019, PRVCU established a collaborative project with the United States Virgin Islands (USVI) Department of Health - Vector Control Division, to provide mosquito identification services, and design, develop and deploy a technology platform that will assist in their daily vector control/surveillance operations. During the project, the USVI Vector Control Division sent weekly mosquito samples to the PRVCU laboratory. By the end of the project in July 2021, the PRVCU laboratory had processed 7,241 samples collected using BG traps and identified 21,703 Ae. aegypti mosquitoes from the islands of St. Croix, St. Thomas, and St. John.

In addition to the technology platform and mosquito identification, PRVCU also collaborated with USVI to conduct a survey about the presence of mosquitoes in water cisterns. PRVCU employees were deployed to USVI to install traps in the residents' cisterns to determine if mosquitoes were breeding inside. The surveillance team visited a total of 1,858 households in the three USVI islands, and 24% of them accepted to participate in the survey (Table 2). Traps were installed inside the cisterns and in the overflow pipes and intake spouts. Preliminary results indicate that 57% of the cisterns have presence of immature mosquitoes (larvae or pupae) which suggest that cisterns are an important breeding site for mosquitoes in the USVI. This information will be used to determine the next steps necessary to control mosquitoes in the islands.

Metrics	Amount
Households Visited	1,858
Cisterns surveyed	342
Cisterns Positive for mosquitoes	188 (56.6%)
Mosquitoes identified as Ae. aegypti (larvae & pupae)	3,892 (89.2%)

Table 2: Preliminary results for the USVI Mosquitoes in Cistern Survey



## Main Achievements in Community Mobilization

The Community Outreach program adapted to the challenges of the Covid 19 pandemic

During the COVID-19 pandemic, the Community Mobilization (CM) Program was adapted for the new reality to educate and empower the Puerto Rican community. PRVCU adapted educational offerings to videos, virtual talks, and other digital support materials.

### Virtual Summer Workshops

During summer 2020, PRVCU developed eight (8) virtual workshops for children (5 to 16 years) in collaboration with the Puerto Rico Public Health Trust (PRPHT) and STEM Program, both programs of the PRSTRT. All these workshops are on the PRVCU Facebook page. This effort aimed for children to learn and practice prevention measures about public health problems and learned more about technology. A contest was conducted on Facebook requiring children to provide evidence of their participation in the eight workshops. A committee selected four (4) children that won gift cards sponsored by PRSTRT.

### Distribution of materials thru community leaders

The distribution of the repellents, larvicides, mosquito nets and educational materials is currently done mostly through community leaders because of the physical distance require by the COVID-19 protocols. Even though some of our activities have been reduced due to the pandemic, the team was able to have a significant impact this year with distribution of 23,586 educational materials and 9,481 repellents, plus diverse other activities (Table 3).

Activity/Material	July 2020– July 2021	Total to date since September 2017	
	Number of activities/ materials	Number of activities/ materials	Number of Municipalities
Educational booths	26	591	54
Educational talks	34	348	42
Community visits	1535	9,301	26
Informational visit	9	340	15
Workshop or training	13	18	6
Summer camps	6	27	8
Distribution of repellents	9481	114,319	77
Distribution of larvicides	404	5,602	48
Distribution of educational material	23, 586	167,269	77
Distribution of activity books	24	19,421	55
Mosquito nets	681	1,314	20

Table 3 Summary of Outreach Activities conducted during this period.

### Informational and Community Visits in Ponce

Given our Wolbachia project in Ponce, more than 200 community visits and meetings have been conducted, impacting more than 8,000 residents, community leaders, churches, government representatives, and other groups to introduce PRVCU and inform about the educational, surveillance, and control activities to be conducted in their communities. To enhance communications with the community, the team used loudspeakers on the PRVCU vehicles to promote key messages including the reduction of mosquito breeding sites. PRVCU has used the loudspeakers for more than 400 hours in Ponce.

## Mosquito Day 2020

World Mosquito Day is observed annually on August 20th, as it was the day in 1897 when British doctor, Ronald Ross, discovered that female mosquitoes transmitted malaria. In 2019, the governor of Puerto Rico signed a proclamation to declare August the Awareness Month against the Mosquito *Ae. aegypti* in Puerto Rico.

Due to the Covid-19 pandemic, the Mosquito Day 2020, was celebrated virtually in collaboration with the Ecoexploratorio. The event, called Virtual Science: Mosquito Week reached 93,024 people from 45 municipalities. This week included a total of 10 webinars with educators, scientists, and community leaders, two PRVCU educational capsules shared in Facebook, and one contest using the application Mosquitolo.

## “Guardianes de la Salud” initiative

The CM team implemented a new initiative, a virtual train the trainers. The trainees need to conduct a series of activities, including presentations to other people or breeding sites reduction activities to receive a certification as “Guardian de la Salud” or Health Guardian. The training is divided into four 1.5-hour sessions. The objective is to train the community and help them foster their leadership in mosquito control. PRVCU provided the trainees with the materials necessary to conduct their activities for the certification. A total of five (5) full training sessions have been conducted for a total of 71 trained participants, 19 certified “Guardianes de la Salud” and 299 people impacted by them (Table 4). Information about this initiative can be found at <http://prvectorcontrol.org/guardianes-de-la-salud/>.

**Unidad de Control de Vectores de Puerto Rico**  
 Federación para Ciencia, Tecnología e Investigación de Puerto Rico

**ECOexploratorio**  
 MUSEO DE CIENCIAS DE PUERTO RICO

**Ciencia Virtual: Mosquito Week**  
 24 al 28 de agosto de 2020

**Webinar**  
 3:00 p.m.

Fecha	Conversatorio con Científico 11:00 a.m.	Webinar 3:00 p.m.
<b>lunes 24</b>	<b>Interacción entre las variables climáticas y los mosquitos responsables de transmitir el dengue, zika y chikungunya en Puerto Rico</b> Dr. Pablo Méndez Lázaro, Catedrático Asociado, UPR Recinto de Ciencias Médicas	<b>Ciclo de Vida del Mosquito</b> Gitza Más, Educadora del EcoExploratorio
<b>martes 25</b>	<b>Vivir con Mosquitos: Realidad Inevitable o Falacia Tropical</b> Manuel F. Lluberas, MSc, IDHA, Director Ejecutivo Salud Pública	<b>Taller: La ciencia del Mosquito</b> Nelmarie Landrau, Educadora del EcoExploratorio
<b>miércoles 26</b>	<b>Mosquitos machos con Wolbachia: usando mosquitos para controlar mosquitos</b> Dra. Marlyanyoly Ortiz, Directora Asociada de la Unidad de Control de Vectores	<b>Lectura de Cuento y manualidades</b> Esmeralda Torres, Educadora del EcoExploratorio
<b>jueves 27</b>	<b>Trampas y repelentes naturales para controlar los mosquitos</b> Dr. Luis A. Bonilla Soto, Director del Departamento de Salud Ambiental, UPR-Ciencias Médicas 9:00 a.m.	<b>Conversatorio: Líderes comunitarios, científicos y el Aedes aegypti</b> Mariny Vázquez de Naguabo, Somos Todos, Delia Díaz Santiago del Proyecto Enlace del Caño Martín Peña, Brunilda Sabater y Julieanne Miranda de UCVPR
<b>viernes 28</b>	<b>Avances en el control de los mosquitos que transmiten el dengue en Puerto Rico sin uso de insecticidas</b> Dr. Roberto Barrera, Entomología en Salud Pública	<b>Métodos de Control del Aedes aegypti</b> Lorna Salamán, Educadora del EcoExploratorio <b>Concurso: Controla el Aedes aegypti</b>

**Registro:** [www.ecoexploratorio.org/cienciavirtual](http://www.ecoexploratorio.org/cienciavirtual) **Capacidad:** ZOOM 500 personas **LIVE** ilimitada

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Information about this initiative can be found at <http://prvectorcontrol.org/guardianes-de-la-salud/>.

Training dates	Trained people	Trainees who completed certification	People impacted by the trainees
October 19 to 22, 2020	14	8	81
November 30 to December 3, 2020	6	1	15
January 25 to 28, 2021	27	6	116
March 15 to 18, 2021	11	2	39
May 24 to 27, 2021	13	2	48
<b>Total</b>	<b>71</b>	<b>19</b>	<b>299</b>

Table 4 Number of participants in the Train the trainers



## Participation in the TV program “La Formula STEAM”

CM Team received an invitation from Dr. Greetchen Díaz to participate in her TV program “La Formula STEAM” in WIPR-Channel 6. Two science activities (experiments) were developed and recorded for the program. The first one aired on television on August 3rd, 2021 (Figure 3).



Figure 4: Picture of the CM Team with Dr. Greetchen Díaz and the first experiment.

## The Puerto Rico Vector Management Association reached over 100 members

To date, 103 individuals from different sectors (municipal, private, academic, among others) have become members of the Puerto Rico Vector Management Association representing 48 local municipalities and four additional countries (United States, Perú, Ecuador, and Mexico). There are 26 municipalities that have representation from municipal employees (OMME or DOH). Efforts will continue to recruit members using social media strategies as well as announcements using traditional media. All the members received a welcome kit (poster, calendar, and others) about the Association as part of the recruitment and retention process.

The first members meeting is scheduled for September 7, 2021.

## Vector Control Summit 2021

PRVCU is planning a summit on September 28-30, 2021, to celebrate the 5th Anniversary of the PRVCU and introduce the AMVPR to the public. The objective of this convention is to provide information about mosquito *Ae. aegypti* and vector control initiatives. This meeting will include presentations on new technologies and exhibits.

## Stakeholders' meetings

Due to the change of government in January 2021, the Puerto Rico Mayors Association and Federation of Mayors changed among other key stakeholders. For that reason, new meetings with these groups were performed to introduce PRVCU and share information for the municipalities (Figure 5). Also, PRVCU conducted meetings with Hon. Javier Carrasquillo from Municipal Affairs of the Government of Puerto Rico and Hon. Marially González Huertas, Vice-President of the Senate. All these meetings had good feedback, and they supported our activities.



Figure 5: Meetings to introduce PRVCU to new key stakeholders including Javier Carrasquillo from the Municipality Affairs Office at Fortaleza (left), the Association (middle) and the Federation of Mayors (right).



## CM Program was awarded the Chrysalis grant by the Entomological Society of America

Julianne Miranda-Bermúdez, CM supervisor, received a grant from the Entomological Society of America Chrysalis Fund Program. The project titled “An observational study kit of *Aedes aegypti* life cycle for middle schools’ students in Puerto Rico” provided 53 students with a kit that included all necessary materials to observe the mosquito life cycle at their school. The team developed student and teacher manuals to be available in Spanish and English.



Figure 6: Pictures showing the teachers' manual developed by the PRVCU and some of the students with their materials.

## Strong presence in traditional and digital media outlets

### Public relations and traditional media efforts

PRVCU with the support of its public relations agency, Burson, Cohen & Wolf (BCW) has established itself as trustworthy public health organization. For that reason, we have had a constant presence in the media with 100% positive coverage and messages about personal protection, mosquito breeding site reduction and new projects.

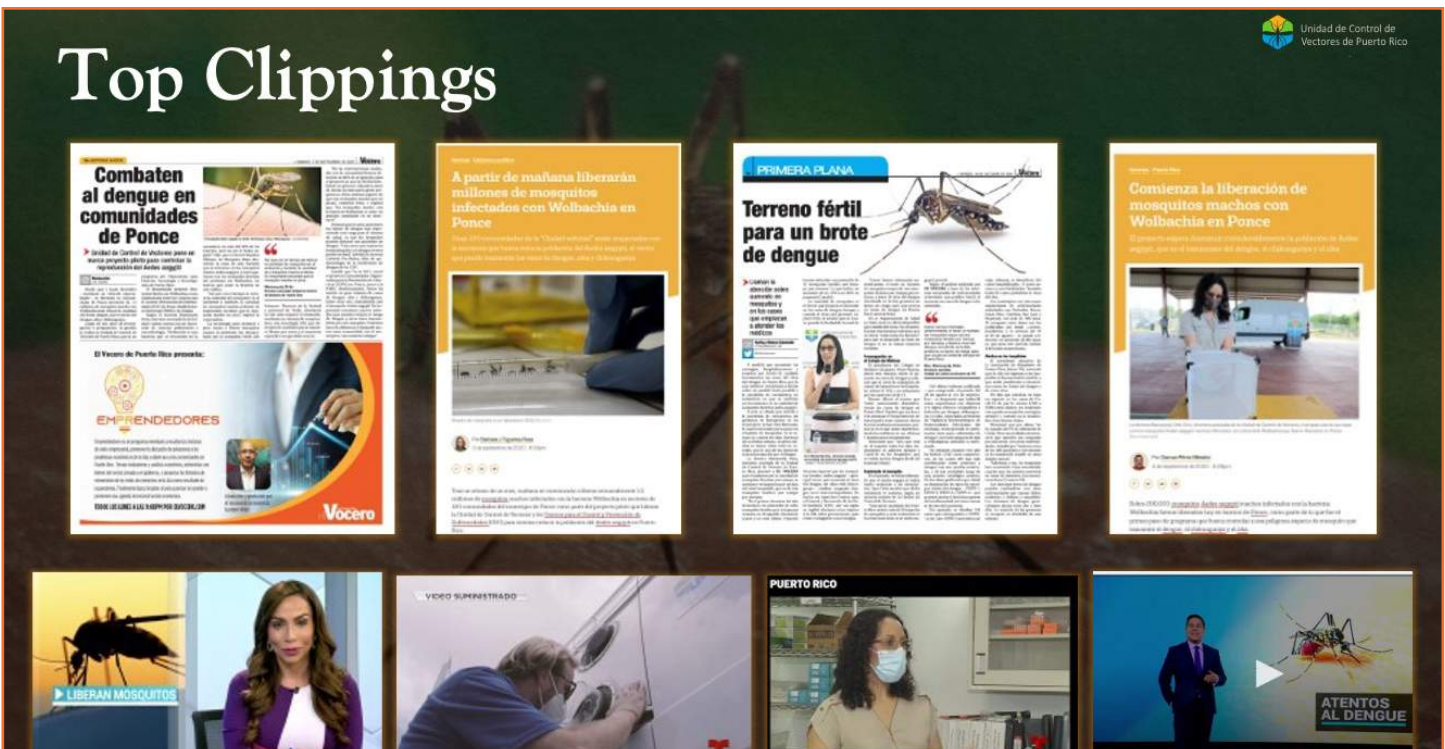


Figure 7: Top clippings of the PRVCU appearances in the main local media for 2020-2021.



In September 2020, PRVCU started the release of millions of male mosquitoes with Wolbachia, which was covered by the main local media in Puerto Rico. Later, with the increase in dengue cases and the announcement of the first dengue death of 2021, the media turned to PRVCU to provide information and education to the public.

For this period alone, PRVCU participated in 26 interviews and had a total of 84 publications. All the public relations efforts for this year have resulted in a non-paid publicity add value of \$170,960 for the program (Table 5).

Media Outlet/Index	Number of Appearances/Results				
	Jul-Sep 2020	Oct-Dec 2020	Jan-Mar 2021	Apr-Jun 2021	Total
Radio	11	1	2	3	17
Television	3	0	2	2	7
Newspaper	4	3	1	0	8
Digital	13	5	8	3	29
Social Media	15	4	4	0	23
<b>Total Appearances</b>	<b>46</b>	<b>13</b>	<b>17</b>	<b>8</b>	<b>84</b>
<b>Non-paid publicity Ad Value</b>	<b>\$73,385.80</b>	<b>\$41,373.74</b>	<b>\$46,000.00</b>	<b>\$14,700.00</b>	<b>\$170,959.54</b>
<b>Impressions</b>	<b>93,520,632</b>	<b>55,564,365</b>	<b>12,746,653</b>	<b>4,752,500</b>	<b>166,584,150</b>

\* Impressions, also known as ad views, are an estimate of the number of times an ad might be seen.

Table 5. Summary of the mass media communication efforts conducted during the 2020-2021 period and the associated value saved each trimester due to public relation efforts. This information was provided by the PRVCU public relations agency, BCW.

## Digital Content and Social Media

The main social media page used by PRVCU is Facebook, with a total of 16,513 followers (1,965 more than last year). New strategies to increase engagement and provide more relevant information include new hashtags, short interview videos, contests, and mosquito facts. In addition to Facebook, PRVCU has opened accounts in Instagram and Twitter as well as a YouTube channel where digital content has been increased to provide additional material to our followers. For example, the Mosquito Children's Book, an official offering of the PRVCU Education Program used as a reading exercise during school visits, is now a virtual reading provided via YouTube video. At this moment, the video on YouTube has more than 1,340 views. A total of 20 videos have been developed and distributed using this platform. The channel has 366 subscribers.

Social Media Channel	Number of followers
Facebook	16,513
Instagram	852
Twitter	224
YouTube	366

Table 6: Summary of the PRVCU social media accounts and the number of followers.

## Main Achievements in Vector Control

### Released millions of male mosquitoes with Wolbachia in Ponce

In September 2020, PRVCU started the weekly releases of millions of male mosquitoes with Wolbachia, a bacterium that lives in the cells of over 60% of the insects, but not in *Ae. aegypti*. When introduced to this mosquito, and only males with the bacteria are released to the environment, the males mate with the females without Wolbachia but because they are incompatible, these females lay eggs that do not hatch. This serves as a population control method that eventually reduces the population of mosquitoes in nature.

The project has continued for almost a year, with over 60 million mosquitoes released up to date. Main limitations have been the number of mosquitoes present in nature which has required a large amount of mosquitoes to be released. This amount has exceeded the production capacity of the factory and therefore, the areas to receive mosquitoes were reduced to only four (4) clusters in Ponce. The mosquitoes are shipped from California to Puerto Rico in passenger flights given the size of the boxes. This shipping mechanism has resulted in several delays or shipments lost, which has affected the number of mosquitoes to be released per week. Another challenge has been the difficult access to certain communities. For that reason, a combination of vehicle and manual releases has been implemented to allow the mosquitoes to reach difficult areas.



Figure 8: PRVCU field technician driving the release vehicle in certain communities in Ponce. Pictures show the inside (left) and outside (right) view of the vehicle.

Despite the limitations, the project has had significant accomplishments during its first year of implementation which are summarized in Figure 9. The efforts of the PRVCU team and collaborators have resulted in a maximum of 50% reduction in the *Ae. aegypti* mosquito population. These are very promising results, and we expect to further understand the effectiveness of the technology as a possible strategy for vector control in Puerto Rico. The project will continue until December 2021.

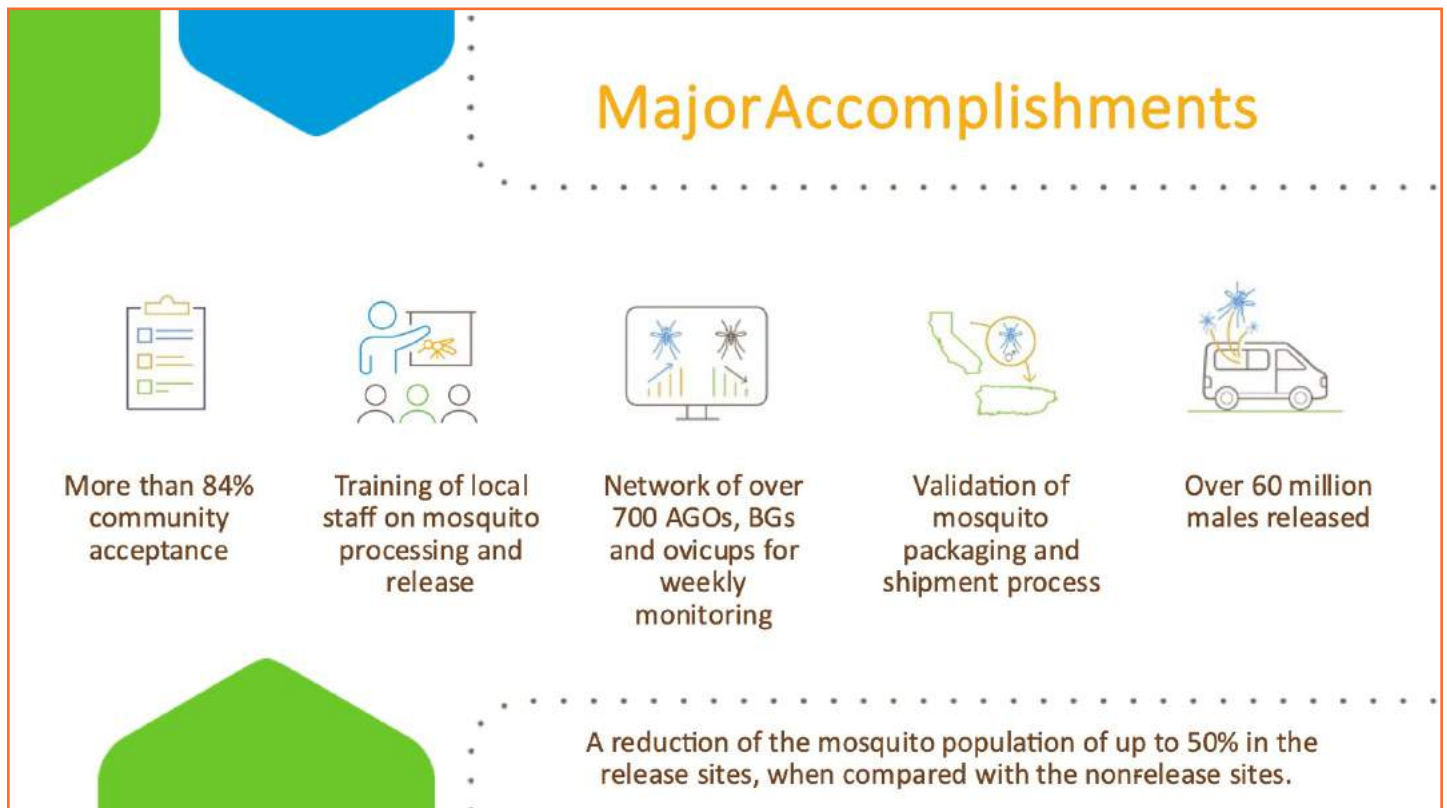


Figure 9: Main accomplishments during the first year of the Wolbachia project in Puerto Rico.





## Started project in Caguas to determine mosquito thresholds necessary to spread disease

In collaboration with CDC Dengue Branch, a proposal was submitted to the Department of Defense Deployed Warfighter Program to determine the minimum numbers of *Ae. aegypti* mosquitoes required to prevent rampant outbreaks of arboviruses such as dengue, chikungunya and Zika. The proposal was awarded to conduct a three-year project with a funding of \$900,000. The project implementation started in February 2021. Meetings were conducted with members of the community and the municipality of Caguas, resulting in a Memorandum of Understanding between PRVCU and the municipality. The municipality, CDC and PRVCU recorded informational videos to inform Caguas residents about the project.

A total of 3,843 AGO traps were deployed in nine intervention clusters to serve as control mechanisms for the mosquito *Ae. aegypti*. In addition, 240 AGO were installed to monitor the mosquito population and conduct molecular tests to detect the presence of arboviruses.

## Implemented rapid vector control response in a public housing project in San Juan

In July 2021, PRVCU was informed of a significant number of dengue cases in a public housing project in Puerto Rico. PRVCU provided a rapid response and worked with the San Juan Municipal agencies to clean up the area, install new dumpsters, clean the roof gutters (we found many eggs there), apply larvicide in targeted areas (e.g., water meter holes), had extensive community engagement and mobilization meetings almost every day, and flooded the area with nearly 200 AGO traps to reduce the adult mosquito population. We have also trained several children to look for and destroy larval breeding sites.

The result of these activities, after one month of intervention, was a reduction of the mosquito population of about 90% while the number of dengue-positive mosquito samples decreased by 100% (Table 7). There have been no dengue cases reported in the month ending 8/27. In comparison, mosquito populations in 4 traps outside of the intervened area, but within a few blocks have not changed and no dengue-positive mosquitoes have been found. All dengue viruses detected has been serotype 1.

Location	Average <i>Ae. aegypti</i> females/trap		% Reduction in <i>Ae. aegypti</i>	Dengue Positive Mosquito Samples		% Reduction in dengue positive
	7/10	8/12		7/10	8/12	
Inside Public Housing Project	62.0	6.9	89%	10	8	100%
Outside Public Housing Project	4.75	4.50	6%	0	0	N/A

Table 7: *Ae. aegypti* females and positive mosquito pools for dengue identified from Residencial Alejandrino in San Juan.

The effort in this public housing project is a result of our continuing development of this technique. We first used it in 2019 in Dorado where we reduced the mosquito population by 80%. We used it again in the earthquake refugee camps in early 2020 where the population was reduced by 90% and no dengue cases were reported in those camps even though many people were exposed to mosquitoes day and night. It is the basis of our approach in Culebra (cf. below) and we expect to use it as a foundation to fighting active dengue transmission sites in the future.

## Received grant from the Rotary Club International to start a project in Culebra

PRVCU received a grant of \$225,000 from the Rotary Club International and the Rotary Club of San Juan to conduct a vector control project in Culebra. In collaboration with the municipality of Culebra, we aim to control the mosquito *Ae. aegypti* and prevent epidemics caused by the viruses they transmit. The project is expected to last two (2) years and, if successful and funds become available, it could be replicated in other Islands like Vieques or USVI. The project started on July 20 with AGO trap installation (Figure 10) and structure survey to better understand the landscape and the number of structures on the island.

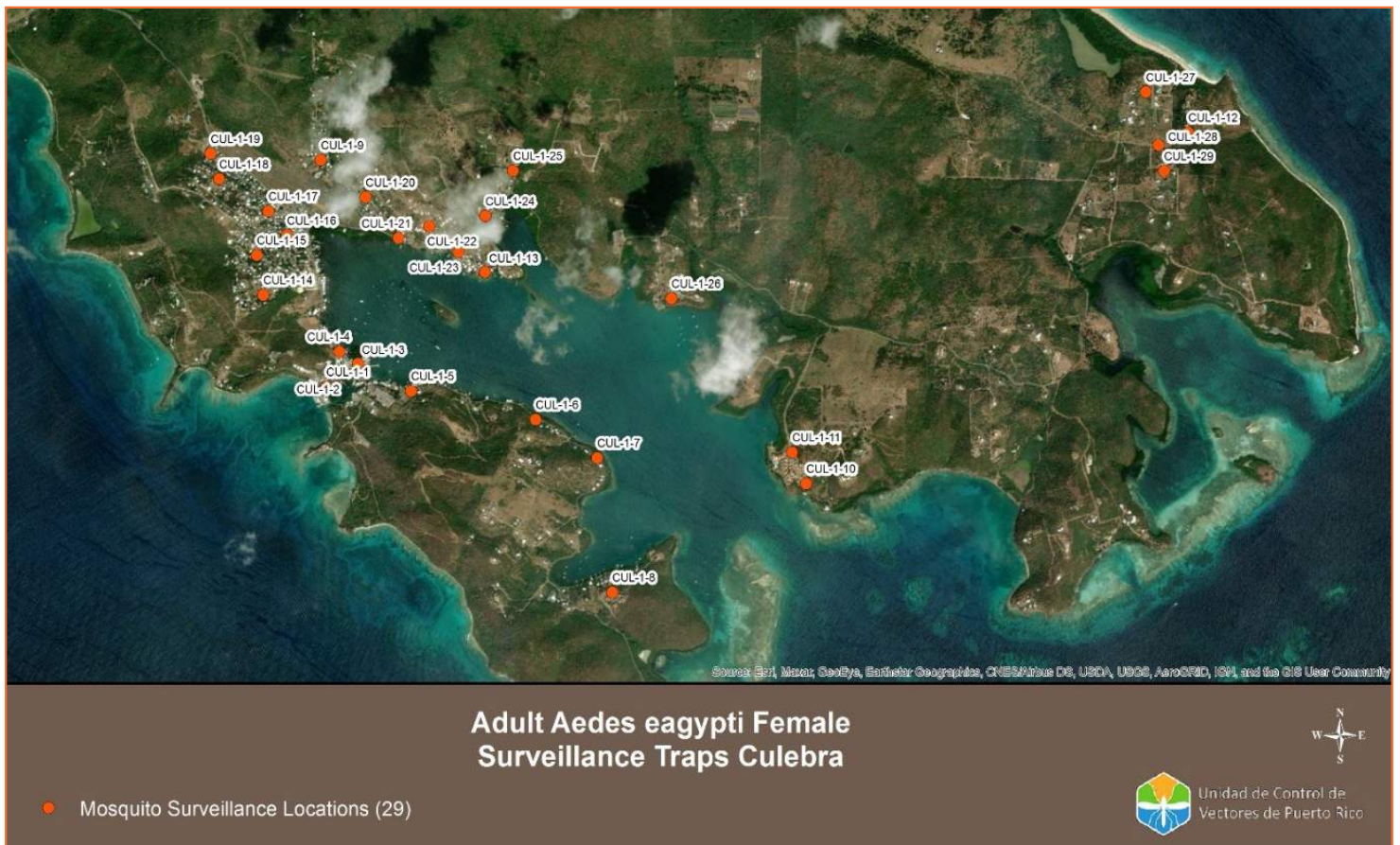


Figure 10: Map of the municipality of Culebra showing the location of the AGO traps (red dots) placed in Culebra to monitor the number of female *Ae. aegypti*.

## Future Plans

PRVCU's future plans fall into 3 basic categories: Evolution of the unit's traditional role, Developing an entrepreneurial arm, and Developing an international reach.

**Evolution of the unit's traditional role:** PRVCU have just submitted its 5-year renewal agreement with the CDC. It was approved for funding up to \$25,000,000 but the funding will not begin until Sept. 2022 as nearly all current CDC funding is being directed toward fighting the COVID-19 pandemic. This agreement recognizes the PRVCU as CDC's primary vector management partner in the Caribbean and anticipates future collaborations in the US Virgin Islands.

According to that agreement, over the next 5 years, the PRVCU will

- Transition into a support organization that implements IVM through building competence and capacity at the municipality level
- Train municipal workers, in concert with the AMVPR
- Provide technical support (mosquito ID, PCR, equipment calibration, etc.)
- Lead in IVM program development (including funding)
- Evaluate/implement new technologies as available
- Collaborate with the PR Department of Health

**Developing an entrepreneurial arm:** There are many companies developing vector management products worldwide and many of these products use novel technologies. These products normally require independent evaluation before they will be accepted into the US market. Puerto Rico is an ideal location for this evaluation because we have *Ae. aegypti* in significant numbers year-round, dengue and other viruses are endemic, and the PRVCU is the organization most competent to carry out this activity. Further, as an organization outside of government, the PRVCU is not subject to FOIA requests so, unlike universities, we can evaluate products at earlier stages of development without the threat of divulging corporate information through the FOIA mechanism.





Our efforts in this area have been hampered by the inability to acquire the necessary certifications. However, we secured the necessary certification (Pesticide Applicator Certification Category 11, Research and Demonstration) in June 2021 and will begin cultivating this activity more intensively going forward.

Specifically, we will

- Continue to collaborate with CDC projects
- Develop an entrepreneurial applied R&D arm, industry funded, capitalizing on our unique situation.
- US-based but with vectors and virus available year-round
- Non-governmental unit not subject to FOIA
- Growing influence throughout the Caribbean basin and, soon, Latin America (cf. below).

**Developing an international reach:** One of the problems of testing vector management technologies in Puerto Rico is that only those technologies approved for use in the US and Puerto Rico can be tested in the field. However, there are important technologies which are approved by the WHO but are not yet approved in the US. For those technologies to be approved, evidence must be acquired showing that they are safe and effective, and that evidence must be acquired by an independent agency that the CDC knows and trusts. Unfortunately, funds from the current and new CDC Cooperative Agreements cannot be used for PRVCU work outside of the US. A different funding mechanism must be found.

The PRVCU currently has two proposals under consideration by the CDC Center for Global Health (CGH); one was submitted in July 2021 and the other in August 2021 and both have an award announcement date of Sept 30, 2021. These proposals involve implementation of IVM throughout Central America and the Dominican Republic. In developing these proposals, we have established collaborators in each of these countries and now have a network throughout that region.

We believe that our proposals are well written and competitive, but we are limited to vector management and, while vector borne diseases are one of the main concerns in the Central American Region, CGH is also concerned about COVID-19 management. Further, the programs are large and only a few proposals will be supported so we expect the competition to be intense.

Nevertheless, we expect to at least have our proposal judged as “Awarded but Unfunded”. Under this designation, the CDC can renegotiate a proposal’s work plan and fund it later. That is, it would provide a mechanism to enable the CDC to fund international work by the PRVCU according to CDC’s needs.

For example, instead of using Wolbachia to reduce mosquito populations, a different strain can be used which blocks virus transmission by the mosquito. This strain, once introduced into the mosquito population, will spread and eventually the entire population will be unable to transmit most arboviruses. This technique, known as population replacement, is likely far more cost effective and sustainable than the population suppression technique we are using in Ponce. It is proving to be highly effective in many parts of the world, but it is not approved for use in the US. The non-profit organization that has developed this technique does not have the funding to pursue registration in the US and would need the help of the CDC to acquire that registration. The PRVCU could, with CDC support, conduct the independent field tests needed to support a registration application with the US FDA.

We anticipate that, within the next year or two, we will receive support to begin this type of work in Central America and the Dominican Republic. However, once we receive any international funding, we will be able to participate in international events anywhere in the world. We would be able to work with CDC’s Division of Parasitic Diseases and Malaria (DPDM). This division conducts most of CDC’s malaria mosquito-related work in Haiti (and other parts of the world). Haiti routinely needs short to medium term assistance with vector management and the DPDM does not have the staff to support a strong program there. The PRVCU could easily provide rapid deployment teams there, especially in support of emergency responses. We have the techniques to suppress emerging vector borne disease outbreaks (cf. above), the trained personnel, and a growing reputation as a quality collaborator with the CDC.

Thus, developing an international R&D arm will help us bring new technologies to Puerto Rico, will build competency within the PRVCU team, and will provide humanitarian relief to many of our neighbors and beyond. For these reasons, an international arm is part of the PRVCU’s future. Specifically, we will

- Develop/host collaborations with research faculty, including non-US institutions (e.g. London School of Hygiene and Tropical Medicine – one of our collaborators on the proposals mentioned above)
- Developing a much closer relationship with the SE Center of Excellence in Vector Borne Disease by becoming a collaborator on the renewal of this program.
- Building our program with USVI.
- Culturing our collaborations with other parts of Latin America, especially Central and South American and Dominican Republic as described above.



## Summary

The PRVCU has achieved much during its first 5 years. It has gone from nothing to a premier and respected vector management organization whose reputation for excellence is widely recognized. With the program now established and with growing acceptance by the Puerto Rican government and municipalities throughout the island, we are now poised to take on additional challenges. Some of this work will take us out of Puerto Rico but all of it will eventually benefit Puerto Ricans.

Challenges will remain of course. In particular, the coming fiscal year will be a lean one for the unit. Our principal source of funding, CDC and other public health agencies, have committed all of their funds to the current COVID-19 pandemic and little is available for other health threats such as vector borne disease. We expect this situation to alleviate by the end of September 2022 and for our funding levels to return.

However, we are confident that we will weather this challenge and that our next 5 years will see bigger and even more significant achievements. Our vision is that of a unit that leads IVM throughout Puerto Rico substantially reducing the threat of vector borne disease here and elsewhere and we are confident that. Although there is still much to do, the strategy that we are



Puerto Rico  
Science, Technology  
& Research Trust

**PUBLIC  
HEALTH**



**PRCCI**

Puerto Rico Consortium  
for Clinical Investigation

*Innovation • Investigation • Well-being*





Established in April 2016, PRCCI is a 501 c3, not-for-profit network of top academic and private research sites. We enhance clinical research speed and quality by driving performance and efficiencies across our 29 sites, leveraging strategic partnerships, and establishing world-class capabilities to position Puerto Rico as the preferred location for participation of Hispanics in clinical investigation in the Caribbean.

## Mission

To improve the impact, quality, and speed of clinical research in Puerto Rico through:

- Building a collaborative network of investigators
- Establishing best practices for the conduct of clinical trials
- Educating sponsors, researchers, and patients

## Vision

To become a preferred location to conduct clinical trials in Hispanics globally by 2025.

## Achievements

The Puerto Rico Consortium for Clinical Investigation (PRCCI) successfully completed its fifth year of operations on June 30th, 2021 and is celebrating its fifth anniversary. During this year the consortium grew to 29 members/clinical research sites in Puerto Rico with more than 116 onboarded physicians/ investigators. Out sites are located in academic centers, hospitals, family practices and specialized research centers across the island, covering more than twenty therapeutic areas. PRCCI brought to the island more than 70 clinical trial opportunities and executed 19 clinical trial agreements in oncology, infectious diseases, pulmonology, cardiovascular, and dermatology.

During FY 2020-21, PRCCI focused on expanding the number of clinical studies and the Consortium membership developing new relationships with Sponsors, Clinical Research Organizations and other important partners and vendors to bring more clinical study opportunities to Puerto Rico. The Consortium has been strengthened with the onboarding of new sites and investigators with different therapeutic expertise, specialties, and various clinical trial settings. Similarly, active evaluation of internal needs and opportunities within the PRCCI network resulted in the identification of new areas of opportunity. As a result, new initiatives emerged towards the expansion of our professional training program and continuing education program for health care professionals and the identification of other research opportunities such as the clinical trials for Covid-19

## Clinical Research Education Program

### Offered the 2nd and 3rd Clinical Research Coordinator Professional Trainings

PRCCI is proud to inform that Puerto Rico now benefits by having a larger pool of trained Clinical Research Coordinators (CRC). Fifty-three professionals have successfully completed a 10 week/30 hours Clinical Research Coordinator training program. This program included a comprehensive introduction to clinical research and its core functions. Certificates were issued upon completion of requirements. The second CRC training sponsored by the Puerto Rico Consortium for Clinical Investigation (PRCCI), in partnership with Barnett International, a leader in clinical research training. The third CRC training certificate program was developed by PRCCI this year including an improved curriculum. The new training also included an experiential component for participants. Our CRC course is the only one in the US and Puerto Rico which provided a live experience at a research center. Thirty-five professionals successfully completed this training. We continue to educate CRC professionals in Puerto Rico as a key activity to expand and implement clinical research on the island. Among the participants there were students from USA, Puerto Rico and Colombia.

CRC's have a critical role in the implementation of clinical trials ranging from screening and recruiting participants, overseeing the day-to-day operations of clinical trials to documenting daily operations. Clinical trials are a key research tool to look at new treatment ways to prevent, detect, or treat disease while testing its safety and efficacy for patients.





## Clinical Research Education to new Sites

Universidad Central del Caribe (UCC) School of Medicine: A new academic research center was developed by PRCCI and completed during this year. This new center will provide options to students and new and existing investigators to conduct clinical trials. The new clinical research center already has two investigators. PRCCI was able to secure a clinical research protocol for this site to help patients with congestive heart failure and diabetes providing them access to novel therapies.

Advanced Medical Research Center: This is a multi-specialty research site. PRCCI identified two new studies for Covid-19 patients for this site offering a new treatment alternative for patients.

San Jorge Children's Hospital: With the addition of a new site located in a pediatric hospital, we have been able to add new clinical research options for this patient population. We are in the process of identifying new studies for this site.

## HIPAA Compliance and Security Officer

The HIPAA Privacy and Compliance Officer continues monitoring activities and training for the different programs of the PRSTRT.

PRCCI is supporting the PRSTRT in the implementation of the HIPAA privacy and compliance program. A new HIPAA compliance and security officer was recruited and works under the guidance of the PRCCI Executive Director and the PRSTRT CEO. As of July 2021, 142 PRSTRT employees completed the HIPAA Awareness Training for Business Associates.

The new HIPAA Officer makes sure that the organization and employees from PRSTRT & PRCCI are in compliance with HIPAA regulations.

## Covid - 19 Initiatives

Puerto Rico Science, Technology and Research Trust and Puerto Rico Public Health Trust

- We are working on a collaboration to develop and implement the Puerto Rico Covid-19 patient registry. This unique database will have the capability to store data from Covid-19 patients for future analysis and patient education and research.
- Donald and Barbara Zucker School of Medicine at Hofstra/Northwell
- PRCCI is partnered with Dr. Frances Santiago-Schwarz, PhD to develop the scientific program of the PRCCI 2021 Clinical Research Summit with focus on Covid-19 and community participation in clinical research.
- PRCCI Sites and study opportunities - multiple Covid-19 potential projects have been evaluated
- We continue monitoring our investigational sites closely. We continue engaged in identifying Covid-19 and other strategic areas to bring studies to Puerto Rico.

## Other initiatives

New Collaborations (4)

- Wake Forest Institute for Regenerative Medicine (teaming partner for the submission of a grant to the DOD), awaiting decision.
- miR Scientific – new diagnostic agent for prostate cancer.
- Ortho Clinical Diagnostics proposal submitted for diagnostic testing trial.
- We continue a collaboration with Dr. Carlos Sariol and Dr. Marcos Lopez for the creation of a Biorepository for samples from Covid -19 patients.

## Key Performance Indicators (KPI's)

Performance Indicators by Functional Area	Target
<b>A. Business Development</b>	
Study Opportunities Pursued	70
New Study Contracts Executed	19
New Sites Contracted	4
<b>B. Operations</b>	
Number of Active Studies	22
Patient Enrollment Per Site (% versus expectations)	30.0% (industry average 35%)
<b>C. Quality &amp; Training</b>	
Number of Quality Validated Sites	77%
Number of Sites Visited by PRCCI during the year	47
Number of Training Events	17

\* KPI indicators were fully meet, patient enrollment per site was slightly below target due to the Covid-19 pandemic.



# 2021 -22 Objectives

As we enter the fifth year of operations there are four major strategic areas:

## 1. Patient interaction and engagement

We continued focusing on patient advocacy and engagement. Educating patients about clinical research and its benefits is crucial to raise awareness of clinical study and will increase study participation. We continued engaging with selected organizations and explore new needs, and opportunities. We are partnering with the pharmaceutical sector and Advocacy groups to continue with initiatives to reach more patients and sponsor events that address patient needs. We launched the Patient Education program to increase the level of patient and investigator engagement with the distribution of educational materials for patients with key PRCCI investigators.

## 2. Quality Assurance

We have continued the valuable partnership with Yale Clinical Center for Investigation (YCCI). During this fiscal year we engaged and completed the on boarding process of two new PRCCI sites. PRCCI closely monitored study recruitment targets and other important performance indicators for PRCCI. In addition, we have focused on internal monitoring through our Clinical Trial Management System, training, publications, sharing tools on best practices. We have established new quality services customized for our site members needs resulting in increased efficiencies reducing onboarding timelines.

## 3. Research Grants

PRCCI continued its efforts to identify new Research Grants in alignment with PRCCI's strategic objectives. We are revisiting the process of identifying areas of opportunity and resources needed for the successful implementation of the program.

## 4. Business development through quality and diversity

The Business Development and Operations teams facilitated the exposure of PRCCI sites to our new sponsors, pharmaceuticals and medical devices companies and others. We have established a new role the role as Scientific Advisor. Two resources were recruited in this area to strengthen the way we connect with sponsors and sites. Both individuals have a strong clinical background. We also implemented a new process in which we prepare a thorough presentation of each study protocol to our investigators to assist in the presentation of new study protocols. Investigators receive all the information needed to decide promptly if they have the patient population needed for the new protocols. In addition, we are searching for studies in a very strategic way using a site/investigator inventory to look for studies matching the areas of interest of our investigators and the industry pipeline which resulted in increased efficiencies. Participating in national conventions remotely, PRCCI members had the opportunity to liaise with potential partners in this industry.

Marketing strategies expanded during FY 2020-21 including the active and structured use of social media (LinkedIn, Facebook, Twitter, and Instagram), an updated and redesigned webpage ([www.prcci.org](http://www.prcci.org)) to promote PRCCI and each individual member site. PRCCI was able to engage with Sponsors and organizations with strong potential for new study opportunities such as Biophytis, Novartis, Milestone Pharmaceuticals, Lundbeck, Nexxon MedSystems, SilkPro USA, IQVIA, Pharm-Olam, Syneos Health, among others. We are focusing on mid-size and small size companies that are new to the Puerto Rico ecosystem

Nineteen new clinical studies were contracted and implemented during FY 2020-21. One of our newest member sites (Puerto Rico Medical Research Center) was selected for twelve new studies directly or indirectly through PRCCI.

To further influence the clinical research ecosystem, PRCCI continues various efforts to engage patient advocacy groups, and connect with representatives of medical affairs teams from sponsors with active business in Puerto Rico. We continue the strategic partnership with WCG Copernicus, and Bio-Optronics for the management of the Clinical trial management system (CTMS) which gives us the opportunity to capture data for our clinical trials and to increase the capabilities of our member sites and expose them to global sponsors.

The Operations team continued to strongly support ongoing clinical trials in our network. Covid -19 studies required from us an increased agility to manage studies during the pandemic. The team supported the sites assisting with the feasibility process as well as expediting response times to quality for new studies. Along with the Quality team, new investigators and clinical trial units completed their onboarding process.

We continue evaluating a Customer Relations Management platform that would continue to serve as the key tool to manage and track all our business relationships and contacts.

The outlook for next year's operations and business development growth and evolution is promising. We have seen a significant increase in the number and diversity of new clinical study opportunities to pursue innovation in areas of biological products, pharmaceuticals, medical devices, and Covid-19 studies. There will also be a strong contribution to enrich and strengthen Puerto Rico's research ecosystem by continue training new clinical coordinators, establishing new strategic partnerships and alliances as well as new funding opportunities in investigator-initiated research proposals and federal funding.

Furthermore, stronger relationships and new ways of doing business customized to the needs of our clients will further support our vision towards a stronger clinical research ecosystem that will impact our knowledge-based economy. Clinical Coordinators are critical for the implementation of clinical trials and for the performance of the sites, we will continue offering the Clinical Research Coordinator Professional Certificate Training program and other selected trainings to increase capacities in clinical research on the island. We will continue engaging with Medical Schools that are part of the consortium and develop a plan to expose students to the clinical investigation field.

This year was full of challenges and opportunities, and we embrace the new ways of managing remote based platforms and technologies to support remote based processes with a lot of success. We look forward to the opportunity to continue growing the clinical research ecosystem for the benefit of patients, the advancement of science and the Knowledge economy in Puerto Rico.

## Event Photos:

### PRCCI 5th Anniversary: Celebrating our Achievements while Embracing our Future April 30, 2021



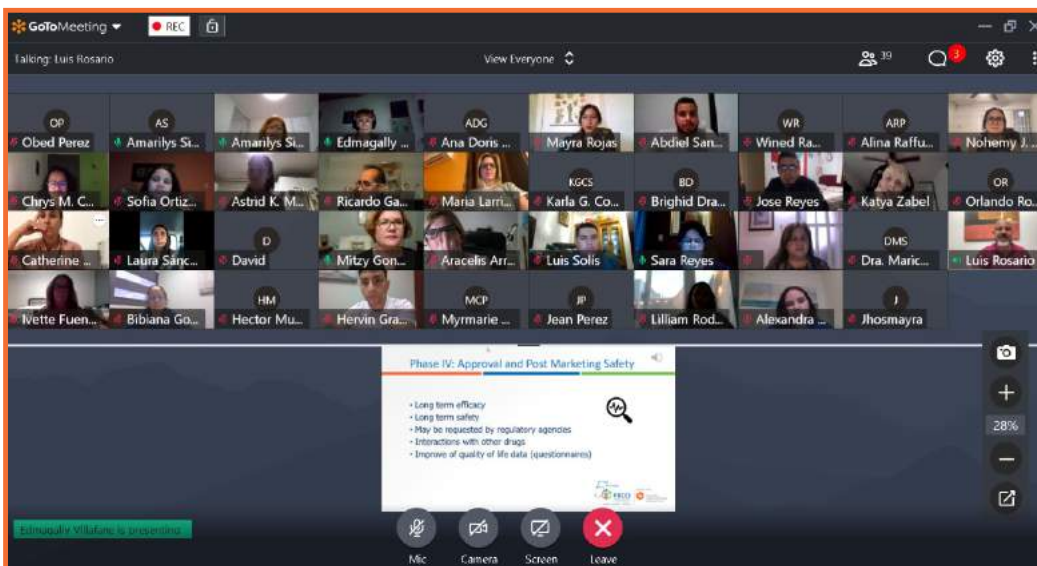




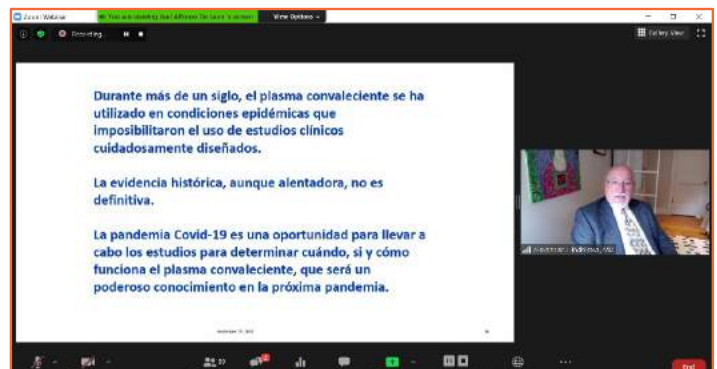




## 2nd and 3rd Clinical Research Coordinator Professional Trainings October – December 2020 & June – August 2021 Virtual Symposium: PRCCI / Northwell Health COVID 19: Current Concepts and Lessons Learned from the Northwell Health/New York Experience September 25 & 29, 2020



## Telemedicine Webinar: A New Era for Clinical Trials September 10 & 17, 2020





Virtual Symposium Day 1

**Temas: COVID-19: Epidemiología y Biología**

- Epidemiología de COVID-19
- Mecanismos de infección y respuesta biológica (celular, inmunológica)
- Intervenciones clínicas
- Entendiendo la patología severa

Virtual Symposium Day 2

Virtual Symposium Day 2

**COVID-19 RESPONSES**

**SARS CoV-2 Molecular Tests**

Puerto Rico Public Health Trust

Puerto Rico Science, Technology & Research Trust

Virtual Symposium Day 2

**Panel Discussion: Behind the Practice and Response**

Co-Chairs: Dr. Eric Cioe Peña and Dr. Joseph Ng

Northwell Health | PRCCI

**A New Era for Clinical Trials**

Join us to learn more about the benefits of using telemedicine and individualized hands-on initiatives to reduce risk of transmission among patients and staff during the pandemic and improve operating efficiencies.

**Speakers:** Andrés Calle, Founder of Applivo, M.S. | Dr. Wendy Matus, Director, Puerto Rico Public Health Trust | Amarillys Silva, Pharm.D., Executive Director, Puerto Rico Consortium for Clinical Investigation | Dr. José Rodríguez Orango, Executive Director, Puerto Rico Public Health Trust

**Moderators:**

**Register today** | Dates: September 10 & 17, 2020 | Time: 11:30am - 12:30pm

PRCCI | Puerto Rico Public Health Trust | Puerto Rico Science, Technology & Research Trust | Applivo

**Beneficios de la Telemedicir**

**Beneficios**

- Registra, recibe y envía información médica de la persona.
- Ahorra tiempo y dinero.
- Facilita el contacto con la persona en su ambiente.
- Comparte imágenes o videos en tiempo real.
- Reporta al momento efectos secundarios.

**Riesgos**

- La seguridad y la privacidad de la información de salud puede estar expuesta en algún momento.
- Puede haber problemas y demora con los equipos o dispositivos electrónicos.
- No todas las evaluaciones se pueden hacer de forma remota.

PRCCI | Puerto Rico Public Health Trust | Puerto Rico Science, Technology & Research Trust | Applivo

PRCCI | Puerto Rico Public Health Trust | Puerto Rico Science, Technology & Research Trust | Applivo

**The new era of Artificial Intelligence (AI) and Machine Learning (ML) focused on clinical trials**

- Increase Clinical Trial Success Rates
- Streamline recruitment and retention processes
- Reduce drug development time
- Automatically collect data and analyze in real time
- Predict the dropout risk for some patients

PRCCI | Puerto Rico Public Health Trust | Puerto Rico Science, Technology & Research Trust | Applivo



Puerto Rico  
Science, Technology  
& Research Trust

ANNUAL  
REPORT

FISCAL YEAR  
2020-2021

Entrepreneurship parallel<sup>18</sup>





Puerto Rico  
Science, Technology  
& Research Trust

ENTREPRENEURSHIP

# parallel<sup>18</sup>





## PARALLEL18



Parallel18 is a top-level, performance-driven international startup program with a social mission: offer entrepreneurs from all over the world access to high-quality business training, funding, and networks to help them scale globally while working to position Puerto Rico as a unique hub for innovative businesses and technology.

The program is part of the Puerto Rico Science, Technology, and Research Trust, a private non-profit organization created with the goal of maximizing Puerto Rico's participation and creation of jobs in the global knowledge economy by promoting investment and financing of science and technology research development. The organization manages and hosts over a dozen initiatives that range from grants and technical support to meetups and educational resources for researchers, entrepreneurs, farmers, investors, and other groups.

### Mission and Vision

We are changing the narrative of Puerto Rico's economy by promoting a diverse business community. We believe in creating opportunities for entrepreneurs of underrepresented groups in the innovation ecosystem and support their dreams of building a high-impact business that can reach the world. Our seventh international cohort was trailblazing the innovation ecosystem with 45% of the teams having female leaders, which is almost 3 times the average in the startup world. Meanwhile, 61% of the startups that have graduated from parallel18 are Latinos.

### HOW?

We nurture globally-minded startups with strong roots in their local communities and encourage the development of solutions to problems with a global outlook, providing access to exceptional resources tailored to streamline the way to their utmost potential.

We leverage Puerto Rico's advantages as a multinational business hub that offers the structures and protections of U.S. legal frameworks with cultural connections to Latin America and the Caribbean and a bilingual highly-trained workforce.





## WHAT WE PROVIDE



Training and mentorship.  
(pre18 12 weeks; P18 20 weeks)



A guide and methodology  
to track growth and  
structure the company  
for scalability.



Connections with  
potential customers in  
top companies.



Investment opportunities.

### EQUITY-FREE FUNDING



**\$20,000**



**\$40,000**

## Impact Metrics

During the five (5) years and eight completed (8) generations and one generation in process of the P18 program, parallel18 has received four thousand five hundred and eleven (4,511) applications from over seventy (70) countries, with two hundred ninety-one (291) companies accepted in the program, a very competitive acceptance rate of only six percent (6%). Among these, eighty-five (85) have Puerto Rican founders, and two hundred and six (206) are foreign, a local representation of forty-one percent (41%) from the overall companies that have participated.

### 5 YEARS OF P18



Generations



In process

**4,511**

applications received

**70**

countries applications  
were received from

**291**

companies accepted  
into the program

**6%**

companies accepted  
into the program

**85**

have Puerto Rican  
founders

**206**

have foreign founders

**41%**

local representation from the overall  
companies that have participated



For pre18, during its three years (3) and three (3) generations, we received nine hundred and three (903) applications from Puerto Rican entrepreneurs with developed concepts or prototypes. These efforts (from Gen.1 and Gen.3) led to forty-seven (47) Puerto Rican companies being selected for P18, demonstrating the quality and caliber of the pre18 pipeline that competed to join our international accelerator. Additionally, an average of forty-three percent (43%) of companies in the program had a female as their team lead.



The parallel18 program structure pursues the mission of positioning Puerto Rico as an international hub for innovation and entrepreneurship, and to provide local startups a global mindset and opportunities to go to market and export to international markets. The latest data informs that the total revenue generated by the companies from Gen 7 and Gen 8 during their participation in the program was three million nine hundred seven thousand six hundred seventy dollars (\$3,907,670) for a total combined global revenue for the first eight (8) cohorts of one hundred eighty-nine million one hundred ninety-one thousand nine hundred six dollars (US \$189,191,906).

Gen. 7 went through the program from November 2019 through April 2020 and graduated 31 international companies. On the other hand, Gen. 8 went through the program from May through September 2020 and graduated 13 Puerto Rican companies. Due to COVID-19 pandemic, Gen. 8 cohort was smaller and for the first time, it was a completely local & virtual cohort.

A total of one hundred three (103) Puerto Ricans were hired by Gen. 7 and Gen. 8. Among these, twenty-four (24) were full-time hires, thirty-three (33) were part-time and forty-six (46) were interns. Even though the pandemic made us have a smaller Gen. 8 cohort, our talent program showed strong numbers and tripled the hours of entrepreneurial experience earned by interns. A total of four thousand nine hundred fifteen (4,915) hours of entrepreneurial experience was earned by Puerto Rican interns during Gen. 7 and Gen. 8.

To foster the interest for innovating in Puerto Rico and to inspire more local entrepreneurs, parallel18 has continued executing its GiveBack Program. In it, participants must offer workshops to students on technology and entrepreneurial development, and provide mentorship support to emerging entrepreneurs at events of the Puerto Rico startup community, as mechanisms of empowerment. Last year, the program impacted sixteen thousand ten (16,010) people in Puerto Rico through GiveBack Efforts.

## Our Sub Programs

### P18VENTURES



Startups rely on investments to fund their operations and boost their company's growth. But raising capital is not an easy task. Even with a functioning business model and a clear market strategy, founders still need to educate themselves on how startup investment works and identify the right investors in order to secure funding. This is exactly what P18Ventures is focused on: offering our startups guidance on fundraising, connections to curated investors, the chance to apply for capital from our investment funds, and additional support aimed towards their capital raising endeavors.



P18Ventures has taken on an active investor role to supplement the existing investment landscape in Puerto Rico, and to further provide capital to the growing number of emerging startups in the local ecosystem and in the region. To date, P18Ventures has deployed two investment funds that have invested \$2.65M via 59 investments in 48 active P18 alumni companies. This year alone, P18Ventures executed an unprecedented 40 investments in P18 alumni to continue catalyzing the investment landscape in Puerto Rico and the region.

Our efforts to directly support our entrepreneurs with their fundraising and to develop the Puerto Rico investor community have resulted in P18 graduated companies collectively raising well over US \$126M in private capital, according to the most recent Parallel18 Impact Report. The island's investment landscape continues to grow exponentially, with Puerto Rico based investors deploying over US \$20M in parallel18 local companies in just the last five years, an unprecedented amount for local startup investment. Furthermore, the current cumulative revenues of the P18 companies has exceeded \$189M, with \$62M of those revenues obtained in Puerto Rico. This has resulted in the current overall valuation of the surveyed P18 companies surpassing \$571M, with approximately \$154M corresponding to Puerto Rican companies.



Our Matching Fund, which has been executed since the inception of the P18 program, is a follow-on matching investment designed to co-invest in promising startups graduating from parallel18 that are positively impacting Puerto Rico's economy. This funding opportunity stimulates local investors to deploy capital in parallel18 companies, and startups graduating from our accelerator to seek local investment when fundraising. With this fund, the Puerto Rico Science, Technology, and Research Trust matches private capital raised by entrepreneurs with a target investment of US \$75K (tickets have ranged between US \$25K up to US \$150K), in exchange for equity, convertible notes or via other financial instruments. Up until Gen.8, the P18Ventures Matching Fund has invested in 24 parallel18 companies for a total of US \$1.775M invested.

Our Business Continuity Fund, a special million dollar (US \$1M) impact investment fund, was created to support P18 alumni companies as a direct response to the downturn of the global economy caused by the worldwide COVID-19 pandemic. The fund's purpose was to ensure companies previously supported by the P18 program could weather increases or decreases in demand, or execute a modification of their business model or strategy to better take advantage of business opportunities that arose during the pandemic. The Business Continuity Fund was rapidly and successfully deployed in 39 P18 alumni companies, helping us become to our knowledge the only startup accelerator program in the world that launched an alumni focused emergency investment fund during the initial months of the COVID-19 pandemic. This effort strategically supported our mission to ensure the long term sustainability and impact of the innovation driven enterprises the Trust had already supported via its entrepreneurial programs, contributing to the maintenance of a 91% survival rate of the companies in the P18Ventures portfolio.

We are excited by the advancement of the investment landscape in Puerto Rico, with several investors getting organized around the foundation parallel18 has created to generate a consistent deal flow of investable companies. Local co-investors deploying capital in startups alongside P18Ventures this year include Aurora Angel Network, Semillero Ventures, Morro Ventures and Ashford Venture

Partners. Having more investment capital available in Puerto Rico is key to continue supporting the growth and retention of P18 graduated companies, and is evidence of the further maturity of the island's entrepreneurship and investment ecosystem.

Today, P18Ventures is the most active startup investor by number of investee companies in the history of Puerto Rico, which is providing our investment team unparalleled knowledge in the types of companies that can be the most attractive venture capital investments and that can best impact the island. To attract further capital, we also continue to grow a strong investor network of over 600 local and international individuals from the United States, Latin America, and Puerto Rico that receive access to curated investment deals on a monthly basis directly from P18Ventures.

## P18CONNECT



On the other hand, with our P18Connect program, we've also focused on providing business connections to our startups while at the same time helping Puerto Rico's corporate ecosystem innovate. This program has two (2) main objectives: match our high impact startups with big local companies and provide our Corporate Partners with the tools to spark innovative practices into their DNA. Our mission is to foster true interactions between corporations and startups. Through a series of meetings and events with decision-makers in top companies in Puerto Rico, startups from our programs are introduced to possible business opportunities to begin --or continue-- their journey to scale outside their original markets.

Although P18Connect Gen. 7 results were deeply affected by the pandemic, since changes brought by the shutdowns shifted partner's priorities, however, during Gen.8, corporate partners seemed clear when identifying their needs for corporate innovation, which led to a faster development of the relationships. During Gen. 7 and Gen. 8 there were one hundred fifty-two (152) unique interactions, fifteen (15) deals negotiated and six (6) deals were closed. Also, 32% of our alumni reported that they are still in contact with the corporate partners they met in the program and 24% said they closed business deals with local companies thanks to a connection made by parallel18.

In the past five (5) years, up to generation eight (8), we've engaged with over 87 corporate partners from over 40 industries.

## Parallel18 Achievements (2020-2021)

In July 2020, pre18 Gen. 3 closed its application process and in September that same year, forty-two (42) companies were accepted in the cohort, making it the biggest pre18 cohort in parallel18 history. 45% of Pre18 Gen. 3 were women led startups, and twelve (12) of these startups were accepted in July in the recent P18 Gen 9 cohort. Gen. 3 culminated its program on March 2021 with a two-day Demo Event.

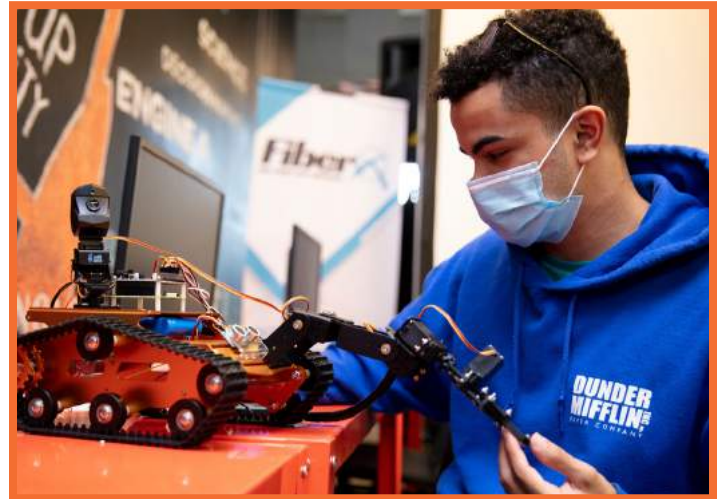


In December 2020, parallel18 celebrated its 5th anniversary with a panel called **parallel18 Turns 5: The Learnings and Challenges**, in which the organization celebrated the release and results of the Y4 Impact Report. The event discussed the five years of growth and establishment as an international startup program with the LATAM innovation ecosystem. Among the guests in the panel was Marisol Villalobos, program (pre18 and P18) alumna and co-founder of Amasar. She shared her experience with the program and highlighted the sense of globalization the program gave to the startup.

Another highlight for parallel18 was the launch of the Startup Directory, a digital tool that feature parallel18 startups and connected them with investors and corporate partners from all over the world. This novel initiative aims to streamline and automate the process by which our network of partners and investors interact with companies that are ready to receive investment and close deals.



In January 2021, parallel18 launched under its pre18 program, **Challenge to Innovate: NASA Edition**. This competition gave the opportunity to undergraduate students from universities of Puerto Rico majoring in electrical, mechanical, computer, agricultural, or industrial engineering, as well as computer science, the opportunity to think, research, and develop solutions with NASA patented technologies. The challenge helped participants create hardware solutions for the pharma or agricultural industry. The initiative was possible thanks to the Technology Transfer Office from the PRSTRT and the innovation center Engine-4 at Bayamón. The goal was to prepare students to present and explore the possibility of creating a startup derived from the project. Fifty-five students (55) were accepted in the challenge and were divided in eighteen (18) teams. The program had a retention rate of 84%, which means forty-six (46) students completed the challenge.



The technologies presented under the Agro Track were: FlashPose; Microwave-Based Water Decontamination System; and Multi-Stage Filtration System. On the other hand, under the Pharma Track these were the technologies presented: Precision Low-Speed Motor Controller; Passive Smart Container; and Improved Infrared Contrast Analysis and Imaging. Students had the opportunity to present their projects to a panel of judges in a Demo Day celebrated in May.



In March 2021 parallel18 celebrated its traditional Alumni Week. In this 5-days event, startups could connect with fellow alumni and the parallel18 team to share updates, next steps and asks. We had two major panels: **Frameworks and Insights on Growth** with Holly Chen and **How to build and scale platforms** with Nate Stewart and Dan Maccarone. We closed the week with our traditional session of **A Seat at the Table**. More than 40 startups actively participated in these events.

Currently, parallel18 is supporting its ninth cohort (Gen. 9). This group is composed of thirty-six (36) startups from nine different countries, such as Puerto Rico, United States, Mexico, Colombia, Argentina, Jamaica, Singapore, Italy and Canada. More than 60% of the selected startups are local, which shows the maturity and preparation of the companies. Fourteen (14) startups come from pre18 pre-acceleration program, which shows that they already come with a more competitive and aggressive mindset for the market. For the first time in 18 months, this cohort is working on a blended/hybrid format.

With the continued investments from our P18Ventures Matching Fund and the deployment of the Business Continuity Fund, the program has consolidated its position as a leader in the local investment landscape and the most active startup investor by number of investee companies in the history of Puerto Rico. The Business Continuity Fund was a significant achievement, helping us become to our knowledge the only startup accelerator program in the world that launched an alumni focused emergency investment fund during the initial months of the COVID-19 pandemic. Both of our investment funds have directly impacted economic development and job creation, with a total of 798 jobs created or retained by the 48 active companies in the P18Ventures portfolio. Our team is also proud to report that the overall P18Ventures portfolio maintains a 91% survival rate, with the Business Continuity Fund supported companies maintaining a 100% survival rate a year after its deployment as a response to the COVID-19 pandemic.

This year alone, P18Ventures executed an unprecedented 40 investments in P18 alumni to continue catalyzing the investment landscape in Puerto Rico and the region. Also, we executed for the first time a third capital deployment into one of our portfolio companies, a bridge financing in voice artificial intelligence company Vozy prior to its Series A. This shows the continued progress and maturity of our P18Ventures portfolio companies, and establishes the scaffold for additional follow-on investments that will continue to accompany our startups as they keep progressing towards subsequent funding rounds.

We launched the **How to Invest in Startups** investor education series to tackle one of the main issues regarding access to capital in Puerto Rico: the lack of understanding of the basics of being an investor. To educate the local community of potential and emerging investors, we hosted quarterly sessions moderated by a member of the P18Ventures team to provide best practices and practical knowledge on how to execute investment in startups. Despite the limitations of in person events brought by the pandemic, four webinar events were successfully completed this year featuring both local and foreign investors and thought leaders. Featured speakers included CDVCA managing director Alan Bernstein, active angel investors Miguel Ríos, Edward Betancourt, and Adam Beguelin, healthcare investors Dr. José Rodríguez Orengo and Mariano de Socarraz, and emerging markets ecosystem builders Jack Farrell from Malaysia and Wossen Ayele from Kenya.

The P18Ventures team continues to support parallel18 cohorts in all matters related to fundraising. This year, we engaged with the most recent pre18 pre-acceleration cohort, Gen.3, through a Fundraising Do's and Don'ts mentor presentation, weekly office hours, and curated investor invitations to Demo Day, all to help 40 early-stage Puerto Rican companies move towards investor readiness. We are currently doing the same for the 36 startups that started in the P18 Gen.9 cohort, for which investment content was shifted to the beginning of the program's curriculum to stimulate an even earlier commencement of fundraising activities by the participating companies.

Furthermore, with the hires of Héctor Jirau as our investment fund manager and Adriana Pérez as our investment analyst joining investment director Lucas Arzola, the P18Ventures team counts with a dedicated team that has expanded its capacity for startup scouting, due diligence and portfolio management, and investor recruitment.

## Parallel18 in the Media

The Weekly Journal / Wednesday, February 24, 2021

**CONTINUED FROM PAGE 1**

Throughout the presentations, attendees were encouraged to participate in polls to enhance the topics discussed and interact with the entrepreneurs in a Q&A format.

**Technology Focused**  
The most common denominator for these startups is that many of them are digital platforms or mobile apps. For example, Paperwork is a Figma-based online platform that allows aspiring entrepreneurs and merchants to work the permitting process of their companies. Paperwork compiles the information required for business permits in Puerto Rico to avoid the hassle of navigating through multiple websites.

Another business-oriented company is Caproni, a podcast publishing platform designed for entrepreneurs, freelancers and companies looking to grow their brand. Caproni allows users to publish on Spotify, Google Podcasts, Apple Podcasts and Youtube, among others. Users can also track their performance through the company's analytics system and sell their podcast merchandise.

Innovation abounded in the likes of Patia Tours, which performs virtual reality VR tours of the island with an educational focus. These virtual excursions feature live, interactive tour guides, immersive technology through Google Earth, customizable content and Q&A sessions for attendees. Each tour can host up to 1,000 guests at a time.

Vevevo also optimizes the use of VR technology through games and entertainment. Specifically, the company creates VR experiences for corporate events, tournaments and fundraisers.

Sustainability was also a key factor in some of the featured business models. VITAL, for instance, develops practical and zero-waste home essentials and accessories with a mission to "mainstream green" as quickly as possible. Likewise, Bana

educates, connects and inspires consumers to be more eco-conscious through a marketing network and its 21-day sustainable living program. In addition, the Vestigium Environmental Group (VEG) develops biotech as its sustainable water management system called bio-gardens, which emulate natural filtering processes through plants and bacteria.

“These startups are a very diverse and diligent group. Many of them are ready to grow and connect with potential clients, partners and even investors.”  
— Eduardo Padal, parallel18's Operations director

Meanwhile, Genster allows users to buy and sell vintage apparel and provides automatic payment to vendors. Its CEO, Vanele Martínez, explained that the company receives 12 percent commissions on every website transaction and has already onboarded more than 50 stores worldwide. It became the first vintage clothing brand to debut at New York Fashion Week earlier this month and has been featured on high-profile fashion publications like Vogue. The company's mission is to merge fashion with sustainable practices by reducing waste.



**48 / NEGOCIOS**  
EL NUEVO DÍA • [elnuevodia.com](#)

## Inversión sin precedentes

Un total de 39 startups recibieron inversión para continuar y escalar sus negocios, con herramientas de P18 y el Fideicomiso de Ciencias

SHARON MINELLI PÉREZ  
[sharon@parallel18.com](#)

Tercera y nueva empresa de Puerto Rico o con los ecosistemas en la isla millones de dólares de \$5000 a \$50000 en sus meses pasados gracias a la creación del Business Continuity Fund (BCF) de Parallel18.

Así lo informó el jefe de Operaciones de P18, Eduardo Padilla, y Lucía Arana, líder del brazo de inversión P18 Ventures. El fondo de emergencia de estos programas adherido al Fideicomiso de Ciencias, Tecnología e Investigación se dotó con \$1 millón.

"Es un fondo de inversión que no



Maria Vilabaz, cofundadora y presidenta de Arisan LLC, empresa que obtuvo \$75,000 adicionales

Las otras cuatro empresas que entraron en esta ronda de P18 Ventures fueron Agtool, The Live Green Co, BondPower y Fitco.

"El impacto en las compañías es grandioso. Nunca había habido esa cantidad de inversiones en un solo mes", recalcó Arana.

En orden alfabético, estas fueron las 39 empresas que recibieron en versión del BCF: Abasto, Arana, Backstaria, Bioactiva, Brands Of EduSoych, ElgieSeguros.com, EDCITED, Flame, Galily, Hunky, Intellicash, Libros.org, Li-eMatic, Laska, Lindada, Lister, My Healthy WOE, Nitas, AYO by Novology, Omics, Outfit, Pick

**NimB**  
NewBury  
Partners

## Parallel18 launches digital tool to spark global investment, business opportunities

Fecha: 10 de octubre de 2020



Una captura de pantalla del nuevo desarrollo del Support 11 tool and un momento de una de las conferencias de P18 Ventures de Puerto Rico, el 10 de octubre de 2020 en un espacio de trabajo en línea.

**NotiCentro** PROGRAMAS NOTICIAS TU TIEMPO MUPR DEPORTES

## Ciencia y Meteorología: Abren convocatoria para universitarios en Puerto Rico

'Challenge to Innovate: NASA Edition' busca estudiantes de ingeniería, ciencias de cómputo y electrónica.



Una transmisión en vivo de la conferencia de P18 Ventures de Puerto Rico, el 10 de octubre de 2020 en un espacio de trabajo en línea.

**VIERNES**  
10 de octubre de 2020

**NEGOCIOS / 35**  
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## Parallel18 rinde cuentas tras cinco años de operación

La aceleradora internacional ha graduado a 271 compañías, de las cuales 36% son de Puerto Rico

SHARON MINELLI PÉREZ  
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A cinco años de operación, la aceleradora internacional Parallel18 (P18) ha graduado 271 empresas en ocho generaciones, de las cuales 98 son puertorriqueñas, 80% continúan activas y 6% de las 80 que se retiraron

seguir a las participantes con mentores de alto nivel, inversionistas y potenciales socios de negocio.

Un componente que se resaltó fue el crecimiento del ecosistema de inversión local que operando inversiones locales, emprendimientos y corporaciones locales.



Cristina Tamayo  
Business Development Manager at parallel18

## INNOVATION ADDS VALUE: THREE POWER TOOLS THAT ENSURE CORPORATE SUCCESS

As with many business models, the term "corporate innovation" can get thrown around so broadly that it starts losing its meaning. So, let's focus it down. DifferentDictionary defines innovation as the process by which something is created and brought up to date by applying new principles, introducing new techniques or establishing successful habits to create new value. This suggests that when it comes to adding "new value" to corporations, innovation can serve as a powerful tool to effectively respond to a fast-changing market.

In the digitalization age, data shows that the rate at which these shifts happen has accelerated to

the point that since the early 2000s, 12% of Fortune 500 multinationals have ceased to exist due to market changes. Moreover, a recent survey conducted by McKinsey & Company found that 80% of executives believe that the COVID-19 impact will have a lasting impact on their customers' needs and preferences, their companies. This means one thing: innovation is crucial for any business to survive and thrive. But how to get there in these years?

At parallel18, a program of the Puerto Rico, Science, Technology and Research Trust, we see this first hand. Through our corporate innovation initiative, P18CORP, we help startups grow on the island

while promoting that Puerto Rico's biggest industries become more competitive. There have been some initial setbacks in the process, but these are the things that I believe will last.

- Supporting top employees to an innovation mindset:** Sometimes innovation comes from those who know the company best: its employees. However, support and compromise from top leaders are key. Having a structure in place that happens and gives employees the necessary tools is a must. For example, Verizon and Coca-Cola created their own innovation labs as spaces to nurture creativity within their companies.
- That's the purpose of our Corporate Innovation School.** To offer a curriculum to helping companies spark innovation from

within by preparing their employees with the tools to face and address their business' present and future challenges with a startup mindset.

- Forging strategic partnerships with smaller companies:** Hiring smaller, but highly innovative companies, to take care of things like customer service, automation or enhanced wellness programs means corporations can scale their competitive advantage. Their startups have plug and play solutions and experience dealing with corporate processes. To put it in perspective, that sometimes have their relationship work.
- Going back to the community:** When a company uses its resources for the greater good, such as investing in local talent, they become catalysts of the future. Giving back to the community through innovation programs, companies are betting on the generation of creators who will bring their innovation to their enterprises, rather than somewhere else. This also helps the company's clients perceive the enterprise as forward thinking and purposeful, a characteristic that 50% of consumers seek for when purchasing from a brand.

## Orlando Sentinel

## Jóvenes puertorriqueños en STEM llevan innovación empresarial a otro nivel en reto estudiantil "Challenge to Innovate: NASA Edition"

By INEBID COTTO  
EL SENTINEL, ORLANDO | JUN 18, 2021 AT 6:54 PM

Estudiantes universitarios en Puerto Rico se alzaron ante el reto "Challenge to Innovate: NASA Edition" con inventos tan futurísticos que son difíciles de pronunciar, pero representan una simple fórmula: apoyar el talento de la Isla del Encanto puede generar grandes resultados.

Esta es la meta de, Laura Delgado, ejecutiva fundadora de Parallel18 a cargo de la iniciativa que acogió a 16 grupos de universitarios de la Isla en las áreas de STEM (siglas en inglés), el acrónimo de los términos en inglés *Science, Technology, Engineering and Mathematics* (ciencia, tecnología, ingeniería y matemáticas), ingeniería eléctrica, mecánica, informática, agrícola e industrial, y ciencias de la computación.

«La misión? Presentar "soluciones comerciales con tecnología patentada de la NASA" en las áreas de manufactura farmacéutica, y agrícola», detalló Delgado en entrevista con *El Sentinel Orlando*.



## The Weekly Journal

POWERED BY Vocero

## Students Present Innovative Solutions at 'Challenge to Innovate: NASA Edition'

The Technology Transfer Office and pre18 highlight projects in agriculture and pharma



**Forbes** CENTROAMÉRICA PAÍSES LIFE COUNTRY BRANDING BRAND VOICE FORO MUJERES PODEROSAS FOR

# Parallel18 abre convocatoria para empresas innovadoras

Parte de los beneficios que ofrece Parallel18 es su visión, la cual impulsa a las startups para asociarse con grandes compañías.

## Future Plans

Parallel18 has established two principal programs with pre18 and P18, with the expectations of continually increasing the quality and impact of the entrepreneurial ecosystem in Puerto Rico. Our focus is to add more depth, to an already globally recognized program, in our offerings to our participants, alumni, and community stakeholders.

Amid the pandemic and all the changes and challenges going through the past year, our team keeps adapting and acting quickly constantly to offer more resources, connections and mentors to all startups founders to help them continue to develop and grow. The parallel18 team is still adjusting to the times and finding ways to impact underrepresented entrepreneurs in their goal of creating high-impact businesses.

As the goal is to continue positioning parallel18 and Puerto Rico as a hub for global collaboration and innovation, our value proposition continues to evolve to attract, foster and accelerate startups in Puerto Rico and internationally in a complex panorama. For that matter, we look forward to expanding our efforts in unattended gaps in the ecosystem, developing tools to assist our alumni, provide on-time connections and resources to our community, and deliver a world-class program to parallel18 founders.

The P18Ventures team continues to meet the Trust's strategic goals and institutional commitments from federal grants provided by CDFI and EDA it is managing, including developing a proposal to launch a venture capital fund affiliated with the Trust that will closely collaborate with parallel18. This initiative, which would significantly increase the investing capacity of P18Ventures and provide the potential for return of investment for the Trust and external investors, is in the final stages of approval by the Board of Trustees of the organization.

More local capital and more investments in startups with operational and commercial ties to Puerto Rico are needed to further support our startup ecosystem. We will continue evolving P18Ventures based on the capital needs of our entrepreneurs, while positioning venture capital as an accessible and validated asset class for potential investors in Puerto Rico.

## The parallel18 Team



**Sebastián Vidal**

PRSTRT

Chief Innovation Officer



**Johann Padilla**

Operations Manager



**Sylmarie Díaz**

Startup Executive



**Natasha Martínez**

Startup Executive



**Adalis Serrano**

Operations Associate



**Mónica Rocafort**

Business Development  
Manager



**Lissa Barreras**

Marketing Manager



**Menchu Agüeros**

Outreach Manager



**Samuel Betancourt**

Lead Creative Designer



**Allison Martínez**

Digital Content &  
Editorial Specialist



**Lucas Arzola**

P18Ventures  
Investment Director



**Adriana Pérez**

P18Ventures  
Investment Analyst



**Héctor Jirau**

P18Ventures  
Investment Manager





Puerto Rico  
Science, Technology  
& Research Trust

ENTREPRENEURSHIP



Colmena66

Tu Conexión Empresarial



## Program Description

Colmena66 (C66), is a program of the Puerto Rico Science, Technology & Research Trust. We are also part of the SourceLink® network, which has over 70 affiliate members across the United States. We facilitate the process of entrepreneurship by connecting entrepreneurs with the resources they need so that anyone in Puerto Rico can start or grow their business. We analyze gaps in the entrepreneurial ecosystem and work together with our Resource Network to find solutions.

The essence of an entrepreneurial ecosystem is its people and the culture of trust and collaboration that allows them to interact successfully. An ecosystem that allows for the fast flow of talent, information, and resources helps entrepreneurs quickly find what they need at each stage of growth. As a result, the whole is greater than the sum of its separate parts. - Robert D. Putnam, "Bowling alone: America's declining social capital", cited in Kauffman Foundation's ENTREPRENEURIAL ECOSYSTEM BUILDING PLAYBOOK 3.0.

As ecosystem builders, we are creating the invisible infrastructure to support entrepreneurs, including access points to the ecosystem so that anyone can participate, grow and now re-build.



## Mission and Vision

Our mission is to strengthen Puerto Rico's entrepreneurial ecosystem by providing a platform for business support organizations and programs in all sectors to identify gaps and work together to educate, facilitate access to resources, and develop tools to assist entrepreneurs to successfully start or grow their business and advance Puerto Rico's economy through entrepreneur led economic development.

That any person looking to start or grow a business in Puerto Rico has access to the necessary resources, regardless of their demographics, gender, and socioeconomic status by democratizing access to an equitable, robust, informed, and coordinated entrepreneurship ecosystem that will transform Puerto Rico into the island with the Caribbean's best business support network to drive economic development.



## Our services include:

1. **Hotline** – Our first point of contact with many entrepreneurs is through a phone call. When entrepreneurs use our hotline, we assess their needs, document their information and then follow-up with the resources they need.
2. **Resource Navigator** – With this interactive directory, entrepreneurs can search and connect with our Resource Partners according to their needs, geography, industry, development stage and type of business. Entrepreneurs can easily find the organization's profile, description, services and contact information, making the research and support process much easier.
3. **Central Calendar** – Access to opportunities and information is very important. We upload and share events in our Central Calendar weekly, and Resource Partners can also upload their own events to reach more people. In one place, entrepreneurs and resource partners can have a look at the activities being organized by the ecosystem across the island and take advantage of the opportunities.
4. **Newsletters** – We share with our audience a weekly newsletter every Monday to let them know about new opportunities, programs, services and events. We have over 14,000 subscribers and our audience continues to grow.
5. **How to Guides** – As we analyze entrepreneur's needs, we design step-by-step guides for the top frequently asked questions. We partner with experts from our network to provide entrepreneurs with the correct information from the best sources available.
6. **Personalized Action Plan** – When deciding whether to start a business, entrepreneurs may become confused with the overwhelming amount of information that is available. To solve this, back in 2019 we created the Personalized Action Plan to show entrepreneurs the steps needed to start, taking them from the idea to business planning to increasing sales. We customize the plan according to the entrepreneur's needs, industry, and stage of development to include the right resources that will benefit them the most. Over 1,800 entrepreneurs have already benefitted from using this tool.

## High Impact Goals

Catalyze the democratization of entrepreneurship

- Provide services that allow entrepreneurs from all backgrounds to have equality of opportunity when starting or growing their business
- Increase the numbers of business that are able to start or grow because of our services
- Provide assistance and tools along every stage of development

This goal aligns with the Puerto Rico Science Trust's priorities and its commitment to the island as it invests, facilitates and builds capacity to advance the economy.

### Facilitate access to resources

- Facilitate access to resources to entrepreneurs in all regions of the island.
- Identify gaps and work alongside Resource Partners to codesign tools
- Create and facilitate access to content
- Develop educational material for Resource Partners and assist them to better serve entrepreneurs

In the pursuit of democratizing entrepreneurship, it's important that everyone has access to resources and helpful information, education is a powerful tool.

### Lead the ecosystem building

- Facilitate data to Resource Partners to guide decision making and respond to gaps in the ecosystem.
- Work alongside Resource Partners to promote an economic development that is led by entrepreneurs
- Coordinate events to facilitate access and connections between entrepreneurs and support organizations
- Continue to find new resources and encourage collaborations among key stakeholders
- Actively gather and share data to inform (public policy, investors, entrepreneurs, Resource Partners, etc.)

This goal is central to Colmena66’s strategies and efforts: an integrated and diverse ecosystem that encompasses business owners, non-profits, academia, government, and other interest groups.

### Establish sustainability & funding strategies

- Seek funding and develop business development strategies for on-going support of the network.
- Develop and manage strategy to increase sponsorship funding for Colmena66 while protecting the brand from excessive commercialization or misuse.
- Identify opportunities for funding among Resource Partners to promote collaborations and increase the availability of financial resources in Puerto Rico to develop programs for entrepreneurs.

Access to funding is one of the biggest challenges entrepreneurs and non-profits face, Colmena66 has decided to make this topic one of its goals due to the importance it represents for many sectors in the ecosystem.

### Promote innovation

- Promote the development of businesses based on innovation
- Develop tools and materials to assist entrepreneurs seeking federal grants
- Increase the number of applications for SBIR/STTR

The Trust and Colmena66 understand that businesses in the innovation and research & development sector are of high interest because of their capacity to scale and create high paying jobs. These businesses work to solve the world’s most complex problems and help to build back faster after crisis.

## Achievements of this fiscal year 2020-2021

There is no doubt that 2020 has had a significant impact on all our lives. It is a year that will mark human history, highlighting the challenges of our modern times heightened by the COVID-19 Pandemic. During this crisis, established and aspiring entrepreneurs have needed a lot of support. Colmena66 has been there to inform, serve and track these entrepreneurs along their journey.



As an Active Network that has been evolving over the past years, Puerto Rico’s entrepreneurial ecosystem can be measured by its Network Access, Network Strength, and Network Reach. Our metrics include number of partners, hotline calls, web visits, directory searches, survey results, social media followers, interactions, and others. To monitor these metrics, we conduct annual surveys from both our clients and resource partners, we leverage our Customer Relationship Management tool, SourceLink ProSM, measure event participation, we use social media and, during 2020, we also launched the 2nd and 3rd editions of Levanta Tu Negocio, a small business disaster recovery platform, to understand entrepreneur’s needs through the earthquakes and the pandemic.

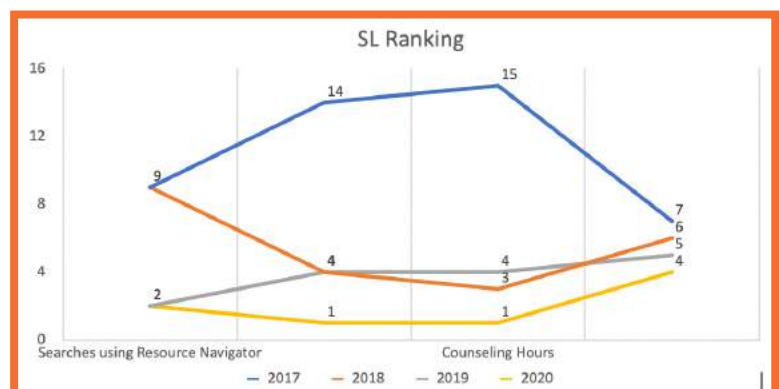
We’d like to share and celebrate some of our achievements during this period.

### SourceLink® Ranking

The SourceLink® community is made up of over 70 affiliated partners across the United States. In just 4 years, colmena66 has become one of the best performing affiliates, setting an example with its best practices and lessons learned. We are also ranked among the top 5 affiliates regarding the Resource Navigator, Counseling Hours provided, Entrepreneurs seeking assistance, and our Network Strength.

In 2020...

- 15,521 searches were made through our Resource Navigator. Rank: 2 of 31 affiliate organizations using The Resource Navigator
- We provided 330.8 counseling hours to





entrepreneurs, equal to 13.75 days straight of service. Rank: 1 of 57 Affiliates using SourceLink ProSM.

- We assisted 8,091 entrepreneurs through our hotline or email. Rank: 1 of 51 Affiliates using SourceLink ProSM.
- We showed the strength of our network to research, understand and communicate opportunities for entrepreneurs to link them with the right resources at the right time. Rank: 4 of 64 organizations using The Resource Navigator

“Colmena66 is one of 70+ affiliated networks SourceLink® partners with across the United States. With their vast knowledge and experience, we frequently call upon the Colmena66 team to share their successful tactics, strategies and innovative approaches to economic impact. They are consistently at the very top among all metrics for our statewide and commonwealth networks.” - Pola Firestone, Affiliate Relationship Manager for SourceLink®

## In the first six months of 2021 . . .

- We served 2,212 entrepreneurs
- We interacted 4,275 times with entrepreneurs to provide support and guidance.
- We made 7,632 referrals to our clients to make sure they get the resources they need.
- We provided 274.5 counseling hours, 83% of 2020’s total in just six months.
- We received 7,101 searches in our Resource Navigator.

## Network

As an ecosystem building organization, Colmena66’s network is crucial to provide entrepreneurs with reliable information and access to resources. Non-profits, academia, public sector, and for-profit organizations form a web that holds the entrepreneurial ecosystem together. We now have a network of 259 resource partners, entrepreneurial support organizations and programs. These organizations provide services such as capacity building, networking events, loans, technical assistance, investment, legal advice, mentorship, and many more. The expertise and background of our network allows us to help entrepreneurs at every stage of the entrepreneurial process, from the concept to the expansion of the business. Through these trying times the network has continuously worked together to identify opportunities, drive initiatives, and design strategies to make sure entrepreneurs reach their goals.



## Our initiatives

Colmena66’s team always has their eyes open and their ears ready to find gaps in the ecosystem. Constant feedback from entrepreneurs, our Advisory Board and the Trust have helped us create impactful initiatives to further our ecosystem’s development.

## Resource Network Meetups

These quarterly Resource Network meetings are convenings where everyone who supports entrepreneurship is invited. They are designed to build trust, foster collaborations, share learnings and resources with each other and continue strengthening relationships within the ecosystem. The agenda is designed based on the needs of the entrepreneur support organizations. In 2020 we held 3 meetups focusing on federal contracting for small businesses, the Re-Grow program to aid agribusinesses and the Global Entrepreneurship Monitor results for 2019 to help us make data driven decisions. In 2021 we’ve held 2 meetups, the first to kick-off the year with a shared vision for economic development and access to capital for entrepreneurs, and the second one to share preliminary results of our 2020 Annual Survey to help Resource Partners design their programs based on real time data and needs of entrepreneurs.

## Levanta Tu Negocio

First launched in 2017 as a multisector campaign to aid entrepreneurs during the aftermath of Hurricane María, this initiative is a collaborative platform powered by Colmena66 and the Trust where a wide array of organizations provide business resources and support during and after crisis based on a needs assessment tool. In 2020 this initiative was activated twice. In the month of January we convened partners and supported businesses affected by the earthquakes. Later in March, during the start of the pandemic in the Island, we surveyed businesses impacted by the lockdowns and built a resource hub for entrepreneurs. The input from the needs assessment survey fed a structured system consisting of three steps to help entrepreneurs and their communities navigate and adapt to new challenges and manage

uncertainty about the future. Read more about Levanta Tu Negocio in this News is my business article.

### Step 1: React.

The first step in the midst of a crisis is to mitigate the damage and provide immediate relief. To this end, we published the Recovery Guide, a resource directory for small and mid-sized businesses organized by topic and industry that is updated daily to make it a less stressful process for the entrepreneur.

### Step 2: Refocus.

Entrepreneurs need to adapt their business quickly amid this constantly changing situation. Therefore, Colmena66 continuously identifies virtual workshops, educational forums and training programs of other business support organizations and publishes them on its website and social networks, thus reducing the burden of entrepreneurs that would otherwise need to do the research on their own.

### Step 3: Rebuild.

For entrepreneurs to not only survive this crisis, but to emerge stronger than before, Colmena66 will continue to connect entrepreneurs in a personalized way with tools, resources and guides that really help them make the necessary decisions during and after the crisis.

During 10 weeks starting in March 10th through May 31st, 2020 we surveyed 718 participants. We found that:

1. At the time of completing the survey 57.7% of businesses were temporarily closed.
2. To adapt, 51% were considering to stop paying their debts and 32% would reduce employee hours.
3. 68.8% of businesses had no capacity for remote work. The industries with less flexibility are Restaurants, Hotels and Agribusinesses.
4. 75.5% stated that they needed help creating risk mitigation plans after COVID-19.



To see more results from our survey, visit Resultados – [Levanta Tu Negocio \(levantatunegociopr.com\)](http://levantatunegociopr.com)

## BE Fest Virtual 2020

In 2020 we postponed the second edition of the Boricua Entrepreneur Fest (BE Fest), the biggest, most inclusive entrepreneurship education and celebration event in Puerto Rico, and quickly re-designed it in format and content to make it virtual and pertinent to the most pressing needs of entrepreneurs in real time. Thanks to the results of the Levanta Tu Negocio Survey, we were able to identify relevant needs and designed our agenda to focus on the digital transformation of businesses. We met the audience's needs by focusing on eCommerce and digital marketing as an alternative for businesses to survive through the pandemic and grow.

We were able to host 20 speakers participating in 12 webinars. Having designed a virtual agenda, we then offered the webinars online and on-demand on our YouTube Channel. The event was a great success, we had 2,921 registered participants and more than 4,000+ additional viewers.

### Across the 12 webinars, subject matter experts shared:

1. What is eCommerce? Platforms and Best Practices
2. Let's talk about eCommerce in Boricua – Success stories
3. How to create your online store with Shopify
4. Permits your Ecommerce needs
5. Content strategy for your business
6. How to improve your reach in social media
7. Search Engine Optimization
8. Your first Google Ads in 5 steps
9. Digital Acceleration: Automize your marketing
10. Promote your business with automated email marketing
11. Local Business, Global Reach



## 12. Measuring the success of your eCommerce

After the event, 99% of participants said the webinars met their expectations, 97% felt prepared after BE Fest Virtual and 88% evaluated the speakers positively.

## Refuerzo PYME

Building on BE Fest's success, the Department of Economic Development and Commerce invited us to design, create and produce Refuerzo PYME, a webinar series with tracks for digitalization, business development and growth.

Here are some insights of the event:

- 20 webinars were hosted, creating 27 hours of on demand content.
- 1,938 people participated.
- 60% of the participants were between 25-44 years old.
- In total, entrepreneurs from 75 out of 78 municipalities (or 94%) in Puerto Rico participated in Refuerzo PyME.

## Global Entrepreneurship Week 2020

November is National Entrepreneurship Month in the United States, a time to celebrate the entrepreneurs who serve their communities and bolster the economy. For one week each November, we also recognize the spirit of entrepreneurship abroad by celebrating Global Entrepreneurship Week (GEW). In collaboration with YEES!, we co-hosted GEW Puerto Rico, helped organize and convene resource partners in Puerto Rico to participate. More than 60 organizations hosted over 115 events from Puerto Rico alone. We were the jurisdiction with the second biggest number of events in the U.S., after Texas.

## SBIR/STTR Support

Colmena66 and the Trust's commitment to promote innovation continues to strengthen. Key to this commitment is the advancement of SBA's SBIR/STTR programs in Puerto Rico.

**Assistance** - We have created a process to provide entrepreneurs and researchers interested in innovation, guidance and education to assess if SBIR/STTR is right for their innovations. The projects that have potential for SBIR/STTR are then referred to Dr. Juan Figueroa, the Trust's SBIR Advisor and former Program Director for the National Science Foundation, to receive additional support.



Since the launch up to June 2021, 55 entrepreneurs and researchers reached out with interest to the program, 19 of these projects showed great potential for the programs and received Dr. Juan Figueroa's guidance.

**SBIR Webinar Series** - as part of our efforts to increase awareness, we designed a webinar series to share knowledge and best practices about SBIR/STTR programs. The series consists of 5 webinars:

1. SBIR or STTR? Which program is for me?
2. Understanding the phases of the SBIR/STTR programs
3. Systems of support for SBIR/STTR applicants in Puerto Rico
4. How to write an SBIR/STTR proposal
5. Accounting and Finances for SBIR/STTR proposals

We had 202 participants: 73% were entrepreneurs and 17% were researchers. These resources are available for more entrepreneurs on our [YouTube](#) where they can be accessed at any time.



**Acércate al Grant** – Is a Phase 0 pilot program to continue increasing successful SBIR/STTR proposals from Puerto Rico, powered by



Colmena66 in partnership with the Trust programs Parallel18 and Research Grants Program and in collaboration with the Puerto Rico SBTDC's Office of Innovation and Technology and the law firm Ferraiuoli LLC. Its purpose is to connect small businesses with seasoned grant writers to develop their proposals, receive legal advice and technical assistance to increase their chances of success.

In just 4 weeks we received over 90 applications, 14 were selected as finalists for the program and are in the process of developing their proposals.

**L2M Prize & Recognition** – Thanks to our efforts during the past 3 years to increase awareness, education and technical assistance to increase the number of SBIR/STTR proposals in Puerto Rico, we were awarded the prestigious Small Business Administration's Lab-to-Market (L2M) prize as a Super Connector. This recognition is awarded to the most impactful organizations, programs and ideas that support innovation ecosystems in R&D, specifically those centered on underrepresented communities and pandemic response.

**Collaborations with Federal Agencies** – Our work in the pursuit of increasing Puerto Rico's footprint in the innovation and technology landscape has been noticed by federal agencies and they have approached us to become their outreach partners in Puerto Rico. On May 25th of 2021, we held the webinar Successful NIH Proposal Development and NIAID Award Management. With this event we were able to share best practices and insights into NIAD's SBIR programs. Later in July 27th we hosted a webinar with the Department of Energy: Path for R&D Funding with Eileen Chant to share their SBIR opportunities with researchers and entrepreneurs. Puerto Rico has never won an SBIR award with the DoE so having them share their knowledge and engage Puerto Rico's audience is a step to achieve that goal. Collaborations like these are very important because we continue to bring information and opportunities to entrepreneurs in Puerto Rico that could benefit from these programs, ultimately advancing the Trust's goal of developing the Island as a recognized innovation hub.

## Results from our 2020 Annual Survey

At the end of each year, we survey all participants we served or interacted with to learn about and track the status of their projects and possible challenges. In December 2020 we gathered responses from 426 businesses. Here are some insights into what we learned.

**Demographic Data** - These are basic metrics to understand the profiles of the clients being served.

**a. Business Development Stage** - Did you know Colmena66 is the only organization in Puerto Rico that works with any type of business at any stage of business development? We are committed to democratizing access to entrepreneurship by encouraging any and all types of entrepreneurs to contact us, go through our assessment process and then be referred to the right resources.

Of the entrepreneurs that participated in our annual survey:

- i. 30% are in the Initial Stages, Developing their idea or concept
- ii. 22.3% are in the Growth Stage
- iii. 19.7% are Developing a prototype of their service or product
- iv. 18.3% are in a Rollout Stage, where they have begun to sell

**b. Location** – Similar to the location of our Resource Partners, clients contacting Colmena66 are mainly concentrated in the Metropolitan Area. Various other clusters can be observed in the Eastern Region and in the municipality of Ponce.

**c. Top 10 industries**

- i. Retail
- ii. Professional Services
- iii. Creative Industry
- iv. Agribusiness
- v. Restaurant and Hotel
- vi. Education
- vii. Food Processing
- viii. Manufacturing
- ix. Tourism
- x. Healthcare





**Response to crisis** - the following data shows the ways in which the companies were affected or responded to the crisis during 2020 (Earthquakes and COVID-19).

**a. Business status during emergencies**

- i. During the 2020 emergencies, 47.3% of the businesses never had to close. In this case, when a business was in the agriculture and creative industries the probability of not having to close increased, 1.72x and 1.68x respectively.
- ii. 34.3% had to close temporarily. When the businesses belong to the Tourism, Professional Services and Education the probability increased over 2.5x for each.
- iii. 15.4% expanded the business, when the business was in the Retail industry the probability of expanding the business increased 2.14x.

What stage of business are you in?	Percent
Idea or Concept	30%
Growth/Expansion	22.3%
Proof of Concept/Prototype (	19.7%
Rollout	18.3%
Maturity	5.9%
Decline	3.8%

**Challenges by Industry** – Within the Top 5 industries, here are some of the probable challenges businesses may be facing as of 2020.

- a. Retail - This industry faces more challenges in relation to marketing and sales. In the Planning Board's Economic Report to the Governor, retail businesses showed a 9% decrease in sales during 2020.
- b. Professional Services – the challenges in this sector tend to be Digital Transformation, Adapting to Remote Work, and the COVID-19 restrictions.
- c. Creative Industry – businesses in this industry tend to struggle more with Marketing and Sales, Exporting and Operations and Management (accounting, human resources, etc.).
- d. Agribusiness - businesses in the agriculture industry tend to have more challenges regarding Physical Infrastructure and complying with Government Regulations.
- e. Restaurant and Hotel - the major challenges in this industry tend to be Talent (Human Capital) and managing the effects of COVID-19 restrictions. Here we could see lockdowns and the reduction of capacity as two major obstacles for this industry.

Business status during 2020	Percent
Never had to close	47.3%
Had to close temporarily	34.4%
Expanded my business	15.4%
Closed my business permanently	2.9%

## For the future

For Colmena66, the pandemic has been an opportunity to serve entrepreneurs once again in a time of pressing needs. Our capacity and reach have increased exponentially, and we've been able to overcome various obstacles. Looking forward, and as we celebrate our 5 year anniversary in November 2021, we are taking a long-term thinking approach and visualizing what we want our ecosystem to look like 2 to 3 years from now.

To harness this period of growth, identify new opportunities and better serve more entrepreneurs and Resource Partners, we're designing renewed goals for the future. We are identifying our strengths and opportunities, understanding the team's needs and values, and defining what our priorities will be, aligning every strategy to our Mission and Vision, and the Trust's goals.

Another focus we are adopting is on more sustainability and funding strategies for growth. We've identified a set of opportunities available for the organization that we are already beginning to take advantage of. Our goal is to direct these efforts to increase our capacity and create more initiatives to impact the ecosystem in meaningful ways. Our research capability is a great strength, and we want to invest on ourselves to bring more data and information about entrepreneurship to the ecosystem.



The third edition of the Boricua Entrepreneur Fest will take place on November 11, 2021 in the context of Global Entrepreneurship Week and Colmena66's 5 year anniversary. Once again, Puerto Rico's most inclusive and diverse entrepreneurship education and celebration event will feature top notch content, experts, entrepreneurs, mentors, all the entrepreneurship support organizations, academia, investors and a coalition of private sector companies committed to supporting entrepreneurship.

As part of our ecosystem building efforts, we are beginning to build relationships with mayors in Puerto Rico. In collaboration with Puerto Rico's League of Cities we are developing and deploying an assessment toolkit to gauge municipalities' goals, resources, and needs for economic development. The results will be discussed with them to define priorities and drive support. Through this effort we expect to convene mayors and foster more relationships with stakeholders in the entrepreneurial ecosystem to continue serving entrepreneurs so they can start and grow successful businesses around the Island.

Colmena66 will be launching a new website! We are redesigning it to make it better, easier to navigate, and with more valuable content. Through our website we communicate with many entrepreneurs and receive their requests for service. We want to make it easier for them to learn about our Resource Partners, participate in events, download our guides, sign up to receive help, read our blogs, and find the best resources.

As we continue to adapt to the pandemic and navigate in this environment, we want to continue to improve our services and our team. We seek to make of Puerto Rico an equitable, inclusive and robust ecosystem where all types of entrepreneurs can thrive. Ultimately, we want to improve the places where we live and give back to this wonderful community.



Puerto Rico  
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ENTREPRENEURSHIP



# Resiliency and Business Innovation





## Description of the Program

The Resiliency and Business Innovation Program (RBI) is an EDA i6 grantee, and part of the Puerto Rico Science, Technology and Research Trust (PRSTRT) since April 2019.

The program provides business resiliency training; research support in documenting resiliency industry practices and the development of proof-of-concept; educational support to businesses on resiliency methods and concepts, and assistance in soliciting Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) funds. The RBI has partnered with institutions of higher education, other nonprofit organizations, professionals, and business associations to promote the identification of innovative practices that foster resiliency in the business community.

## Mission and Vision

To foster a Resilient Business Community on the Island. Enhance the innovations that create business resiliency from entrepreneur development and SBIR program applicants.

## Achievements

Natural disasters continued to affect life in Puerto Rico as the island joined the world in dealing with the global COVID pandemic challenges. This includes not only dealing with the challenges but also to look for opportunities within those challenges

The RBI continued to teach and to practice the kind of adaptability and determination needed for communities, businesses, families, and individuals to face adversity, striving not only to survive but to thrive. The implementation of project goals, objectives, and activities were accomplished, despite the need to adapt to an almost entirely virtual operation with face-to-face activities replaced by Zoom and other communication platforms for virtual meetings, and educational sessions.

The RBI has been able to impact businesses, organizations, and university programs that support businesses through collaboration, capacity building, training, research, and technical assistance, so far having over 2,000 businesses and individual been impacted or received support from the RBI since it was initiated in April 2019.

## RBI 2020 in Numbers

- Participants receiving training, referrals or other project support: **1187**
- Resiliency Training sessions: **17**

## Impact of the RBI beyond Puerto Rico

The RBI has contributed to build a stronger resilient business community in the Island with the collaboration of other programs at the Trust, NGOs, professional associations, the private sector, and the government, supported by a larger network group of collaborators. The impact of the program is starting to transcend local borders and is starting to be seen as a subject matter expert in resiliency.

During the Summer of 2021, Dr. Veena Parboteeah, Dean of the New Mexico Highlands University (NMHU) School of Business reached out to RBI to discuss the request to incorporate the RBI resiliency materials and virtual educational opportunities into a proposed project that will benefit and impact the New Mexico community. As part of our social responsibility, we were able to extend an endorsement letter to the NMHU, to make the RBI materials available at no cost and provide, when needed, advisement and guidance to the project that will nurture cohorts of Hispanic undergraduate students through concept development and eventual implementation of entrepreneurial concepts.





## Building a Resilient Business Community Through Education

One of the main purposes of the RBI is to create a strong resilience business community through education. A second cohort of the Resiliency courses created with George Mason University and Echar Pa' Lante, given from May to June 2020, was offered free of charge and in English. Digital materials were handed to participants and all the lessons were recorded and are available in the RBI website [www.rbipr.org](http://www.rbipr.org). Participating Faculty were:

- Dr. Linton Wells II, Executive Advisor to the Center for Resilient and Sustainable Communities at George Mason University, founder of the TIDES Project and the
- J.P. Auffret, Associate Director of the Center for Assurance Research and Engineering in the Volgenau School of Engineering, director, research partnerships in the School of Business at George Mason University.
- Bob Rogers was #250 of Inc Magazine's Top 500 rankings of the fastest-growing privately held companies in the United States

As with the first cohort, this second cohort was aimed at business - support practitioners and business owners who were exposed to ideas about building a resilience business community in Puerto Rico at policy and strategy-related levels and learned the following concepts:

- How to prepare for the 4 Phases of Resilience (Anticipate, Withstand, Recover, Adapt/Reposition)
- What resources are available to small and medium businesses to help build resilience in PR.
- The value of a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis
- Analyzing hazards to businesses in Puerto Rico and their impacts.
- Protecting core business assets such as people, data, operations, etc
- How to develop an effective, adaptable, business resilience plan
- How to exercise the plan and keep it up to date.

A certificate of participation and a Digital Badge from the RBI, the Center for Resilient and Sustainable Communities (C-RASC) at George Mason University and Echar Pa' Lante, were issued upon successful completion of the course and a learning assessment.

*"Building a Resilient Business Community: A Course for Entrepreneurs Support Practitioners" (G2)*, was offered from September 15th to October 6th, 2020.

The 4-week online course via ZOOM, was designed for senior business leaders and academics who provide direct support to entrepreneurs. It aimed to give participants the tools to educate in capacity-building and strategic analysis. Each session was 2 hours, for a total of 8 hours. A total of 117 people from academia, non-profit entities, government, and private sector registered to the course and 54 people completed the course and received a certificate and digital badge.

*"Creating a Resilience Plan for your Business: A Course for Businesses" (G3)*, was offered from September 24th to October 15th, 2020.

The 4-week online course via ZOOM was designed to assist businesses create their Resilience Plan. Each session was 2 hours for a total of 8 hours. A total of 77 people registered for the course and a group of volunteers from the G2 course was invited to participate as facilitators to guide entrepreneurs to complete their resilience plan.

## Global Entrepreneurship Week

The RBI management was part of the organizing committee for the Global Entrepreneurship Week held November 16th to November 20th, 2021. Over 100 conferences were offered in Puerto Rico. The RBI coordinated three conferences on resiliency and supported one related to cryptocurrency and blockchain. Conferences were online, free of charge in Spanish and English. RBI organized the most activities in PR.

The following conferences were part of the activities organized by the RBI:

- *"Organizational Resilience from the Perspective of Human Capital"* was offered by Ana G. Méndez University professor, Leslie E. Domínguez Martínez. We had 57 assistants.
- *"Recovery Process After a Natural Disaster in the Agro-Industrial Sector: The Experience of Rico Banana Inc. and Café San Pedro Inc."*, was offered by Dr. Libya M. González López, from the University of Puerto Rico, Rio Piedras Campus. 32 people assisted.
- *"Conversation on Resilient Strategies for Business Continuity, Challenges and Opportunities: The Perspective of Retailers in Puerto Rico"*, was offered by Dr. Maribel Ortiz, from the Ana G. Méndez University and Dr. Karen Orenge from the University of

Puerto Rico, Rio Piedras Campus. 34 people assisted.

- *“Como Ser Mas Resiliente Ante un Terremoto”* was organized with the PR Chamber of Commerce of the South. The free webinar on earthquakes and resilience was held on Friday, February 5th, 2021, and included the following speakers: Manuel Felix, Director of Emergency Management of the Municipality of Bayamón, who presented information concerning preparation for the Earthquake Sensor project. Engineer Mike Vivaldi addressed project construction, and Andres Meira from the GRILLO project gave a presentation about the importance of creating a strong network system through sensors, to develop an early earthquake alert. He focused the presentation on the Chile and Mexico cases.
- *“Embracing Change: Successful Transitions in the Post Covid 19 Environment”* was offered June 15th until Thursday June 17th, 2021. The free, 3-day online course was created with George Mason University and Echar Pa’ Lante and designed for senior business leaders and academics who provide direct support to business owners and operators, and entrepreneurs. Each session was 2.5 hours, in English, for a total of 7.5 hours. Participating Faculty were Dr. Linton Wells II, J.P. Auffret, and Bob Rogers. By the end of the course, assistants were exposed to ideas about the broad changes that Puerto Rico and the international business environment will be facing in the next five years and how they will affect local business conditions, both in the immediate post-COVID19 environment and afterwards. It aligns with strategic cluster development and the needs of industry 4.0. It also provided participants with the tools to build skills and develop leadership capabilities. Topics included:
  - What changes in the international business environment are expected in the next five years and how these will affect PR.
  - Ideas about (a) growing a business, (b) expanding products and services, and (c) adapting and pivoting in a post-COVID19 world (which must include a large measure of digital transformation).
  - Case studies in several business sectors
  - How to develop case studies tailored to the business owners and operators they’ll be teaching and mentoring, along with SWOT analyses (strengths, weaknesses, opportunities, threats). How to use these to engage with for mentoring and teaching.
  - How support practitioners can develop their own training and mentoring for separate sessions in Spanish that they would then teach to business owners and operators. Topics to consider by the mentors include: How would you know when it’s necessary to pivot to a new business model, vice adapting what you’ve been doing? What might be some options? How do you pivot? What information would you ask of the owners in developing their decisions to adapt or pivot?
  - The importance of an effective, adaptable, business resilience plan, and keeping it up to date.
  - A total of 117 people registered, and about 50% of the people connected to the course. 24 people completed the learning assessment and were awarded a certificate and a digital badge.

## Building A Resilient Business Community Through Research

The final reports of the 4 research projects funded by the RBI were received in August 2020.

- **“Between Hurricanes and Earthquakes: PR Rico Banana Inc. 2017-2020”** Principal investigator, Libia M. Gonzalez López, Ph.D. Analyzed the success of a Second Generation family agribusiness primarily in the Banana Ripening Industry, this research identified practices which made the business able to improve their mitigation and recovery plans in Guayanilla and Cayey after hurricane Maria and to the Southern coast where recent earthquakes have destroyed homes leaving many families homeless. Lessons learned may have broader applications, especially in the key Puerto Rican guineo (green banana) agricultural industry.
- **“Customer Relationship Management Resilience Strategies After a Natural Disaster”** Principal Investigator, Karen I. Orengo Serra, Ph.D. Research consisted of in-depth interviews with seven businesses in the Southwest part of Puerto Rico analyzed different resilience techniques used by businesses while dealing with natural disasters. From the survey for both earthquakes and the pandemic the strengthening of communications with customers was the best way of addressing the challenges as demonstrated the highest average score of CRM’s resilience strategy they received.
- **“Best and Worst Resilience Strategies Adopted by the Food and Beverages Supply Chain in the Aftermath of a Natural Disaster”**, Principal Investigator, Maribel Ortiz -Soto, Ph.D. Using six focus groups, composed of members of the professional associations of wholesalers, distributors, retailers, manufacturers, Agro-industrials, and sales & purchasing managers for prominent firms’ research analyzing post-disaster mitigation efforts identify those effective methods and those that were not. Lessons learned in this process will better enable businesses to incorporate successful methods both preparing for and dealing with natural disasters.
- **“Online Trade Data Service for Small and Medium Enterprises (SME) and Humanitarian Resiliency”**, Principal Investigator, Maribel Aponte-Garcia, Ph.D. Before Hurricane Maria 45,000 SMEs were the backbone of Puerto Rico’s economy providing 83% of the employment and 53% of its Gross Domestic Product. An estimated 80% to 90% of those SMEs became inoperative following the hurricane, and SMEs did not have access to the information of Trade Value Chains analysis such as those available to large corporations. Analysis has begun on import and export data on selected items and has begun to create a mapping system that could benefit Puerto Rico SMEs by making critical data available to those SMEs.



An online presentation was organized to share the findings of the 4 research. The free webinar “Resilience Strategies After a Disaster” was presented on August 26th, 2020. About 100 people participated from the academia, private sector, government, non-profit entities, as well as various entities supporting the business ecosystem.

A second Request for proposal was organized and launched at the end of June 2021, seeking researchers with projects focusing on resilience and innovation in business. The topics chosen for research were:

- Energy Resilience for Businesses
- Hardening Business IT Infrastructure
- Reshoring
- Manufacturing Resiliency
- Use of Artificial Intelligence for Business’
- Water Resilience for Business

## OTHER SEMINARS SUPPORTED BY THE RBI

RBI supported the PR Chamber of Commerce Act 20/22/60 Special Committee and Crypto Mondays to organize “*The Future of the Internet and the Global Economy*” with cryptocurrency and blockchain leaders. The three-hour online event included topics related to bitcoin, mining, stablecoin, staking fundamentals and entrepreneurship opportunities in crypto. The event attracted over 200 people from all over the world.

RBI also supported AFAE (Alumni of the School of Business of the University of Puerto Rico, Rio Piedras campus) to host two online conferences broadcasted from the Puerto Rico Science, Technology and Research Trust facilities: Those conferences were:

- “*Integration of the Points Suggested by Professional Associations in the Economic Plane of Puerto Rico*” was held Wednesday, February 3rd, 2021. Guest speakers included: Hon. Manuel Cidre, designated Secretary of the Department of Economic Development and Commerce (DDEC) and member of the Board of Directors of the PRSTRT; Juan Carlos Agosto, President of the PR Chamber of Commerce; Carlos Rodriguez, President of the PR Manufacturers Association, which the RBI maintains MOUs with both organizations; as well as the Presidents of the Collegiate of CPAs and the Engineers and Surveyors Collegiate.
- “*Economic Projections and Challenges for 2021*” was presented on March 10, 2021. Guest speakers included: CPA Francisco Pares - Secretary of the Department of the Treasury of PR; Esq. William Rodríguez - Secretary of the Housing Department, and Economist, Dr. Antonio Fernós.

## Association Collaborations

The RBI facilitated completion of a Memorandum of Understanding (MOU) between PRSTRT and the Puerto Rico Chamber of Commerce for collaborative efforts to facilitate economic development and resiliency for the Puerto Rico business sector. Oversight of this effort is provided by RBI Program Manager, Annie Mustafa-Ramos.

The RBI assisted in the creation of an MOU with ENACTUS. Oversight of this effort is provided by RBI Program Manager Annie Mustafa-Ramos. Prototype development was funded by RBI from EANCTUS sponsored innovation contests.

RBI promoted the signing of the MOU with the Liga de Ciudades, a nonpartisan grouping of Mayors of Municipalities in Puerto Rico aimed at economic development and raising awareness to train their local office of economic development.

The RBI assisted in the creation of an MOU with the UPR Resiliency Law Center. Oversight of this effort is provided by RBI Program Manager Gilberto Guevara.



## Special Projects

### ROCKY MOUNTAIN INSTITUTE (RMI)

The Rockefeller Foundation awarded \$70 million dollars for an energy resilience project to enable installations of Photo Voltaic (PV) in Critical Facilities. Most of the facilities are small and medium enterprises (SMEs) that are the livelihood of the community following a disaster. Bakeries, Pharmacies, Supermarkets, and gasoline stations are among the critical facilities that will be supported with their energy resilience through PV installations. In addition, IT efforts developed the dashboards for display within the PR Science, Technology, and Research Trust (PRSTRT) website. Coordination and support are provided by RMI Project Director Gilberto Guevara. Ongoing negotiations will lead to creating a community-based financing from Savings and Loans Cooperatives to supplement the awards from Rockefeller being managed by Rocky Mountain Institute.

### NASA

The RMI worked with NASA Virtual Reality contractor, Shayna Skolnick, as well as Johnny Lugo from the PRSTRT, to develop a Virtual Reality demo on a cultural site as a model to create a visual record for Resilience and Preservation best practices. These best practices are meant to enrich the Resilient practices using innovation and new technologies.

Dr. Allan Astorga, scientist working on NASA Disaster Program, conducted a presentation about Salva Terra to members of the Foundation for Puerto Rico Whole Community Resilient Program (WCRP) and the Fundación para la Naturaleza. Over 75 environmental specialists and professionals were taught how to include preservation thinking into their Resilient programs and practices. The Seismic area was visited to corroborate the geomorphology risks and to size the number of businesses and understand their vulnerability. The initial assessment of field visit produced several recommendations for policy makers and GIS specialists.

### MODULAR MANUFACTURING

Puerto Rico Manufacturers Association (PRMA), Medical Devices cluster received the presentation of Deloitte and Siemens on the Modular Manufacturing Technologies available to enhance the cluster R&D capabilities, based on their Intelligent Factory in Wichita. EDA's funded Forward Building facilities and the technologies for medical devices received a presentation and virtual tour from Deloitte, who shared their expertise and knowhow on how it organized the global cluster of companies and Smart Manufacturing Facilities and technologies a model that can be replicated at the PRSTRT to support the Medical Devices Cluster evolution to Industry 4.0.

RMI is supporting the Faculty of Industrial Engineering (ININ for its abbreviation in Spanish) from the UPR RUM to assess pending actions to achieve the setup of the DoD sponsored metal additive printing facility that can be used for printing medical devices, aerospace devices and other metal-based instruments. A meeting was sponsored with the Material Characterization Center (MCC) to explain the process to setup a ININ as a University Enterprise. This model of University Enterprise will ensure sustainability for the ININ operations. RMI will continue to work with the UPR in the installation and commercialization of the additive printing facilities to service the business and industry while providing a specialized training for undergraduate and graduate students.

### CARIBBEAN CENTER FOR RISING SEAS

RMI assisted in finalizing the agreement terms and documents to launch the Center in June 2021. This Center will engage professional associations and universities to provide better designs and build forward better to mitigate the projected 11 feet of sea level rise around the coast of Puerto Rico. The International Airport, Luis Muñoz Marín and many of the tourism facilities and sites will be impacted along with communities that depend on fishing and the sea services for their livelihood. Coordination is ongoing with the Blue Wave program, a Blue Tide initiative funded by EDA to support their efforts in identifying resilient innovations for ocean-based SMEs.

### ENERGY RESILIENCY

Following Hurricanes Irma, Maria, and the Seismic events, PRIMEX and other industry-based associations have ascertained that the biggest risk to the economic base in Puerto Rico is the energy resilience. Major metropolitan areas experience brown outs and black out daily where affected consumers are in double digits. RMI has maintained presence and ongoing communication with ACONER, SESA and other alternative energy industry associations and leaders to promote and support the availability of alternative energy resources for businesses. The focus for RMI is in promoting the engagement of Savings and Loan (S&L) Cooperatives to include financing products for PV installations.





This project is also aligned with the current work with the Rockefeller funded project managed by the Rocky Mountain Institute promoting installation of PV systems in critical facilities that stand to provide community services with their installed energy resilience.

## UPR- RESILIENCY LAW CENTER

The UPR Resiliency Law Center (UPR-RLC) is a two-part initiative to shift the balance of power to local communities in order to ensure that disaster recovery and rebuilding in Puerto Rico is effective, fair, and resilient while developing legal techniques to fight climate change, train students and lawyers in their use, providing counseling, legal representation and education to individuals and leaders of communities affected by natural disasters and climate change, and by establishing an advocacy center for disaster recovery and climate change awareness. RBI has leveraged the relationship to refer clients in need of the services of the UPR-RLC in achieving the goal of registering to compete with Federal Disaster Recovery contracts that are typically awarded to national vendors. The Center of the New Economy (CNE) findings are that less than 45 of all aid delivered in the aftermath of declared disaster is done by local businesses under contract by the Federal Agencies.

## GRILLO: AN EARTHQUAKE EARLY WARNING SYSTEM

The RBI partnered with GRILLO on a special project to create an Earthquake Early Warning System in the Caribbean using seismic sensors in key buildings around PR. Similar systems are already operating in Mexico and Chile. In Puerto Rico, the project will be known as GRILLO-PR.

The project is sponsored and backed by IBM, the Clinton Global Foundation, la Red Sismica de PR with the leadership of the RBI program at the PRSTRT. A special announcement about the project was given at the virtual Clinton Global Foundation annual activity on May 25th by President Bill Clinton.

Dr. Victor Huerfano, from the Red Sismica, assigned a student at the doctoral level exclusively for this project.

Ninety sensors are being installed in companies from diverse industries of different size around PR to gather the seismic information that is being stored in AWS cloud platform and available as Open Data for researchers and institutions of higher learning. Only one sensor per company is installed. The data is analyzed by Grillo Scientists in Mexico and the Puerto Rico Seismic Network to improve the algorithms that will produce a more accurate Early Warning System (EWS). This innovation will go a long way to protect property and life in the SMEs where customers can be caught by an earthquake event without warning.

RBI is sponsoring the cost of 50 sensors with the grant's funds at \$100 each. There is no cost on behalf of the companies to participate in the project.

To participate in the project, businesses must be able to provide electricity and internet access 24/7 for data collection. Companies are being evaluated by their location, type of structure and topography.

The list of prequalified interested companies that host the sensors include the Trust's sites in San Juan and Ponce; ten companies identified by la Red Sismica, 20 sites from Walmart/Sam's/Amigo and about 25 companies identified through PRIMEX and the PR Manufacturers Association.

Although the system can issue an alert, in PR the project will work in phases. The first phase will be the installation of sensors, data collection and validation by la Red Sismica. No alarms or early warning will be activated during phase I.

## ENACTUS

The RBI sponsored the Enactus Challenge competition related to Business Resilience and Innovation. This was the first annual competition where students needed to create a project in response to a particular need. The Resiliency challenge consisted of a research/prototype conducted by a student and supervised by a professor from a local university and business mentor, who participated at one of the RBI resilience courses and had a Resilient Certificate from the RBI program. The winner, Ninoshka Arroyo Valentin from the University of Puerto Rico, Mayaguez Campus, created a Resilience Plan for the agro-company Ricura Caribeña, under the supervision of Dr. Patricia Valentin Castillo, she presented her project in June 2021 and received a \$5k award.



## OTHER RBI PARTICIPATION

The RBI Program Manager, Annie Mustafá, served as the moderator of the forum: “Charting a Path to Growth”, and served as judge in the final round of the 2020 Enactus Puerto Rico National Virtual Competition held August 2-4, 2020.

The RBI Program Manager, Annie Mustafá, participated in the 2020 Enactus World Cup as a judge to the Top 16 Round celebrated September 8th -11th, 2020.

The RBI Program Manager, Annie Mustafá, served as judge for the Robot Maker competition held by YEES on November 13th, 2020, and December 4th, 2020.

The RBI Program Manager, Annie Mustafá, served as judge for preselected businesses considered to be part of the Startup PR Acceleration Program from the Ana G Mendez University. Winning companies were: Zero Damage, Agropek and Vivencias in February 2021.

The RBI was part of the organizing committee for the Decarbonize Puerto Rico Conference scheduled for April 21st. Program, Director Gilberto Guevara was one of the speakers.

The RBI Program Manager, Annie Mustafá, was a Co-Presenter at the 17th International Conference on Environmental, Cultural, Economic & Social Sustainability, which took place virtually on February 26, 2021. The second presenter was Dr. Linton Wells, from George Mason University with whom we developed the business resilience courses.

## SUCCESS STORIES

**CELEROPS** - implements Robotic Process Automation (RPA) and Artificial Intelligence (AI) to help accounting firms and financial institutions speed up their processes and reduce their costs. This automation reduces the time of a process from 8 hours to 20 minutes reducing costs to the businesses by 80%. The Program Manager connected CelerOps with the Colegio de Certified Public Accountants (CPAs) who hosted a seminar about AI as a way to manage the accounting processes and services.

**NUVANT** - is a manufacturer of equipment to rehabilitate hybrid car batteries. They have 52 worldwide repair shops. The RBI has been working in establishing an outlet for repair of hybrid car batteries through a workers cooperative. The owner of NuVant, who is a scientist and a chemical engineer professor at Northeastern University is interested in pivoting their corporate business model. RBI has also engaged in the creation of a Battery Reconditioning as a service in lieu of their legacy reconditioning equipment sales. There are other conversations to relocate their manufacturing facilities from Indiana to Puerto Rico. RBI has facilitated several conversations with potential investors for NuVant. POC: Dr. Eugene Smotkin is a resident of Old San Juan and is the majority owner of NuVant.

## FUTURE

As EDA i6 funding is coming to an end in December 2021, successful components of the RBI Project are expected to continue as the RBI was able to build a strong networking and relationships with resilience educational providers to remain in place, allowing ongoing educational programs about business resilience. The RBI leadership continues to seek funding opportunities that would enable continuation of the RBI project and its history of success.

Gilberto Guevara

Senior Manager and Program Manager

Annie Mustafá Ramos

Program Director



# OUR COLLABORATORS



**CERTIFICATE OF PARTICIPATION**  
**Building a Resilient Business Community: G2**  
A Course for Support Practitioners

Sept 15<sup>th</sup> to Oct 6<sup>th</sup>, 2020  
Total contact hours: 8

for participating in "A Course for Support Practitioners [G2]"

Gloria Viscasillas  
Lead Integrator  
Echar Pa' Lante

Linton Wells  
Executive Advisor  
George Mason University  
(C-RASC)

Lucy Crespo  
Chief Executive Officer  
Puerto Rico Science, Technology and  
Research Trust

Annie Mustafa  
Program Manager  
Resiliency and Business Innovation

Certificate of participation "Building a Resilient Business Community Through Education"

**GLOBAL ENTREPRENEURSHIP WEEK** PUERTO RICO

Global Entrepreneurship Week



**GLOBAL ENTREPRENEURSHIP WEEK**

Resiliency and Business Innovation  
Puerto Rico Science, Technology & Research Trust

**ACTIVIDADES ONLINE, REGÍSTRATE HOY**

**Martes, 17 noviembre 2:00pm**  
**Resiliencia Organizacional Desde la Perspectiva del Capital Humano**  
 Prof. Leslie E. Domínguez  
 Universidad Ana G. Méndez

**Miércoles, 18 noviembre 10:00am**  
**Proceso de Recuperación Después de un Desastre Natural en el Sector Agroindustrial: La Experiencia de Rico Banana Inc. y de Café San Pedro Inc**  
 Dra. Libia M. González López, Universidad de Puerto Rico

**Viernes, 20 noviembre 10:00am**  
**Conversatorio sobre Estrategias Resilientes para la Continuidad de Negocios: Retos y Oportunidades: la perspectiva de los detallistas en Puerto Rico**  
 Dra. Maribel Ortiz, Universidad Ana G. Méndez  
 Dra. Karen Orengo, Universidad de Puerto Rico

Resiliency and Business Innovation  
Puerto Rico Science, Technology & Research Trust

[www.rbipr.org](http://www.rbipr.org)

Global Entrepreneurship Week - activities organized by the RBI

**¿Cómo ser más resiliente ante un terremoto?**

PRIMEX

¿Qué debe contener tu mochila de emergencia?

**Sr. Manuel J. Félix Ortiz**  
 Director de Manejo de Emergencia Municipio de Bayamón

**Andrés Meira**  
 Fundador de Grillo

Creando un sistema de alerta temprana de terremotos en el Caribe

Riesgo sísmico no estructural en estructuras

“Como Ser Mas Resiliente Ante un Terremoto”

**Embracing Change: Successful Transitions in the Post-COVID19 Environment**  
*A Course for Entrepreneur Support Practitioners*

15th - 17th June, of 2021  
 6:00 PM - 8:30 PM  
**Register NOW!**

[www.RBIPR.org](http://www.RBIPR.org)

ECHAR PA'LANTE  
 GEORGE MASON UNIVERSITY  
 Resiliency and Business Innovation  
 Puerto Rico Science, Technology & Research Trust

“Embracing Change: Successful Transitions in the Post Covid 19 Environment”

Resiliency and Business Innovation  
 Puerto Rico Science, Technology & Research Trust

Microsoft Teams  
**TEAMS MEETING**  
 miércoles, 26 de agosto de 2020  
 10:30 AM a 12:00 PM

eventbrite  
**REGISTRO**  
[www.bitly.com/RFPResults](http://www.bitly.com/RFPResults)

**Estrategias de Resiliencia en los Negocios Luego de un Desastre**

Presentadoras:

**Dra. Maribel Aponte-García**  
 Universidad de Puerto Rico  
 Recinto de Río Piedras

**Dra. Karen L. Orengo Serra**  
 Universidad de Puerto Rico  
 Recinto de Río Piedras

**Dra. Maribel Ortiz-Soto**  
 Universidad Ana G. Méndez  
 Recinto de Gurabo

**Dra. Libia M. Gonzalez Lopez**  
 Universidad de Puerto Rico  
 Recinto de Río Piedras

“Resilience Strategies After a Disaster”

REQUEST FOR PROPOSALS FOR

# BUSINESS RESILIENCE RESEARCH PROJECTS

**PROPOSAL DEADLINE**  
THURSDAY, JULY 8TH, 2021

**MAXIMUM GRANT**  
\$6,000 PER PROJECT

Second Request for proposal

## WORKSHOP AGENDA

5:00: *Welcoming by the PR Chamber of Commerce Chamber President Juan Carlos Agosto*

5:05: *Annie Mustafa Ramos President of Act 20/22/60 committee*

5:10: *Opening by Pedro Rivera*

**Part 1**

5:15: *What is Bitcoin by Nick Spanos*

5:35: *What is Mining by Scott Walker*

5:55: *What is Stable Coin by Craig Sellars*

6:15: *What is Staking by Geoff McCabe*

**Part 2**

6:35: *No Barrier Entry by Crystal Rose*

6:55: *Entrepreneurship Opportunities in Crypto by Michael Terpin*

**Part 3**

7:15: *The 4th Technological Revolution by Brock Pierce*

7:35: *The Future of the Internet and the Global Economy by Andrew Keys*

Photo Information or description.

¡CONÉCTATE!  
zoom  
**3 FEBRERO 2021**  
10AM-12PM

**INTEGRACIÓN DE LOS PUNTOS SUGERIDOS POR LAS ASOCIACIONES EN EL PLANO ECONÓMICO DE PUERTO RICO**

**ORADOR INVITADO**  
Sr. Manuel Gilze Miranda  
Secretario de Estado de Asesoría y Asesoría Económica y Comercio

**PRESENTADOR**  
CPA Raoul Rodríguez  
Presidente de Ingeniería, Estudios y Lub GIZZE

Sr. Juan Carlos Agosto  
Presidente, Consejo de Gobernación de Puerto Rico

Sr. Carlos Rodríguez  
Presidente, Asociación de Industriales de Puerto Rico

CPA Rosa M. Rodríguez Parrales  
Presidenta de CPA

Ing. Juan E. Alíza Flores  
Presidente, Colegio de Ingenieros y Arquitectos de Puerto Rico

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Coordinadora: *Araceli Rodríguez* | 787.363.3446 | Síguenos en [f /alumnifae](https://www.facebook.com/alumnifae)

“Integration of the Points Suggested by Professional Associations in the Economic Plane of Puerto Rico”

¡CONÉCTATE!  
zoom  
**10 MARZO 2021**  
10AM-12PM

**PROYECCIONES ECONÓMICAS Y RETOS PARA EL 2021**

CPA Francisco Pardo Albino  
Presidente de la Cámara de Comercio de Puerto Rico

Ing. William G. Rodríguez Rodríguez  
Presidente de la Cámara de Comercio de Puerto Rico

Dr. Antonio L. Ferrás Sepúlveda  
Economista

CPA Manuel Díaz Saldaña  
Presidente de la Cámara de Comercio de Puerto Rico

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Puerto Rico  
Science, Technology  
& Research Trust

ENTREPRENEURSHIP



# SBIR/STTR Federal Grants





# SBIR/STTR Program Description

The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are highly competitive programs that encourage domestic small businesses to engage in Federal Research/Research and Development (R/R&D) with the potential for commercialization. Through a competitive awards-based program, SBIR and STTR enable small businesses to explore their technological potential and provide the incentive to profit from its commercialization. By including qualified small businesses in the nation's R&D arena, high-tech innovation is stimulated, and the United States gains entrepreneurial spirit as it meets its specific research and development needs.

Central to the STTR program is the partnership between small businesses and nonprofit research institutions. The STTR program requires the small business to formally collaborate with a research institution in Phase I and Phase II. STTR's most important role is to bridge the gap between the performance of basic science and the commercialization of resulting innovations.

Small Business Innovation Research (SBIR) requires a 3.2% set aside of the extramural research budget for agencies with a budget greater than \$100 M per year for a total of ~\$3.2 billion minimum spend FY21 year. Similarly, Small Business Technology Transfer (STTR) asks for a set aside of 0.45% of the extramural research budget for agencies with a budget greater than \$1B per year or a total of \$450 million minimum FY20.

The SBIR program goals are: Meet federal research and development needs, increase private-sector commercialization of innovation, derived from federal research and development funding, stimulate technological innovations, foster and encourage participation in innovation and entrepreneurship by women and socially/economically disadvantaged individuals, and foster technology transfer through cooperative R&D between small businesses and research institutions.

## 1) Mission

The mission of the SBIR/STTR programs is to support scientific excellence and technological innovation through the investment of Federal research funds in critical American priorities to build a strong national economy.

The program's goals are to:

- Stimulate technological innovation.
- Meet Federal research and development needs.
- Foster and encourage participation in innovation and entrepreneurship by women and socially or economically disadvantaged persons.
- Increase private-sector commercialization of innovations derived from Federal research and development funding.
- In addition, the STTR program aims to:
- Foster technology transfer through cooperative R&D between small businesses and research institutions.

## 2) Eligibility

Only United States small businesses are eligible to participate in the SBIR/STTR programs. A small business must meet the eligibility requirements set at the time of Phase I and II awards, the following criteria

1. Organized for profit, with a place of business located in the United States
2. More than 50% owned and controlled by one or more individuals who are citizens or permanent resident aliens of the United States, or by other small business concerns that are each more than 50% owned and controlled by one or more individuals who are citizens or permanent resident aliens of the United States; and
3. No more than 500 employees, including affiliates

For SBIR awards from agencies using the authority under 15 U.S.C. 638(dd)(1), an awardee may be owned and controlled by more than one VC, hedge fund, or private equity firm so long as no one such firm owns a majority of the stock .

Phase I awardees with multiple prior awards must meet the benchmark requirements for progress toward commercialization.

For STTR, the partnering nonprofit research institution must also meet certain eligibility criteria:

- Located in the US
- Meet one of three definitions:
  - Nonprofit college or university
  - Domestic nonprofit research organization
  - Federally funded R&D center (FFRDC)



### STTR differs from SBIR in three important aspects:

1. The small business awardee and its partnering institution are required to establish an intellectual property agreement detailing the allocation of intellectual property rights and rights to carry out follow-on research, development, or commercialization activities.
2. STTR requires that the small business perform at least 40% of the R&D and a single partnering research institution performs at least 30% of the R&D.
3. The STTR program allows the Principal Investigator to be primarily employed by the partnering research institution.

### 3) Participating Federal Agencies

Each year, Federal agencies with extramural research and development (R&D) budgets that exceed \$100 million are required to allocate 3.2% of that R&D budget to these programs. Currently, eleven Federal agencies participate in the program:

- Department of Agriculture
- Department of Commerce
- NIST and NOAA Department of Defense
- Department of Education
- Department of Energy
- Department of Health and Human Services
- Department of Homeland Security
- Department of Transportation
- Environmental Protection Agency
- National Aeronautics and Space Administration
- National Science Foundation

Each agency administers its program within guidelines established by Congress and managed by the Small Business Administration (SBA). These agencies designate R&D topics in their solicitations and accept proposals from small businesses. Awards are made on a competitive basis after a peer-reviewed, in some agencies and internally by others, proposal evaluation.

### 4) The Three Phases of SBIR/STTR



Figure 1. SBIR/STTR Three Phases

For ease of reading the SBIR/STTR program will be referred to as SBIR.

This program is a gated process with three phases, Phase I, Phase II, and Phase III with award/contract amount varying among agencies. Phase I is a technology commercial viability study to overcome key technical hurdles that could prevent successful commercialization. SBIR Phase II funds the development of a commercial prototype. Figure 1 shows the submission process and the amount of equity-free funding offered per Phase.

This three-phase program provides \$50K up to \$400K in Phase I and \$600K up to \$2M in Phase II. There is no support for Phase III where the awardee should be presenting at least pre-production solutions to potential customers. Agencies could buy the solutions from the grantees at their discretion since they have no obligation to do so.



# The Trust SBIR Program

## Mission and Vision

### Mission

To support scientific excellence, technological innovation, research and development, and commercialization of the results of these efforts with the support of federal agencies, their investments, the Puerto Rico Science, Technology & Research, Trust's Matching Funds in critical priorities to build a strong Puerto Rico economy.

### Vision

Making the Trust's SBIR program an economic engine in the economy of Puerto Rico while becoming a model in the USA by creating and enhancing small businesses while creating high-paying jobs in the technology sector. The retention of locally educated talent.

## Program Description and Outreach

The SBIR program at The Trust provides support to entrepreneurs with innovative technologies and applications in the commercialization of a product concept derived from their research and needs. The program provides technical and commercialization experts advice to work with small businesses teams in the search for non-dilutive federal funds to overcome the commercial viability risks associated with new technologies and applications. The program assists in the development and submission of competitive proposals to the SBIR program in all agencies.

The Trust program emphasizes two critical items to increasing the successful proposals: outreach and education. 1) Outreach: Colmena66 (C66) and the Grants Program together with the following organizations. C66 has a network of thousands of small businesses in Puerto Rico and, together with providing seminars, webinars, and one-on-one support has gone to its network to enlist companies to learn and submit competitive proposals. This year's initiative, Acércate Al Grant (AAG), has brought to the SBIR program 14 companies with the potential to submit a competitive proposal. 2) Education: The Trust supports the development and submission of proposals but does not include writing proposals, instead, it leads the applicants through the process of positioning their innovation, writing a competitive proposal to one or two agencies. As the proposals develop the applicants learn how to avoid programmatic and subtle mistakes that can get their proposals rejected. The concept consists of writing to the reviewers. Successful SBIR Programs together with grantees are creating a mentor network to share their experiences in writing a proposal and managing an award. It is expected that after this process, the applicant will have a good understanding of how to develop a competitive SBIR proposal.

The Trust is the coordinating entity of related activities SBIR in Puerto Rico. It assists all qualified small businesses, researchers, and individuals accessing these funding opportunities.

The following organizations form the Puerto Rico SBIR Program Committee responsible for coordinating the Program activities on the Island:

- Puerto Rico Science Technology Research Trust
- Colmena66
- P18
- SBIR Program
- PRIDCO
- SBA
- SBTDC
- Guayacán
- Mentors
- UPR
- Others

## Trust SBIR Support Eligibility Criteria

Eligible participants include:

1. Puerto Rico-based companies or companies that have their principal place of business in Puerto Rico. To meet this standard, a Company must have all, or substantially all, of its operations and employees located within Puerto Rico.
2. SBIR.GOV records should show Puerto Rico as the recipient state.
3. Over 51% of the work and expenses should take place in Puerto Rico.



4. Companies located outside of Puerto Rico are eligible to apply, subject to the following conditions before the disbursement of matching funds:
  - a. The company will have 90 days from the date of the grant agreement to relocate to Puerto Rico. If this eligibility requirement is not met, then the funds allocated for the grant will be forfeited and made available to other companies.
  - b. The company must submit documentation showing acknowledgment from the Federal Agency regarding its physical relocation to Puerto Rico and transfer of the Federal Grant to Puerto Rico.
  - c. The company will be also required to designate the PI or Co-PI, a Puerto Rico resident/employee.

## SBIR Matching Grant Program

Trust's SBIR Matching Grant program assists local innovative technology-based small business firms who have received a Phase I and Phase II award/contract to increase the possibility of taking their technologies to market. It offers critical complementary funding to strengthen its projects' R&D and commercialization efforts, 1-to-1 matching for Phase I & II SBIR proposals: to promote and increase commercialization of research. Match up to \$100,000 for Phase I and \$200,000 for Phase II. The Trust offers an SBIR Proposal Preparation Workshop to assist participants to prepare competitive proposals. The benefits of this program include 1) Providing a new, attractive incentive to apply for Federal SBIR Phase I grants, 2) Improving chances for proposal approval by Federal agencies with a letter of support indicating the availability of matching funds should they be awarded. 3) Closes funding gap between Phase I and Phase II contract awards and 4) Provides additional capital to accelerate R&D commercialization efforts.

The Trust's SBIR matching funds program has the following objectives:

1. Stimulate technological innovation.
2. Meet Federal research and development needs.
3. Foster and encourage participation in innovation and entrepreneurship by socially and economically disadvantaged persons.
4. Increase private-sector commercialization of innovations derived from Federal research and development funding.

These funds will:

1. Increase Puerto Rico's Innovation capacity, by supporting and encouraging SBIR Phase I awardees' firms to pursue Phase II funding.
2. Increase Puerto Rico's Innovation capacity, by supporting and encouraging SBIR Phase II awardees' firms to complete their prototype development, the expected outcome of a Phase II award.
3. Increase the amount of R&D Funding in Puerto Rico, by providing a mechanism to leverage federal funds as well as private capital.
4. Attract research talent by allowing companies from out of Puerto Rico to apply for matching funds, subject to meeting eligibility criteria.
5. Foster job creation and economic development in Puerto Rico by increasing the competitiveness of Puerto Rico's small businesses in attracting Federal SBIR and STTR grants.

## How it works:

Incentivizes the submission of winning proposals from Puerto Rico by providing non-dilutive matching funds to SBIR applicants. Trust Awardees may utilize the matching grant for any expenditure allowed by the SBIR funding agency, plus other expenditures not normally covered by the SBIR program such as the purchase of equipment, intellectual property protection/patent costs, commercialization/marketing costs, and other costs related to raising venture capital. The majority of the expenses covered by the matching grant must be incurred in Puerto Rico.

Firms receiving a federal SBIR Phase I award will receive a dollar-to-dollar matching grant from the Trust, of up to \$100,000.

For year one of the SBIR Phase II: The Trust will provide up to \$100,000 matching upon applicant's submission of proof of negotiation of a contract or the approval of the Phase II award. The objective of this portion of the funding is to provide critical gap funding to awardees obtaining the award.

For year two of the SBIR Phase II: The Trust will provide an additional match of up to \$100,000, subject to a dollar-to-dollar match obtained from awardees from private sources of funding. The objective of this portion of the funding is to leverage Trust funds with private capital.



Third-Party Funding may come from: Private investors, including angel investors and/or venture capitals; Ineligible sources of third-party funding include in-kind contributions, internal company funds, federal funds, Trust funds, or other State funds.

## Application Process

After securing an award/contract the small business contact the Trust SBIR Program director to discuss the process and the needed information. The funds are made available to the applicant after a Matching Funds Agreement developed by the Trust is signed by both parties. The awardee should provide the following information (the Trust reserves the right to ask for additional information deemed necessary) to proceed with the agreement negotiations.

1. Company Full legal name, as incorporated.
2. Is it for-profit or non-profit?
3. State and date of incorporation.
4. Tax ID Number (EIN).
5. Location of the company's main offices.
6. Company's location where the majority of the work will be conducted.
7. Company representative's name.
8. Representative's job title.
9. Representative's civil status.
10. Representative's place of residency.
11. Representative's email address.
12. Company's mailing address.
13. Company's phone number.
14. Company's Good Standing Certificate ("Certificado De Cumplimiento Emitido Por El Departamento De Estado").
15. Merchant's Registration Certificate ("Registro de Comerciante").
16. Tax Return Filing Certificate ("Certificado de radicación de planillas en Hacienda").
17. The Volume of Business License Tax ("Patente Municipal").
18. Has the company paid taxes in Puerto Rico? Share records.
19. Electronic Excel Document copy of the budget for use of Trust's matching funds:
  - a. The electronic template is provided with this notification. Excel electronic documents provided by the applicant must not be locked.
  - b. Indirect Cost charge must not exceed 10%. Fringe benefits should not include vacations, holidays, or sick days.
20. Electronic Word Document copy of budget justifications narrative for use of Trust's matching funds.
21. An electronic template is provided with this notification. Word electronic documents must not be locked.
22. Copy of awarded proposal in full.
23. Clear and detailed Statement of Work for use of Trust's matching funds including a timeline for deliverables and milestones.
24. Copies of any documents from the granting agency's Program Director approving or denying changes in work goals, activities related to the award/contract in the budget, milestones, change of personnel, change of work venue, and other communications that change the work as described in the awarded proposal.
25. All communications that affect the grant/contract performance

## SBIR Matching Funds Grant Program Approval and Disbursement

### Phase I Approval and Disbursement Procedures

If the applicant is successful in receiving an SBIR Phase I award, it must submit proof of notification of negotiation of the award or an executed SBIR contract, grant, or cooperative agreement between the federal agency and the applicant.

After the successful execution of an agreement between the Trust and the awardee, Phase I matching grants will be disbursed as follows

1. Funds disbursements for a year, up to \$100,000:
  - The Trust will disburse 50% of allocated funds upon signing of the matching funds' agreement
  - 25% midway through the first year
  - 25% at the end of year 1 upon completion of the final report.

Last disbursements will be made after the awardee submits the final report to the funding agency and the Trust, per the agreement. The report to the Trust must describe the work done, and a breakdown of the funds' expenditures.





## Phase II Approval and Disbursement Procedures

If the applicant is successful in receiving an SBIR Phase II award, it must submit proof of notification of negotiation of the award or an executed SBIR contract, grant, or cooperative agreement between the federal agency and the applicant.

After the successful execution of an agreement between the Trust and the awardee, Phase II matching grants will be disbursed as follows:

1. For year one of the SBIR Phase II: The Trust will provide up to \$100,000 matching upon applicant's submission of proof of negotiation of a contract or the approval of the Phase II award. The objective of this portion of the funding is to provide critical gap funding to awardees obtaining the award
2. For year two of the SBIR Phase II: The Trust will provide an additional match of up to \$100,000, subject to a dollar-to-dollar match obtained from awardees from private sources of funding. The objective of this portion of the funding is to leverage Trust funds with private capital. Third-Party Funding may come from:
  - Private investors, including angel investors and/or venture capitals;
  - Strategic partners pursuant to a development contract as long as the partner provides cash (as opposed to in-kind services) to the Company and the purpose of the contract is to advance the work done under the SBIR grant or contract.
  - Ineligible sources of third-party funding include in-kind contributions, internal company funds, federal funds, Trust funds, or other State funds.

## SBIR CY21 PERFORMANCE METRICS

This calendar year we have seen a lot of interest in our SBIR program. The Trust's outreach was led by Colmena66 with contributions from the Department of Economic Development Commerce (DEDC), and Small Business Technology Development Center (SBTDC) among others. Current Colmena66's, AAG program recruited 14 SBIR candidate companies to the SBIR Program to receive support towards the development of a competitive proposal. This support team includes four (4) new SBIR writers, three from Puerto Rico, in addition to the three others that have worked with the Trust in SBIR and non-SBIR proposals. It is expected that this program, will generate 5-7 submissions this calendar year.

Up until October of this year, 106 companies and individuals have reached the Trust to learn about the SBIR program and to start working on the commercialization of their innovative technologies and applications, see Table 1,

Summary	Totals	% Total
<b>Companies Reached the Trust</b>	<b>106</b>	
<b>Potential SBIR</b>	<b>85</b>	<b>80%</b>
<b>Not SBIR Proposal</b>	<b>21</b>	<b>20%</b>
<b>Active</b>	<b>50</b>	<b>47%</b>
<b>Dormant</b>	<b>56</b>	<b>53%</b>

Table 1. SBIR Program Companies Participation.

Table 1. Shows the breakdown of SBIR candidates from first-order evaluations. These numbers reflect referrals from AAG, P18, Trust staff, universities, DDEC, and others. The team, Trust plus grant writers, followed up and worked with all the companies considered as having technology and its proposed application with a possibility of an SBIR submission. Not all companies had ideas that would be competitive in the targeted agency, that is, Not SBIR Proposal.

Of the 106 evaluated companies, 85 (80%) of the companies/individuals have ideas that were considered to have concepts with competitive proposal submissions potential.

A total of 21 (20%) of the interested companies did not have SBIR strong concepts. This was communicated to all companies and encouraged them to continue searching for innovative ideas towards a possible SBIR submission.

A total of 50 (47%) companies continue working with our team, Active, including grant writers, to submit competitive proposals to the right agency or agencies.



Many companies, 56 (53%) did not follow up with their SBIR efforts, Dormants. There are two major reasons for companies going dormant; their business activities do not provide the bandwidth necessary to continue, the other is their realization that developing a competitive proposal is difficult, requiring time and efforts they cannot or do not want to spend on the development of such a proposal. Some of the companies, identified as active, are making slow progress due to their multiple activities combined with the demanding efforts for the development of a competitive proposal.

Since the Trust has assumed leadership of the SBIR Program in Puerto Rico there has been significant progress in the number of awards and dollars amount brought by new awards and matching funds. These results show how the SBIR awareness on the Island is resulting in a higher number of people searching for our support.

Actions	Totals
New Phase II Awards	2
Processing Phase II Matching Agreement	2
Phase II Submitted	3
Phase I Submitted	5
New awards	2
Current Awardees	3

Table 2. Results Breakdown

Table 2 shows the results from the team's efforts this year, CY21. Two key categories are submissions and awards: eight (8) proposals submissions and two (2) Phase II awards. Five (5) are Phase I, and three (3) submissions are Phase II submissions. The Phase II Matching Funds Agreement is being worked on.

The Trust's SBIR program started in the second half of the calendar year 2015. During the previous 30 years, 28 awards SBIR awards were scattered over that period without coordinated efforts. See Table 3.

Before the Trust's leadership years, Puerto Rico had 28 awards, four STTRs, and 24 SBIR. These results brought \$4,205,645 in awards. In the years since 2015 Trust's efforts have seen 24 awards, that is, 86% when compared to the previous years. These new awards have brought \$8,201,28 in funds, 188% of what had been achieved previously.

More of the program's performance is shown in tables 3 through 6.

Before Trust	#	After Trust	% Since Trust
SBIR/STTR #	28	24	86%
Total \$	\$4,355,426	\$8,201,282	188%

Table 3. Comparison in dollars between the first and Trust SBIR efforts

Phase	Total	Total SBIR Funds	Total Matching Funds	Contribution to Puerto Rico Economy
Phase I	17	\$3,582,419	\$1,649,998	\$5,232,417
Phase II	7	\$4,618,863	\$600,000	\$5,218,863
	24	\$8,201,282	\$2,249,998	\$10,451,280

Table 4. Trust Contribution to the Puerto Rico Economy Table.



Table 4 shows the breakdown of awards by phase and the equivalent matching funds amounts. The rightmost column shows the total funds our efforts have contributed to the Puerto Rico economy, salaries, sales, taxes, etc.

While over the 30 years of the program contributed a total of \$8,201,282 with the Trust leadership SBIR awards and matching funds have contributed \$10,451,280, a 240% ratio.

Agency	Total	Total SBIR Funds	Total Matching Funds	Contribution to Puerto Rico's Economy
NSF	13	\$4,199,037	\$1,400,000	\$5,599,037
NIH	7	\$2,977,318	\$600,000	\$3,577,318
NASA	2	\$874,929	\$100,000	\$974,929
USDA	1	\$100,000	\$100,000	\$200,000
NOAA	0	\$0	\$0	\$0
DoD	1	\$49,998	\$49,998	\$99,996
	24	\$8,201,282	\$2,249,998	\$10,451,280

Table 5. Trust SBIR program Awards per Agency.

Table 5 shows the breakdown of awards funds into the Puerto Rico economy by granting agencies.

Before Trust	# Awards	After Trust # Awards	% Since Trust
SBIR/STTR #	28	24	86%
Total \$	\$4,355,426	\$8,201,282	188%

Table 6. Contrast In Results Between Before and After Trust Intervention

Table 6 shows a comparison of Puerto Rico's SBIR performance before the Trust took over the leadership of these activities. Since the Trust leadership of the SBIR program Puerto Rico has received 24 awards, and 28 through the first 30 years of the program. This shows that during the Trust's leadership it has achieved 86% of awards in the previous 30 years.

The rightmost column in Table 6 shows that in less than a third of the time the Trust has seen a 188% increase in the total amount of funds the agencies have granted to Puerto Rican companies.

### New Awards:

1. Michael Contreras - NASA Phase II award - \$749,995 - Ensemble Consultancy.com
  - Working on Matching Agreement -
2. Social Solutions - DoD (Air Force) Phase I 4/12/2021 \$49,998
  - Matching Funds Agreement signed.
3. LifeGene DNA -Rafael Guerrero Preston, Fast Track NIH/ \$399,998
  - Working on Matching Agreement

This shows the progress this program has made when compared to states that had been more active in SBIR than Puerto Rico. The total number of Puerto Rico SBIR awards during the existence of the SBIR Program, 52, still falls short of the next state up the list of awardees, Alaska with 96. We have already exceeded Alaska's awards over the last 6 years. It is a goal of this program to surpass Alaska's total number of awards over the next five years. Also close the gap with North Dakota, a total since the beginning of SBIR of 155 awards, in 10 years or less. We aim to earn as many as 50 awards a year soon.



## Long Term Goals

This program's leadership aims to surpass Alaska today's total number of awards over the next five years and close the gap with North Dakota, next up on the winners' list. One driving force in these efforts is to be able to earn as many as 50 awards a year.

With the increase in the numbers of awards, two things must take place, 1) a higher number of participants from universities and the recruitment of companies outside Puerto Rico, mainland, and international. The recruitment could use the support of organizations that work with the diaspora and other organizations that may have access to such a group.

**SBIR/STTR Federal Grants** - A digital hub of resources and funds for the development and commercialization of innovative technologies.



**Juan E. Figueroa, Ph.D.**- Dr. Juan E. Figueroa is Entrepreneurship Advisor and Associated Researcher at the Puerto Rico Science, Technology, and Research Trust (Trust) responsible for working with researchers and innovators to transform the results of their research and ideas into product concepts with high potential for commercial success. He also works in the search for research and commercialization funds from private and government sources for the Trust community. Juan E. Figueroa, Ph.D., Program Director  
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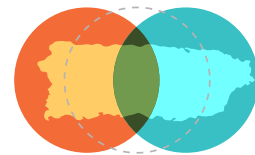


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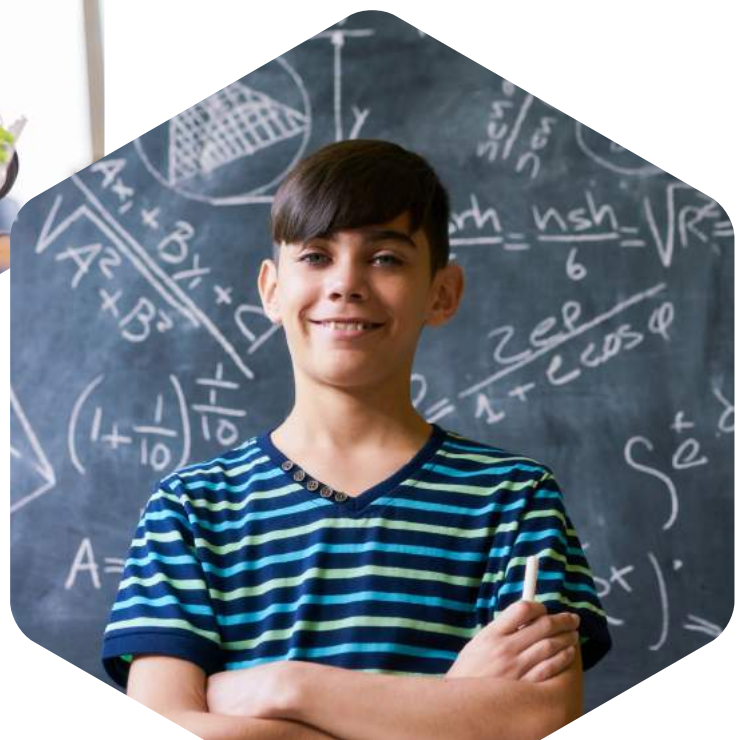
Puerto Rico  
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# FOUNDATION PROGRAM



# STEM

EDUCATION PROGRAM





The STEM Education & Workforce Development Program has the mission to reimagine and lead the way towards STEM, Career Technical Education and Workforce Development innovation in Puerto Rico. Through our work with the educational and workforce development ecosystem, we strive towards sound public policy, learning opportunities for all and contribute to innovation while contributing to the economic development of the island.

We connect with key education, technology and innovation projects, communities and organizations, engaging in meaningful work that advances our mission.

We collaborate with key stakeholders to ensure successful STEM, CTE and Workforce Development initiatives.

We design informal and formal approaches to learning, training, research and capacity building.

We evangelize on behalf of innovation, lifelong learning and professional development as the keys towards socioeconomic development on the island.

## AREAS OF FOCUS

### Public Policy

Lead the effort to establish a Puerto Rico STEM Education Strategic Plan that charts the path towards cutting-edge education within the island's education system.

### Strategic Partnerships

To advance STEM Education & the Workforce of the future in Puerto Rico by leveraging resources, tools and necessary convenings to avail both formal and informal STEM education programs, as well as workforce development opportunities that enhance the professional capacity of our community.

Support the local STEM Education and Workforce ecosystem for equitable access for all  
Provide effective leadership to make STEM Education and workforce development experiences with ease of access, lowest cost possible, with industry recognized partners and integrating the highest quality and best practices.

## PROGRAM SNAPSHOT

- Over \$76,000 in direct services to participants for year 2020/2021
- 2,632 Individuals received services from our projects including students and teachers.
- 65% of program participants are from public schools
- 35% of STEM education experiences are females
- Over \$1.4 million in new projects for STEM Education and Workforce Development initiatives over the next 2 years



## OUR INITIATIVES

### STEM EDUCATION

#### STEM Boxed Kit Experience

In 2020, Puerto Rico Science Technology and Research Trust through its STEM Education Program developed the STEM Boxed Kit Experience as an alternative to face-to-face programs. With the collaboration from The Engineering Place at North Carolina State University and Emergent Tools, Inc., the SBK promotes and support high-quality informal STEM learning integrating future career interest, exposition to the principles of electrical engineering, alternative energies, agriculture as well as virtual and augmented reality engaging participants with content that enhances skills in mathematics, technology, and general sciences.



Through its existence, the STEM Boxed Kit Experience has received financial support from sponsors like New Fortress Energy (SBKE – Electrical) and the AMGEN Foundation (Virtual / Augmented Reality) to provide high-quality educational content free of charge to more than 400 public and private school students on the island during school year 2020/2021.

Projections for upcoming years include the inclusion of online asynchronous components to the SBKE like reading materials, independent study options and transferable content for classroom integration.

#### Teacher Workshops

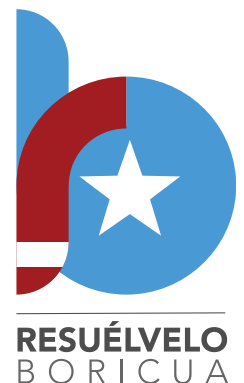
The STEM Education Program's mission includes working with key stakeholders within the educational community. Leveraging our collaborative agreement with the Puerto Rico Department of Education, the program deployed its Teacher Workshop series delivering professional development experiences free of charge to teachers withing the public education system.

During the year 2020/2021, amidst lockdown and closed school buildings, the Teacher Workshop series served over 1,500 public and private education teachers in topics such as STEM Education and Workforce Development, Physics, Biology, Environmental Protection and other. Sessions were announced and registered through Department of Education's outreach instruments and delivered using videoconferencing platforms provided by the Trust.

#### Resuélvelo, Boricua

The innovation and entrepreneurship challenge where student teams compete for the chance to develop and implement their solution prototypes had its third iteration during year 2020/2021. This time with \$20,000 in funding for the winners.

This year teams like Boricuapónico, have been funded to work on an aquaponic system that can produce high yields with less energy and overall effort from owners. Throughout the process, participants have received procurement assistance, as well as inclusion within the Puerto Rico Science Technology and Research Trust's network of collaborators to receive mentorship and coaching while prototypes are ready for deployment.





# WORKFORCE DEVELOPMENT

## Puerto Rico Ready [PR-Ready]

In August 2021, the Puerto Rico Science Technology and Research Trust signed a two-year contract to advance its premier workforce training initiative under the Community Development Block Grant – Disaster Relief (CDBG-DR). With an obligated \$1.3M, Puerto Rico Ready will offer will train and develop information and communication technology (ICT), food and agricultural, health services, manufacturing, and historic preservation professional for critical industry sectors. The program will enable workforce skill sets for an agile continuation of responses, services and products affected by Hurricanes Irma and Maria. Through an industry-ready approach, PR-Ready will offer a multi-track training and education intervention that will provide participants with a) intensive training leading to certificates and credentials needed for employment in the targeted areas; b) job coaching and mentoring of participants to ensure coursework completion and improved job searching, and c) an online platform for professional profile showcase made available to potential employers.

Puerto Rico Ready will develop education and training geared towards primarily under and unemployed individuals across the island. Participants are expected to create a career pathway and acquire tools that will enhance their employability competencies, as well as develop skills to sustain a well-paying job for self-support and professional mobility in one of the selected emergent economic sectors. PR-Ready will also provide participants with the opportunity to showcase their skills in a professional profile while active in the program's database. The program will deploy last trimester of 2021 and will impact more than 360 individuals ready to be integrated into the 21st century workforce the island needs so much.

## Academia del Cacao

Academia del Cacao: Un Proyecto de Agroforestería is a structured initiative designed to fulfill the gaps in knowledge and expertise with agroforestry farming practices among farmers in Puerto Rico. Cacao is a relevant crop for the introduction and practical training of agroforestry concepts because it is a high value crop which may provide direct benefits to farmers. The proposed project will serve as a pilot program to be developed and executed in the northern region of Puerto Rico with the establishment of two (2) cacao-agroforestry farm models. Participants have access to theoretical and practical hands-on experiences to develop technical capacity and expertise with cacao farming and the agroforestry practices.

Progress against each objective to date, our work has focused on preparing the necessary programmatic baseline structures to enable the execution of objectives.

### Project snapshot:

Outreach in the Community

- 5 print media outlets (4/21/2021 through 5/15/2021)
- 2 radio interviews
- 1 TV appearance
- Over 200 individual informative communications and phone call orientations

### Recruitment

- Applications were open from 4/19/2021- 5/28/2021
- 228 farmers applied.
- 80 semi-finalists selected for participation in the program
- 40 have been invited to participate.





## Program Content

- Theoretical workshops have been designed to provide participants with the necessary tools to approach the development of a cacao agroforestry system.

The Academia del Cacao is funded in part by both the Boston Foundation and the Peter Alford Foundation to whom we are grateful as they are supporting workforce development, as well as capacity building in agriculture and food security.

## Professional Certificates in Emerging Technologies

In 2020/2021 the STEM Education & Workforce Development program completed a collaboration agreement with one of the nation's leading professional associations in the field of information technology, the Internet Security and Controls Association (ISACA). The partnership enables the Puerto Rico Science Technology and Research Trust to become the provider of two professional certificates:

### Information Technology Associate

This certification provides a blend of knowledge and performance-based components to validate readiness in basic Information Technology and Communications fields. Five knowledge and performance-based certificates stack up to one career-advancing certification ideal for participants looking to demonstrate fundamental understanding of essential areas of IT.

### Certificate in Emerging Technologies

Offering more than just an understanding of theory and concepts, CET's four certificates stack up to a certification that validates ability to perform technical tasks and advise on, assess, and implement emerging technologies. The certification is focused on participants in current or future roles in IT audit, risk, security, cybersecurity, governance, privacy, business development and beyond.

## RESEARCH, PUBLICATIONS & ENGAGEMENTS

### Research

Academic, Financial and Personal Experiences of Puerto Rican Students and their Impact on Mechanical Engineering Career Selection and Persistence in College: A Longitudinal Study. Ana G. Méndez University

### Publications

O'Keefe, D., Valentine-Rodriguez, J., González-Espada, W. J., Meier, D., & Belcher, L. (2021). STEM attrition at a military academy: Cadets' experiences and recommendations. Submitted for publication.

O'Keefe, D., Valentine-Rodriguez, J., González-Espada, W. J., Meier, D., & Belcher, L. (2021). STEM attrition at a military academy: Cadets' experiences and recommendations. Poster presented at the Summer National Meeting of the American Association of Physics Teachers, August 2 (virtual).

Valentine, J., Zenón, F., and Gonzalez-Espada, W.J. (2021). Planning a longitudinal study of Puerto Rico public school graduates' persistence in STEM. Oral presentation at the Spring Meeting of the Kentucky Association of Physics Teachers, March 13th (virtual).

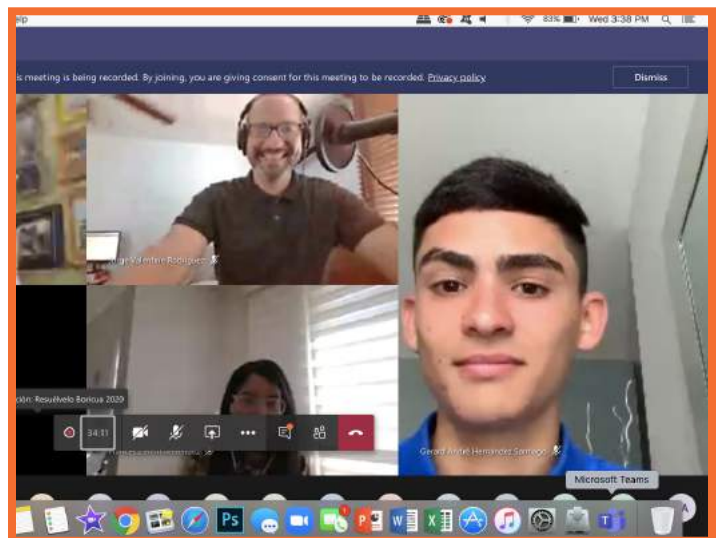
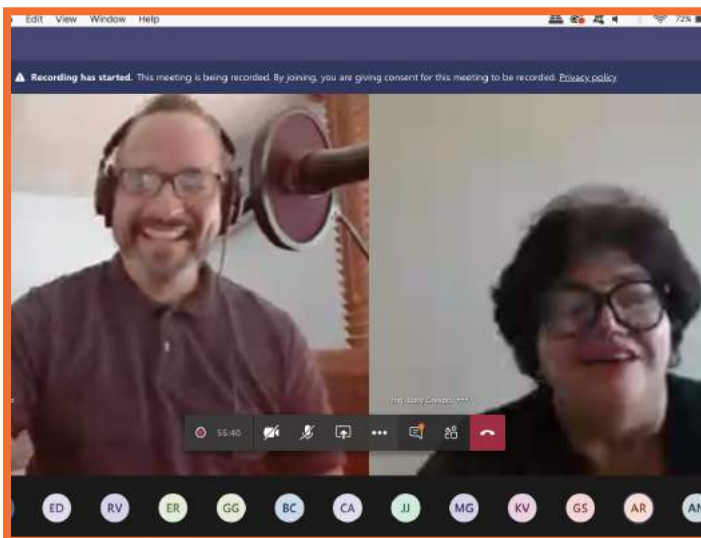
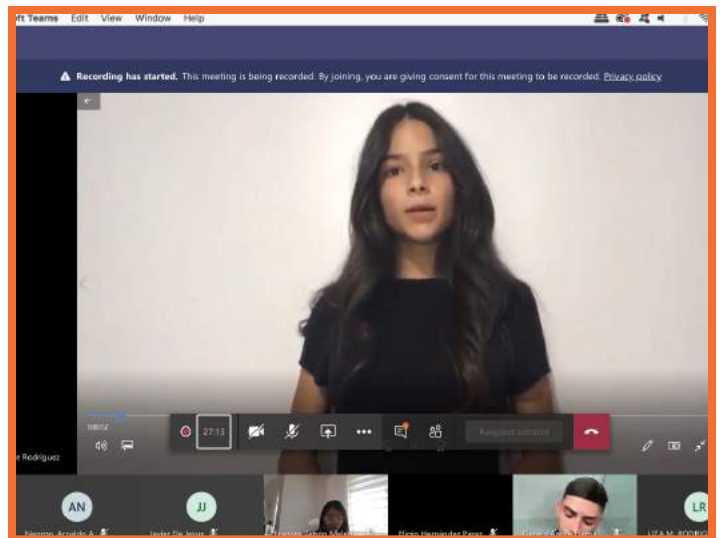
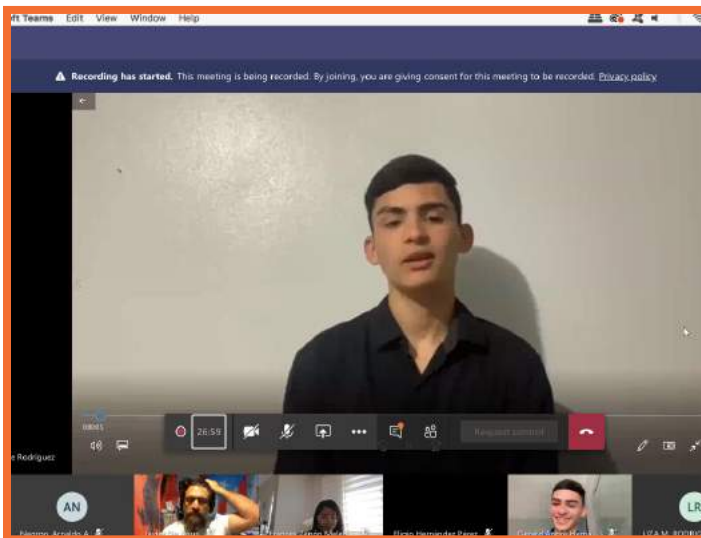
### Engagements

Education and the Future. Ars Electronica. September 10, 2021.

How to Bridge the Divide Between Education and the IT Workforce. Arizona State University – Global Silicon Valley Summit 2021. August 13, 2021. San Diego, California.



# Resuelvelo Boricua





Puerto Rico  
Science, Technology  
& Research Trust

FOUNDATION  
PROGRAM

# Science City







# Program Description

## Science District

The Trust's main infrastructure-related initiative is Science District. It is a Puerto Rico-wide network of state-of-the-art facilities for research, academic, and business initiatives that advance knowledge and innovation. Its members benefit from important tools described in Act 214-2004. Its major component is Science City, a 69 cuerdas mixed-use project located in San Juan, in a dense concentration of hospitals, universities, and other science and technology resources. The Trust aims to fortify Puerto Rico's research infrastructure and enable its use as a tool to develop, attract, and retain a vibrant research ecosystem. To do so, it is identifying and incorporating additional resources that contribute to the Trust's overarching mission of facilitating economic development and citizens' well-being through science, technology, research, and Puerto Rico's industrial base.

## Science City

Science City is the major component of Science District. It is located in Puerto Rico's capital city of San Juan, hosting state-of-the-art facilities for research, academic, and business initiatives, as well as other lifestyle amenities. The 69 cuerdas site will contain a vibrant, culturally rich, planned science campus in an urban setting with many important science, technology, research, health, and academic resources nearby. The Trust is executing a plan of action with the ultimate goal of facilitating such an innovation ecosystem. To do so, the Trust is pursuing two action steps: First, it is seeking a development partner to lease, finance, develop, and manage the mixed-use 69 cuerdas Science City project (Master Development- RFQ). Secondly, it is identifying and approaching potential anchor tenants to be a part of Science City.

## Mission and Vision

The Puerto Rico Science, Technology and Research Trust has made a commitment to the advancement of a "Knowledge Economy" in Puerto Rico. Our Master Plan outlines the flagship development of this vision – a new Science City. Science City is to become a globally recognized innovation hub connecting and integrating Puerto Rico science and technology ecosystem. As a multidisciplinary international center of collaboration, it will inspire new ideas, inventions and enterprises, resulting from its vibrant and rich environment to innovate, work, and live.

The new development will sit at the geographic and ideological hearth of the Knowledge Corridor – a nearly 2000 acre district within San Juan comprised of the University of Puerto Rico, Rio Piedras campus; San Juan's Central Medical Campus; the University of Puerto Rico's Botanical Garden; Universidad Metropolitana; and various publicly-owned potential development sites for life science industries, education and new lifestyle neighborhoods.

The Master Plan will establish a comprehensive Life Sciences cluster in San Juan able to facilitate the development of a new knowledge economic vision for Puerto Rico.

## Benefits of Science City

To support private development efforts to attract tenants to Science City, developers of the Site can take advantage of numerous tax incentives including:

- Full real estate tax abatement.
- Full sales tax abatement on construction materials and capital equipment.
- Full exemption from Federal Income Taxes for bona fide residents of Puerto Rico and Puerto Rican corporations.
- Competitive tax incentives to attract investors, tenants and employee.

## Science City specific incentives:

- Up to \$250,000 of the compensation received by eligible researchers/scientists residing in Puerto Rico and conducting work within the Puerto Rico Science District created by Act No. 214 of 2004, as amended will be exempt from Puerto Rico income taxes (Section 1031.02(a)(27). This exemption is independent and separate to the other incentives discussed herein.
- Sales tax exemption on construction materials and capital equipment (11.5%).
- New Tax Market Credit Eligible Location.



## Accomplishments Fiscal Year 2020-2021

### Forward Center Building

- Bid process ended on November 2020. IG Builder was the lower bidder and signed contract on March 2021.
- Break ground of the Forward Center Building was on April 2021. The project is 17 % completed.

### Fase 1

- FASE1 will be headquartered on the second floor of the same building where parallel18 has its office space, San Jose Building, in Santurce, Puerto Rico.
- The RFQ/RFP to hire an architect/engineer firm to design the office space is in progress. The RFP/RFQ award notification will be on September 2021.
- Science City Boulevard's parcels.
- Science City Boulevard's parcels were returned to the Trust from Department of Transportation and Public Works

### Farm in the City

- A Farmer Training Center with a vertical farm technology have been established in Science City.
- 5 years contract with this company have been signed to perform training to other farmers.

### Oso Blanco Conservation Exhibition and Experimental Space

- The Oso Blanco Experimental Space will be a 3,000 square feet with lobby, exhibition area, conservation lobby, small library and research study space and a deposit or stage area.
- The RFQ/RFP to hire an architect/engineer firm to design the space was finished. Rigau Arquitectos have been hired.



Forward Center Construction Process



Forward Center Construction Process



Forward Center Construction Process





Forward Center 3DView



Forward Center 3D Northwest Approach

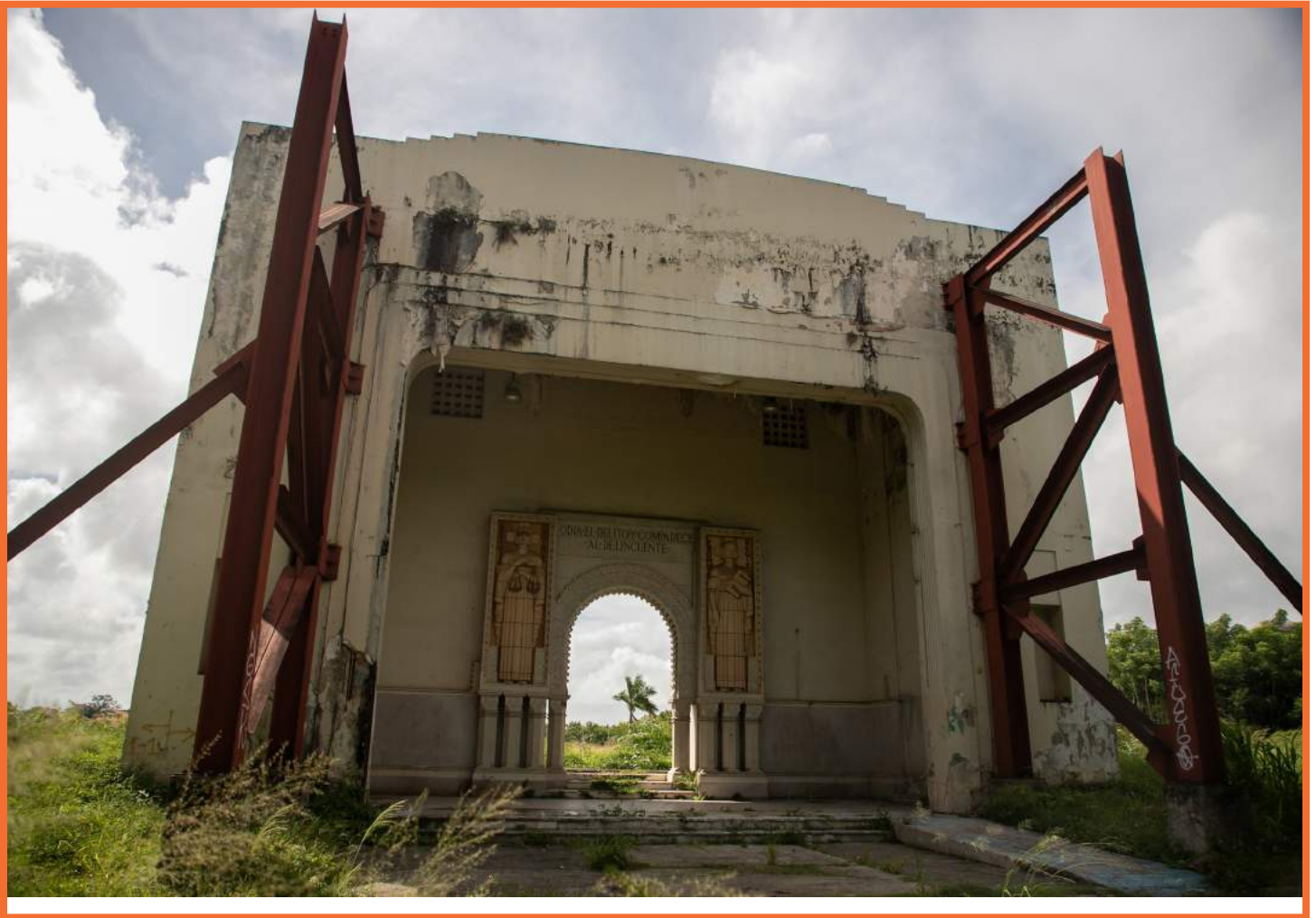




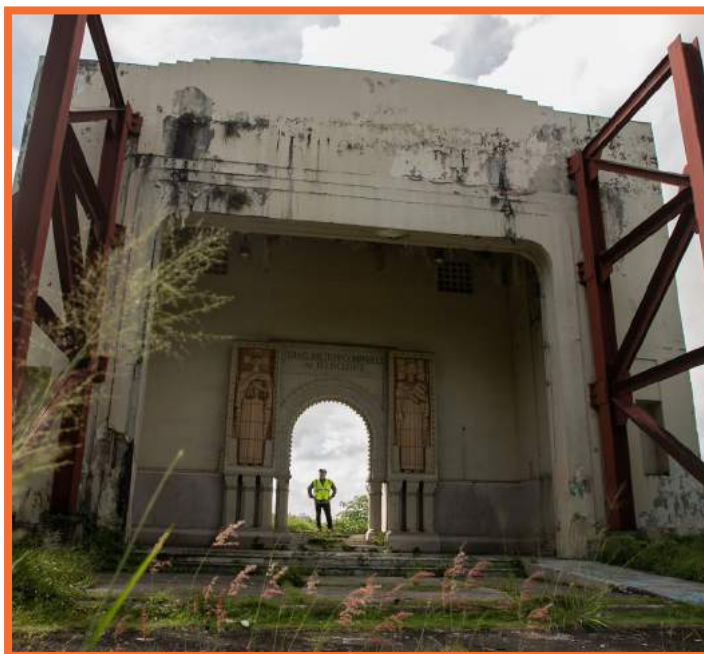
Forward Center Interior Office Space



Forward Center 3D South Approach



Oso Blanco State Penitentiary Old Entry



Oso Blanco State Penitentiary Old Entry



Oso Blanco State Penitentiary Old Entry





Innovation Center Entrance



Innovation Center Lateral Facing street

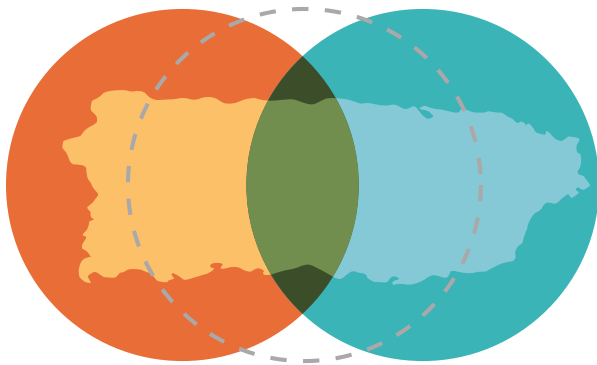


Innovation Center Signage



Puerto Rico  
Science, Technology  
& Research Trust

# FOUNDATION PROGRAM



**PR** RESEARCH  
& INNOVATION



**Meet-ups**







## Program Description

The Research and Innovation MeetUps Program continues to be a successful platform for sustained dialogue among stakeholders of emerging ecosystems in Puerto Rico, as we remain focused on stakeholder engagement from the vantage point of our program drivers: increasing social capital, shared leadership, and collaboration, as well as more sensible and intelligent business practices. Salient achievements for the Meetups Program are presented below.

## Vision

A community that thrives on diversity and creativity as the basis for its social economic prosperity.

## Mission

To foster productive, solution-design dialogues to increase citizen wellbeing while promoting innovation and economic development.

## Meetup events

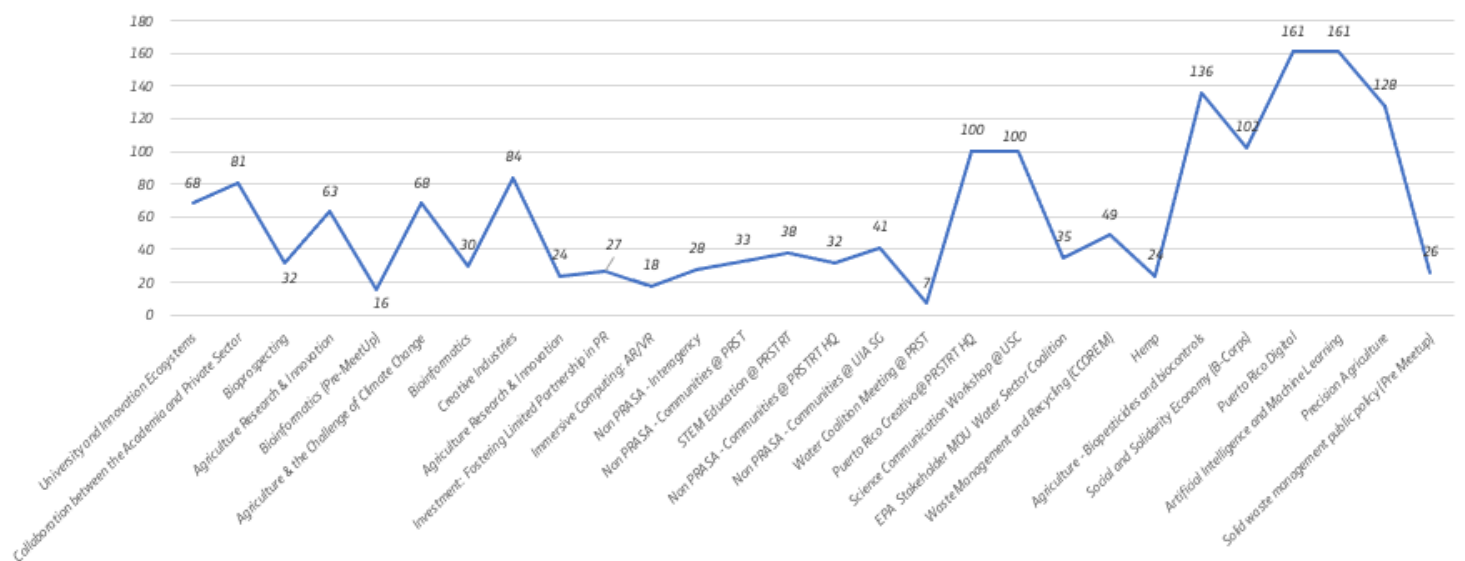
The Meetups Program adapted to pandemic challenges by shifting the in-presence mode of the events to a remote, virtual one.

We facilitated 6 meetup events, with an aggregate attendance of 714 persons and 54 speakers. The topics of discussion were: Biological Pest Control (136 attendees), Empresas B (Social & Solidarity Economy, 102 attendees), Puerto Rico Digital (161 attendees), Artificial Intelligence and Machine Learning (161 attendees), Precision Agriculture (128 attendees), Waste Management Public Policy (Pre Meetup, 26 attendees).

This yielded two positive outputs. First, a significant increase in audience frequency throughout the year, which equals 42% of the historical meetup program attendance and further validates that the program remains an effective convener of a wide variety of stakeholders aligned with the Trust's mission and vision. Second, we avoided in-presence production costs related to food and beverage, utilities, and space.

## PRSTRT program support

MeetUp Program - Attendance (2015-2021)





The Meetups Program's supportive engagement reached 9 PRSTRT programs, as described below:

- **Center for Tropical Biodiversity**- Explore collaboration for the improved research activity related to new biological based pesticides and fungicides;
- **Colmena 66** – Participation in the SBIR/STTR Federal Grant Program to expand outreach efforts and increase recruitment;
- **Cultural Heritage Innovation Program** – Design and development support for Creative Economy research and strategic planning;
- **STEM Education** – Continued support for the launching of Academia del Cacao;
- **ReGrow PR** – Provided technical support for program launching;
- **Parallel 18 / Pre18** – Continued outreach and networking efforts in benefit of Parallel 18 and Pre18 companies. It must be noted that this effort has become an integral part of the Meetup event agenda, as we aim showcase Parallel 18 and Pre18 companies that align with discussion topics;
- **Puerto Rico Public Health Trust** – Provided support for the development of a grant application submitted to the Segarra Boerman Foundation;
- **Response Innovation Lab** – Provided support for the product development of a grant management application for Licimatic;
- **Research Grants Program** - Explored the development of new opportunities to support research and researchers in Puerto Rico.

## PRSTRT Special Projects

The Meetups Program, under the direction of our CEO, Lucy Crespo, also engages in strategic visioning and pursues intelligent opportunities to improve PRSTRT's program's leadership and leverage economic growth and impact. During the last year we engaged over 15 multistakeholder sector special initiatives along three core areas: strategic networking and support, MOU support, and grant development. Crafted from the vantage point of social capital development we aim to braid efforts to engage in shared leadership and collaboration towards the creation of value added, sustainable activities, as explained forthcomingly.

## Strategic Networking and Support

Beyond the encounter of audiences to engage in meaningful dialogue, the Meetups Program actively identifies salient leadership in these meetup events and engages them in order to foster spinoff initiatives that address islandwide challenges by enabling grounding of quick wins and advancing the interests of that emerging ecosystem while cultivating the relationships among the varied stakeholders that populate it. For example, the meetup events held for solid waste management Meetup led to the reactivation of a working group for waste management while the BCorps Meetup, led to a collaborative arrangement with Sistema B for the development of a social and solidarity economy in Puerto Rico.

## Addressing Puerto Rico's challenges by fostering civil society leadership focused on collective action solutions

Understanding ecosystemic relationships have allowed us to hone the dynamics of convoking emerging leaders to action-driven initiatives such as roundtable in-depth group discussions, grant applications for special projects, and furthering multistakeholder social capital.

## Waste Management

We led the recruitment of Puerto Rico Waste Management Round Table, whose work is focused on three areas of action: public policy, education and data collection. The continued coordination of the Round Table, has added new stakeholders to the discussion, like the PR Department of Economic Development, the Recycling Museum, Liga de Ciudades and Cambio PR.

As it relates to public policy we are collaborating with the UPR's Resiliency Law Center to conduct the first comprehensive study of the framework of the current public policy that regulates waste management in Puerto Rico. In addition, we are planning the launching of the first Waste Management Advocacy Day, focused on educating our lawmakers of the imminent threats that the lack of attending to Puerto Rico waste management crisis has to the Puerto Rico's Public Health.

We have also begun a collaboration with La Liga de Ciudades in a pilot project to support the Recycling and Waste Management Initiative in the municipality of Hormigueros. The PRSTRT is collaborating with this effort by developing a recycling materials data gathering tool that will keep track on a live dashboard of all the potential materials that are recovered and the final volumes that are effectively transferred from municipalities to be recycled by recycling companies.



Furthermore, several collaborations with the Trust's department have taken place, for example: 1) IT Department: development of a recycling material data gathering tool that will be made available to municipalities for the effective collection of recycling materials creating a live dashboard to track recyclable materials available for purchase; 2) Research Grants Program: promoting increased research on sustainable materials that can replace toxic materials and the reduction of potential recycling materials. Last but not least, we are in collaboration with the government's Puerto Rico Department of Economic Development for the structuring of incentives to be offered to business that propose solutions that help reduce and reuse recycle waste.

### **Social and solidarity economy**

The Meetups Program is fostering leadership to expand the dialogue of social and solidarity economy by promoting the organization of more business models aligned with that of B-Corps Sustainable Business Certification. We engaged in collaboration with Sistema B to gain a more profound understanding of the challenges, benefits, and potential opportunities to contribute to the social and solidarity economy. We have identified, B Labs, as an entity that may support the transition of some 20 businesses with models that are compatible with and allow them to become a B Corporation as a value added course of action.

### **Food security**

This endeavor is focused on impacting Puerto Rico's agricultural sector through research, science and technology activities focused on a reduction of the climate change impact, as agricultural activity is said to generate an estimated 25% of annual GHG (green house gasses). To that end, we conducted two Meetup events (Precision Agriculture and Biological Pest Control), explored potential collaboration with the Center for Tropical Biodiversity, and engaged the Peter Alford Foundation to apply for a grant in collaboration with the STEM Education Program in order to study the future of agroecological practices and its viability as a commercially viable business that could potentially scale and have a positive impact in our ecosystems but also provide healthy pesticides free produce that can contribute to Puerto Rico's public health.

In this effort, we are part of the founders of MASA, Mesa de Acción de Soberanía Alimentaria, as the established working group on the matter to foster collective action within the agroecological sector.

An important development to highlight is Sterling College Eco Gather, a content development sharing platform that has provided a \$50k subgrant for the development of a knowledge sharing platform to foster agroecological farming and food sustainability.

### **Creative Economy**

The creative economy endeavors led by the Meetups Program have been formally integrated into PRSTRT's Cultural Heritage and Innovation Program.



Puerto Rico  
Science, Technology  
& Research Trust



Design  
Marketing  
Communications







## Communications & Marketing Growth & Value

### Non Paid Publicity

THE BIG  
THINK  
GROUP

**\$6,879,655.52**  
Impressions: 246,711,719  
Appearances: 510

bcw

**\$170,959.54**  
Impressions: 166,584,150  
Appearances: 124

PharMaCon  
HEALTH-MARKETING & COMMUNICATIONS GROUP

**\$140,225.00**  
Impressions: 140,225.00  
Appearances: 42

### Total Non Paid Publicity Ad Value



# \$7,190,840.06

Total impressions: 413,436,094

Total appearances: 676

## Digital Content

### New Digital channel Fideicomiso.TV

New PRSTRT digital channel launched on 2021 as the one-stop channel to access all digital content produced for PRSTRT programs and organization. Including new segments such as “**Conversando**”, series of one-on-one interviews between communications leadership and program directors to showcase the diversity of skills, profiles and achievements of the team. An effort launched in an unplanned period of remote work in the midst of the pandemic.

Another effort is the Podcast series, that was also initiated to address the growing interest in podcasting during the pandemic.

 Fideicomiso.TV	<b>Total of Conversando episodes</b>  <b>7</b>	<b>Total of Podcasts episodes</b>  <b>13</b>
 <b>Videos produced</b>  <b>103</b>	<b>New logos, programs &amp; projects</b>  <b>27</b>	



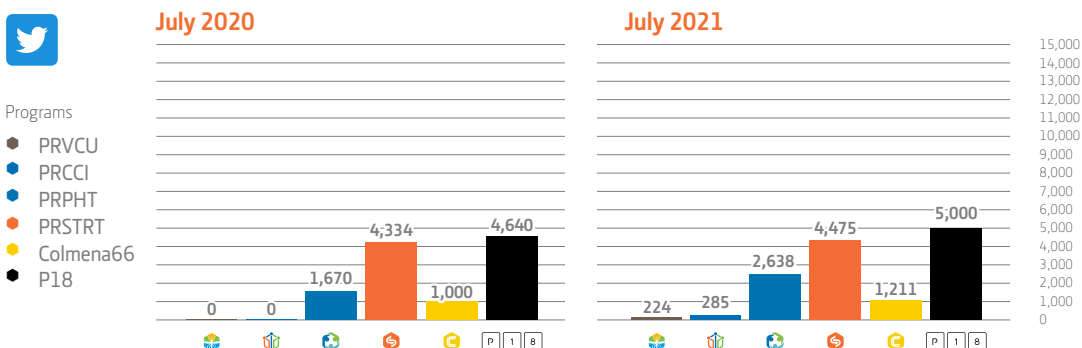
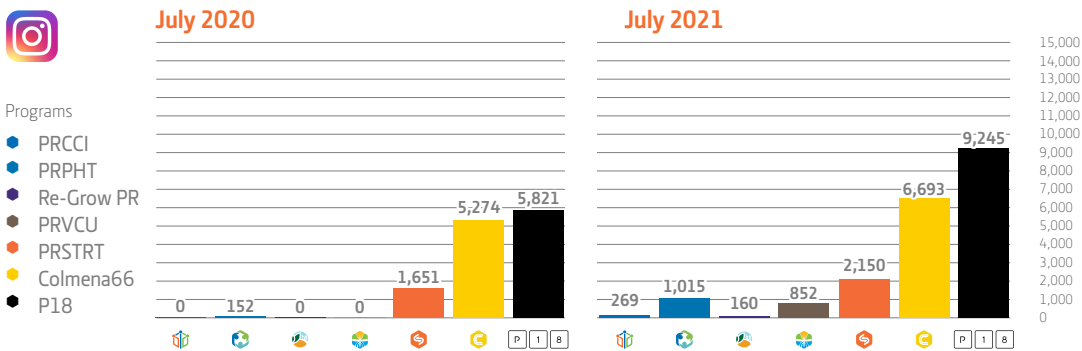
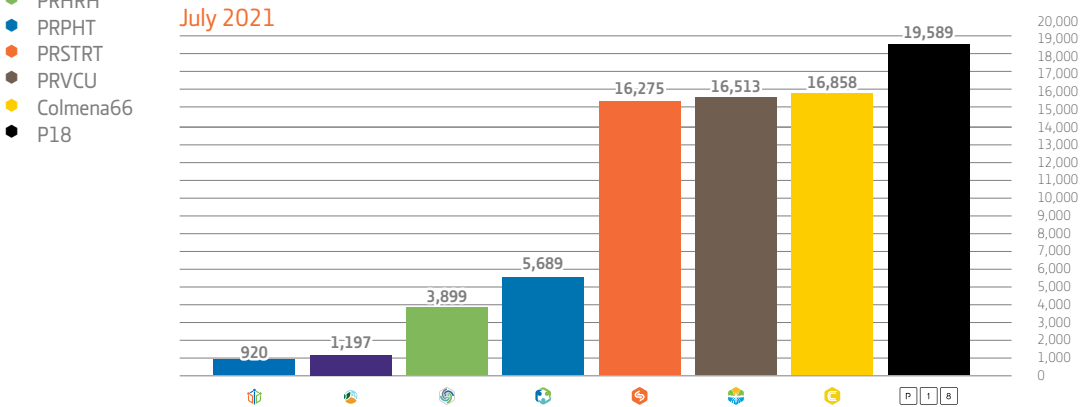
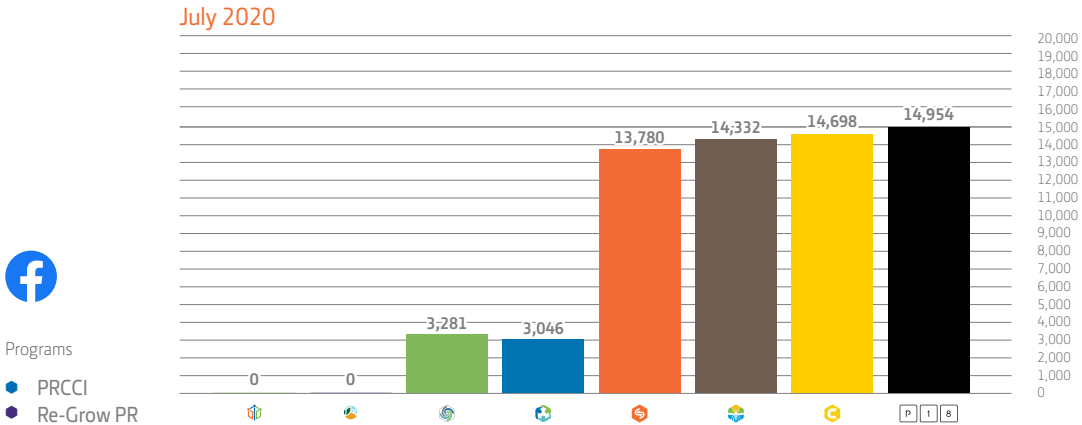
# New Logos





# Social Media Growth

The PRSTRT programs whose accounts maintain as the Top 5, with the most reach and interaction in social networks are: Parallel18, Colmena66, PR Vector Control Unit and the main PR Science Trust account.



## Media Clippings



**UPR**  
Recinto Universitario de Mayagüez



### Valiosas aportaciones surgen desde el Centro de Respuesta Técnica e Innovación del RUM en el manejo del COVID-19

Por Ídem Osorio De Jesús ([idem\\_osorio@upr.edu](mailto:idem_osorio@upr.edu))



### Informe revela que el ingenio boricua impulsa el emprendimiento en Puerto Rico

Según el reporte de impacto de Colmena66, el 31% emprende porque busca solucionar problemas con sus ideas

Por Metro Puerto Rico



Suscríbete

### Negocios

SECCIONES +

EMPRESAS Y COMERCIOS

### Engine-4 inaugura el primer laboratorio enfocado en IoT e inteligencia artificial

La expansión recibió una inversión del DDEC y el Municipio de Bayamón de \$623,000, además de equipos especializados y recursos técnicos de múltiples compañías de tecnología

viernes, 30 de octubre de 2020 - 5:22 p.m.  
Por Sharon Minelli Pérez



Home > Business > Parallel18, the accelerator from Puerto Rico, prov...

**BUSINESS**

### Parallel18, the accelerator from Puerto Rico, provides funding for 39 startups impacted by COVID-19

Parallel18 invested \$1 million into 39 startups from its portfolio to help ease economic constraints brought on by COVID-19.

The Sociable 11 months ago 4 Comments  
accelerators , COVID-19 , funding , startups





Suplementos

CAPÍTULO DE LA MUJER INDUSTRIAL

## Lucy Crespo ve como asignatura impostergable la transformación de la economía mediante la adaptación de la tecnología

Para quien fuera la primera mujer en presidir la Asociación de Industriales, "estamos ante una oportunidad única porque nos va a abrir nuevos horizontes"

lunes, 30 de noviembre de 2020 - 2:59 p.m.  
 Por Larissa Vázquez Zapata

Noticias

SECCIONES

LOCALES

## El Fideicomiso de Salud Pública reconoce una baja de contagios y hospitalizaciones por COVID-19 en Puerto Rico

Sin embargo, los expertos hacen un llamado a no bajar la guardia debido a que la enfermedad continúa ocasionando muertes

miércoles, 30 de diciembre de 2020 - 4:42 p.m.  
 Por Marga Parés Arroyo

IN-BRIEF

## Application deadline looms for 'Challenge to Innovate: NASA Edition' competition

Contributor - January 28, 2021

Share this:

## Arranca segunda fase de estudio de seroprevalencia de COVID-19 en la isla

*Dicho análisis busca confirmar el por ciento de la población que pudo haber estado expuesta al virus.*

Por Metro Puerto Rico

elVocero.com

“El Vocero y nada más que El Vocero.” Decir la **Verdad**, es decir el Vocero.

PRÓXIMO

Clara Liz sonríe a las oportunidades

SUPLEMENTOS > Mujeres de Temple

**Carmen Yamira Medina Ayuso**

Fundadora de Beauty 911

Yaira Solís Escudero, EL VOCERO 31/03/2021

endi

Suscríbete

Estilos de vida

SECCIONES +

SALUD Y EJERCICIOS

**Reconocerán el desarrollo científico de investigadores que laboran en la isla**

El Consorcio para la Investigación Clínica de Puerto Rico celebrará su quinto aniversario con un evento virtual, libre de costo, con varias conferencias sobre diversos temas de salud

miércoles, 28 de abril de 2021 - 10:16 a.m.

Por ELNUEVODIA.COM

efeminista

Home > Género > Igualdad > Machismo > Mujeres > ONU

Alfonso Rodríguez | San Juan

29 abril, 2021, 8:02 am

**Nace el primer Foro Económico de Mujeres (WEF) en el Caribe para reducir la brecha de género**

TEMBORES

91°

PUERTO RICO

EXCLUSIVA

Instalan sensores que emiten alerta temprana de terremotos

TEMBORES - MAYO 31, 2021 8:32 PM

Recopilarán información que será compartida con la Red Sísmica. Conoce sobre Grillo PR.



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**EN ESPAÑOL**

## Jóvenes puertorriqueños en STEM llevan innovación empresarial a otro nivel en reto estudiantil “Challenge to Innovate: NASA Edition”

By **INGRID COTTO**  
EL SENTINEL ORLANDO  
JUN 30, 2021 AT 6:59 PM

[Twitter](#) [Facebook](#) [Share](#)

4 de Octubre de 2021

# CB en Español

## Anuncian nueva oportunidad para que empresas creen su plan de resiliencia

Por CB en Español el 24 de Septiembre de 2020

[Facebook](#) [Twitter](#) [Google+](#) [WhatsApp](#)  
[Pinterest](#) [LinkedIn](#)

**Resiliency and Business Innovation**  
A program of the

**The Weekly Journal**

NEXT UP [With Oil Market Tight, OPEC+ Decides How Much More to Pump](#)

**FEATURED**

## More than 100 Puerto Rican Events in Global Entrepreneurship Week

Business support organizations moving the economy

Newsroom, The Weekly Journal  
Nov 12, 2020 Updated Nov 12, 2020 0

**GlobeNewswire** by notified SIGN IN

**GLOBAL ENTREPRENEURSHIP WEEK FOR PUERTO RICO**

## Cryptocurrency Leaders and Blockchain Legends Meet in Puerto Rico to Address the Future of the Internet and the Global Economy November 16



# Landing Pages











Puerto Rico  
Science, Technology  
& Research Trust

# Education and Capacity Building







## Mission

Our Education and Capacity Building initiatives aim to provide participants instruction, mentorship, and other development opportunities in strategic sectors of science, technology, and entrepreneurship. We strive to give Puerto Ricans the tools they need to be more competitive in science and technology fields, or to pursue entrepreneurial initiatives. The Trust supports and funds various programs, in partnership with several stakeholders who promote entrepreneurship, research and investing opportunities, to further economic development in the island. Also, through our Sponsorship Policy we have powered events and activities of R&D, entrepreneurship and innovation.

### **The Trust invested more than \$82,500 in science, technology, research & entrepreneurship training initiatives, including the following:**

Reimagine Education with Hack the Class Challenge2020; Universidad de Puerto Rico with Centro de Apoyo a la Innovación y Comercialización; Puerto Rico Information Technology Cluster with CIO & IT Leadership Conference; Sales & Marketing Executives with SME Digital Forum 2021; Puerto Rico Broadcasting Corporation with La Fórmula STEAM tv program; Code Puerto Rico LLC with Holberton School; Women Economic Forum Caribbean Edition; IOT Innovatech Latam.

## Memorandum of Understanding signed and conceptualized on 2020-2021

The Trust establish alliances with a diverse range of organization, educational, private, and non-profit, and the result is a bigger map of stakeholders to reinforce the Trust mission & vision. These are the organizations with which the PRSTRT has officialized alliances during this fiscal year. **Memorandum of Understanding (MOUs) (July 2020 – June 2021)**

1. Bayamón Municipality
2. PREMA
3. Toa Baja Municipality
4. Aguadilla Municipality
5. Vega Baja Municipality
6. Google
7. Barceloneta Municipality
8. Guaynabo Municipality
9. Loíza Municipality
10. Scuba Dogs Society
11. Club Rotario de Dorado
12. Lajas Municipality
13. Voluntariado de Ingenieros Profesionales
14. Mercy Corps (PRPHT)
15. Ciencia Puerto Rico (PRPHT)
16. CDC Dengue Branch (PRVCU)
17. Engine4 (P18)
18. Internet Society of Puerto Rico
19. Cámara de Comercio de Puerto Rico
20. Grillo (RBI)
21. Pathstone Corporation
22. Resiliency Law Center – UPR Derecho (RIL)
23. Caguas Municipality
24. Sterling College
25. PRSBDTC (C66)
26. La Liga de las Ciudades (C66)
27. San Juan Bautista School of Medicine (TTO)
28. ISACA (STEM Ed.)
29. Rising Seas Institute, Inc.
30. Response Innovation Lab
31. Hogar Esperanza Unida (PRPHT)
32. Taller Salud (PRPHT)
33. Redes del Sureste (PRPHT)
34. Centro de Servicios Médicos (PRPHT)
35. Instituto Médico Familiar (PRPHT)
36. LBA Medical Services (PRPHT)
37. REMAS (PRPHT)
38. Policlínica Las Américas Medical Center (PRPHT)
39. Insignia Parkville (PRPHT)
40. Insignia Living (PRPHT)
41. Hogar de la Loma San Agustín (PRPHT)
42. Hogar Mi Casa en el Campo (PRPHT)
43. Tamara Home Care (PRPHT)
44. ARSE (PRPHT)
45. CDT Centro de Servicios Médicos Integrados (PRPHT)
46. Semila LLC (STEM Ed.)
47. Empresa Municipal Salud Integrada de la Tierra Alta (PRPHT)
48. Access Medical Group (PRPHT)
49. Provider Network Solutions of PR (PRPHT)
50. George Mason University (RBI)
51. UPR Escuela Graduada de Planificación (CHIP)



## Collaborators



Municipio de Lajas , PR.



Rotary Club of PR



Municipio de Barceloneta, PR



Ciudad de Bayamón, PR



Rising Seas Institute



George Mason University



Sterling College



ISACA



Grillo



Ciencia PR



Mercy Corps



Scuba Dogs Society



Engine 4



# Sponsors



IOT Innovatech 2021



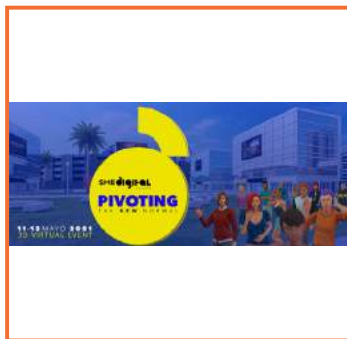
Women Economic Forum



Holberton



La Fórmula Steam



SME Digital Pivoting 2021



CIO & IT Conference



UPR Rio Piedras



Puerto Rico  
Science, Technology  
& Research Trust

# Consolidated Financial Statements







RSM Puerto Rico



**PUERTO RICO SCIENCE, TECHNOLOGY AND  
RESEARCH TRUST AND ITS SUBSIDIARIES**  
*(A Puerto Rico Not-For-Profit Organization)*

Basic Consolidated Financial Statements  
June 30, 2021 and 2020



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## INDEPENDENT AUDITORS' REPORT

To: The Board of Trustees of  
Puerto Rico Science, Technology and Research Trust

We have audited the accompanying consolidated financial statements of Puerto Rico Science, Technology and Research Trust, a Puerto Rico not-for-profit organization, and its Subsidiaries, which comprise the consolidated statements of financial position as of June 30, 2021 and 2020, the related consolidated statements of activities, functional expenses, and cash flows for the years then ended, and the related notes to the consolidated financial statements (collectively, the financial statements).

### Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of the financial statements that are free from material misstatement, whether due to fraud or error.

### Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

**THE POWER OF BEING UNDERSTOOD**  
AUDIT | TAX | CONSULTING

RSM Puerto Rico is a member of the RSM network and trades as RSM. RSM is the trading name used by the members of the RSM network. Each member of the RSM network is an independent accounting and consulting firm which practices in its own right. The RSM network is not itself a separate legal entity in any Jurisdiction.

**Opinion**

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Puerto Rico Science, Technology and Research Trust and its Subsidiaries as of June 30, 2021 and 2020, and the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

San Juan, Puerto Rico  
October 27, 2021.

Stamp No. E471528 was affixed to  
the original of this report.

**PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST  
AND ITS SUBSIDIARIES****CONSOLIDATED STATEMENTS OF FINANCIAL POSITION**

June 30, 2021 and 2020

	2021	2020
<b>ASSETS:</b>		
Cash	\$ 23,530,989	\$ 33,040,055
Accounts receivable	869,527	703,527
Prepaid expenses	71,861	175,763
Due from governmental entities	5,428,877	1,128,892
Investments	4,273,838	6,235,611
Convertible promissory notes receivable, net	1,315,000	560,000
Other assets	29,483	29,483
Endowment fund	54,081,742	35,609,069
Property and equipment, net	1,863,868	676,294
Building, net	6,847,334	6,120,644
Land and property for research, development and infrastructure project related to science and technology	18,100,307	16,100,307
Land development costs	11,329,395	11,329,395
Construction in progress - Science City	11,153,287	11,148,356
	<u>\$ 138,895,508</u>	<u>\$ 122,857,396</u>
<b>LIABILITIES AND NET ASSETS</b>		
<b>LIABILITIES:</b>		
Program service payable	\$ 1,641,363	\$ 1,634,879
Accounts payable	2,156,775	1,965,232
Accrued expenses	520,304	454,658
Other liabilities	154,022	11,019
Loan payable	-	1,786,300
	<u>4,472,464</u>	<u>5,852,088</u>
<b>NET ASSETS:</b>		
Without donor restrictions:		
Undesignated	57,337,560	61,636,932
Designated by the Board of Trustees for endowment	54,081,742	35,609,069
	<u>111,419,302</u>	<u>97,246,001</u>
With donor restrictions:		
Purpose restrictions	4,903,435	3,659,000
Perpetual in nature	18,100,307	16,100,307
	<u>23,003,742</u>	<u>19,759,307</u>
	<u>134,423,044</u>	<u>117,005,308</u>
	<u>\$ 138,895,508</u>	<u>\$ 122,857,396</u>

The accompanying notes are an integral part of these consolidated statements of financial position.





**PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST  
AND ITS SUBSIDIARIES**



**CONSOLIDATED STATEMENTS OF ACTIVITIES**

For the years ended June 30, 2021 and 2020

	2021		
	Without donor restrictions	With donor restrictions	Total
<b>REVENUES, SUPPORT AND OTHERS:</b>			
State grants and assessments	\$ 10,000,000	\$ -	\$ 10,000,000
Federal grants	13,888,913	2,641,645	16,530,558
Private grants and sponsorships	70,417	1,228,991	1,299,408
Donations and contributions	39,061	-	39,061
Clinical trials	196,733	-	196,733
Rental income	348,742	-	348,742
Net return (loss) on investments	9,884,534	819,453	10,703,987
Net return on endowment fund	444,934	-	444,934
Other income	81,382	-	81,382
	<u>34,954,716</u>	<u>4,690,089</u>	<u>39,644,805</u>
Net assets released from restrictions:			
Satisfaction of program restrictions	3,445,654	(3,445,654)	-
	<u>38,400,370</u>	<u>1,244,435</u>	<u>39,644,805</u>
<b>OPERATING EXPENSES:</b>			
Program and services:			
Research and data	2,211,591	-	2,211,591
Public health initiative	14,115,201	-	14,115,201
Technology transfer and commercialization	4,760,460	-	4,760,460
Science City development	413,330	-	413,330
	<u>21,500,582</u>	<u>-</u>	<u>21,500,582</u>
Supporting services:			
Management and administrative	4,523,902	-	4,523,902
	<u>26,024,484</u>	<u>-</u>	<u>26,024,484</u>
	<u>12,375,886</u>	<u>1,244,435</u>	<u>13,620,321</u>
<b>NON-OPERATING INCOME:</b>			
Gain on extinguishment of debt	1,797,415	-	1,797,415
Donation of land	-	2,000,000	2,000,000
	<u>1,797,415</u>	<u>2,000,000</u>	<u>3,797,415</u>
<b>CHANGE IN NET ASSETS</b>	<u>14,173,301</u>	<u>3,244,435</u>	<u>17,417,736</u>
<b>NET ASSETS</b> , beginning of year	<u>97,246,001</u>	<u>19,759,307</u>	<u>117,005,308</u>
<b>NET ASSETS</b> , end of year	<u>\$ 111,419,302</u>	<u>\$ 23,003,742</u>	<u>\$ 134,423,044</u>

Continues . . .

**PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST  
AND ITS SUBSIDIARIES****CONSOLIDATED STATEMENTS OF ACTIVITIES**

For the years ended June 30, 2021 and 2020

Continued...

	2020		
	Without donor restrictions	With donor restrictions	Total
<b>REVENUES, SUPPORT AND OTHERS:</b>			
State grants and assessments	\$ 12,248,663	\$ -	\$ 12,248,663
Federal grants	11,871,209	-	11,871,209
Private grants and sponsorships	276,951	2,454,626	2,731,577
Donations and contributions	101,209	-	101,209
Clinical trials	64,742	-	64,742
Rental income	268,753	-	268,753
Interest income	116,187	-	116,187
Net return (loss) on investments	2,707,091	(133,086)	2,574,005
Net return on endowment fund	212,635	-	212,635
Other income	181,205	-	181,205
	<u>28,048,645</u>	<u>2,321,540</u>	<u>30,370,185</u>
Net assets released from restrictions:			
Satisfaction of program restrictions	2,481,680	(2,481,680)	-
	<u>30,530,325</u>	<u>(160,140)</u>	<u>30,370,185</u>
<b>OPERATING EXPENSES:</b>			
Program and services:			
Research and data	4,879,203	-	4,879,203
Public health initiative	12,485,395	-	12,485,395
Technology transfer and commercialization	6,234,079	-	6,234,079
Science City development	303,268	-	303,268
	<u>23,901,945</u>	<u>-</u>	<u>23,901,945</u>
Supporting services:			
Management and administrative	4,049,488	-	4,049,488
	<u>27,951,433</u>	<u>-</u>	<u>27,951,433</u>
<b>CHANGE IN NET ASSETS</b>	<u>2,578,892</u>	<u>(160,140)</u>	<u>2,418,752</u>
<b>NET ASSETS</b> , beginning of year	<u>94,667,109</u>	<u>19,919,447</u>	<u>114,586,556</u>
<b>NET ASSETS</b> , end of year	<u>\$ 97,246,001</u>	<u>\$ 19,759,307</u>	<u>\$ 117,005,308</u>

The accompanying notes are an integral part of these consolidated statements.



**PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST  
AND ITS SUBSIDIARIES**



**CONSOLIDATED STATEMENTS OF FUNCTIONAL EXPENSES**  
For the years ended June 30, 2021 and 2020

	2021					Total
	Program activities				Support activity	
	Research and data	Public health initiative	Technology transfer and commercialization	Science City development	Management and administrative	
Program support:						
Capacity building and sponsorships	\$ 30,232	\$ -	\$ 44,203	\$ -	\$ -	\$ 74,435
Research and development grants	391,279	35,000	100,000	-	-	526,279
Matching grants	-	-	800,000	-	-	800,000
Parallel 18 grants	-	-	1,023,167	-	-	1,023,167
Other program initiatives	182,404	6,216,039	272	5,263	-	6,403,978
	<u>603,915</u>	<u>6,251,039</u>	<u>1,967,642</u>	<u>5,263</u>	<u>-</u>	<u>8,827,859</u>
Personnel costs:						
Salaries and wages	590,567	4,130,348	1,354,342	123,727	1,565,125	7,764,109
Benefits and payroll taxes	217,263	1,485,563	430,801	48,225	617,636	2,799,488
	<u>807,830</u>	<u>5,615,911</u>	<u>1,785,143</u>	<u>171,952</u>	<u>2,182,761</u>	<u>10,563,597</u>
Professional services	388,378	1,157,508	479,500	226,997	732,840	2,985,223
Occupancy expenses:						
Depreciation and amortization	27,999	413,294	87,673	-	247,147	776,113
Rent	-	-	162,120	-	27,000	189,120
Repairs and maintenance	2,224	-	70	-	258,087	260,381
Security	-	-	-	-	100,740	100,740
Other	11,182	35	524	-	455,942	467,683
	<u>41,405</u>	<u>413,329</u>	<u>250,387</u>	<u>-</u>	<u>1,088,916</u>	<u>1,794,037</u>
Travel	207	212,695	26	2,561	15,852	231,341
Other	369,856	464,719	277,762	6,557	503,533	1,622,427
Total operating expenses	<u>\$ 2,211,591</u>	<u>\$ 14,115,201</u>	<u>\$ 4,760,460</u>	<u>\$ 413,330</u>	<u>\$ 4,523,902</u>	<u>\$ 26,024,484</u>

Continues . . .



**PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST  
AND ITS SUBSIDIARIES**



**CONSOLIDATED STATEMENTS OF FUNCTIONAL EXPENSES**  
For the years ended June 30, 2021 and 2020

Continued...

	2020					Total
	Program activities				Support activity	
	Research and data	Public health initiative	Technology transfer and commercialization	Science City development	Management and administrative	
Program support:						
Capacity building and sponsorships	\$ 96,575	\$ 20,000	\$ 145,490	\$ -	\$ -	\$ 262,065
Research and development grants	3,348,312	-	46,193	-	-	3,394,505
Matching grants	-	-	445,770	-	-	445,770
Parallel 18 grants	-	-	2,701,877	-	-	2,701,877
Other program initiatives	94,764	2,448,010	50,000	-	-	2,592,774
	<u>3,539,651</u>	<u>2,468,010</u>	<u>3,389,330</u>	<u>-</u>	<u>-</u>	<u>9,396,991</u>
Personnel costs:						
Salaries and wages	600,310	6,279,768	1,151,571	75,568	1,222,096	9,329,313
Benefits and payroll taxes	226,203	1,667,067	423,844	22,189	498,982	2,838,285
	<u>826,513</u>	<u>7,946,835</u>	<u>1,575,415</u>	<u>97,757</u>	<u>1,721,078</u>	<u>12,167,598</u>
Professional services	212,964	546,273	539,591	191,017	774,237	2,264,082
Occupancy expenses:						
Depreciation and amortization	25,460	150,122	94,998	-	222,212	492,792
Rent	-	-	162,120	-	24,205	186,325
Repairs and maintenance	-	-	420	5,700	214,069	220,189
Security	-	-	-	-	139,446	139,446
Other	2,048	15	886	-	378,912	381,861
	<u>27,508</u>	<u>150,137</u>	<u>258,424</u>	<u>5,700</u>	<u>978,844</u>	<u>1,420,613</u>
Travel	22,554	122,591	100,052	2,456	31,122	278,775
Other	250,013	1,251,549	371,267	6,338	544,207	2,423,374
Total operating expenses	<u>\$ 4,879,203</u>	<u>\$ 12,485,395</u>	<u>\$ 6,234,079</u>	<u>\$ 303,268</u>	<u>\$ 4,049,488</u>	<u>\$ 27,951,433</u>

The accompanying notes are an integral part of these consolidated statements.



**PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST  
AND ITS SUBSIDIARIES**



**CONSOLIDATED STATEMENTS OF CASH FLOWS**

For the years ended June 30, 2021 and 2020

	2021	2020
<b>CASH FLOWS FROM OPERATING ACTIVITIES:</b>		
Change in net assets	\$ 17,417,736	\$ 2,418,752
Adjustments to reconcile change in net assets to net cash provided by (used in) operating activities:		
Bad debts expense in convertible promissory notes receivable	150,000	75,000
Gain on conversion of notes receivable	-	(6,904)
Unrealized loss on investments	(650,120)	2,339,199
Realized (gain) loss on investments, net	111,275	(1,134,162)
Investment received in lieu of interest payment	-	(169,116)
Capitalized income on Endowment fund	(444,934)	(212,635)
Unrealized gain on Endowment fund	(9,687,537)	(630,184)
Depreciation and amortization	776,113	492,792
Property and equipment received as donation	-	(39,425)
Land received as donation	(2,000,000)	-
Gain on extinguishment of debt	(1,797,415)	-
Changes in operating assets and liabilities-		
Decrease (increase) in assets:		
Accounts receivable	(166,000)	1,161,153
Prepaid expenses	103,902	(68,028)
Due from governmental entities	(4,299,985)	3,849,171
Other assets	-	(9,999)
Increase (decrease) in liabilities:		
Program service payable	6,484	917,842
Accounts payable	191,543	(306,035)
Accrued expenses	76,761	6,418
Other liabilities	14,003	2,519
Net cash provided by (used in) operating activities	<u>(198,174)</u>	<u>8,686,358</u>
<b>CASH FLOWS FROM INVESTING ACTIVITIES:</b>		
Advances under convertible notes receivable	(905,000)	(335,000)
Proceeds from sale and redemption of investments	2,927,823	28,879,080
Purchase of investments	(427,205)	(115,000)
Contributions to Endowment fund	(8,340,202)	(34,766,250)
Purchase of property and equipment	(1,646,015)	(489,261)
Addition to construction in progress - building	(915,362)	(238,242)
Addition to construction in progress - Science City	(4,931)	-
Net cash used in investing activities	<u>(9,310,892)</u>	<u>(7,064,673)</u>
<b>CASH FLOWS PROVIDED BY FINANCING ACTIVITIES:</b>		
Proceeds from loan payable	-	1,786,300
<b>NET INCREASE (DECREASE) IN CASH</b>	<b>(9,509,066)</b>	<b>3,407,985</b>
<b>CASH, beginning of year</b>	<b>33,040,055</b>	<b>29,632,070</b>
<b>CASH, end of year</b>	<b>\$ 23,530,989</b>	<b>\$ 33,040,055</b>

The accompanying notes are an integral part of these consolidated statements.





## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

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#### 1) Organization and summary of significant accounting policies:

- A) Organization – Puerto Rico Science, Technology and Research Trust (the Trust) is a not-for-profit organization created on August 18, 2004 by Act No. 214, as amended (the Act 214), of the Legislature of the Commonwealth of Puerto Rico (the Commonwealth). The purpose of the Trust is to foster, and fund research, development and infrastructure projects related to science and technology that will promote the economic, social or educational development of the Commonwealth and to operate exclusively for charitable, educational and scientific purposes. The Act 214 also designates the Trust as a Public Health Institute, an Educational Organization and allows the Trust to act as fiscal agent to pursue certain federal funding opportunities on behalf of the Commonwealth. The Act 214 also enables the Trust to establish a research institute through which researchers from public and private research institutions might affiliate with and enables the Trust to evaluate competitive grant proposals and/or act as fiscal sponsor to pursue funding opportunities on behalf of these institutions.

The projects of the Trust are to be financed as follows: (i) the greater of \$7,130,000 or 35% out of the monies deposited in the Special Fund for Economic Development managed by the Puerto Rico Industrial Development Company (PRIDCO) for the fiscal year ended June 30, 2021 and the greater of \$6,340,000 or 31% for the fiscal year ended June 30, 2020, (ii) the monies of Scientific Investigation Fund for the Centenary of the University of Puerto Rico (Centenary Fund), (iii) a special appropriation of \$5,000,000 from the Improvements Fund, (iv) \$5,000,000 from the balance of collections of federal excise taxes in accordance with Section 7652(a)(3) of the United States Internal Revenue Code 1986, as amended, and, (v) private grants and donations, other government funds, and legislative appropriations.

The Act 214, as amended on August 2017, provides that the Board of Trustees is to be composed of eleven (11) trustees, two (2) of whom shall be members *ex officio* including the Secretary of the Department of Economic Development and Commerce and other government agency representative to be appointed by the Governor of the Commonwealth; and nine (9) members from the private sector.

Since September 2016, the Trust has been awarded, as prime recipient and subrecipient, with federal funds from the US Department of Health and Human (DHHS) - Center for Disease Prevention and Control, the DHHS - National Institutes of Health, the US Department of Commerce – Economic Development Administration, the US Department of the Treasury, and the US Department of Agriculture. In addition, during the years ended June 30, 2021 and 2020, the Trust has been the primary recipient, or acted as fiscal sponsor, for the implementation of privately funded initiatives, mostly related to recovery efforts after the passing of Hurricane Maria in Puerto Rico in September 2017 and the organization's Public Health Institute initiative.

Subsidiaries – The Trust has established the following subsidiaries by virtue of Article 5(26) of Act 214, as amended, whereby the Trust may organize subsidiaries or affiliates subject to its total or partial control to carry out any assignment from the Trust's Board of Trustees for the best interest of the Trust:

- The Puerto Rico Consortium for Clinical Investigation, Inc. (PRCCI) – A not-for-profit entity organized on January 20, 2016. PRCCI began operations on April 1, 2016 and its purpose is to improve the impact, quality, and speed of clinical research activity conducted in Puerto Rico, especially in the fields of oncology, infectious diseases, neurological disorders and cardio-metabolism. To achieve its mission, PRCCI partners with clinical research sites across Puerto Rico to ensure access to a diverse patient population. PRCCI's operations are sustained through a combination of revenues obtained from clinical research sponsors, grants and contracts with state and private entities, and contributions from the Trust.



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

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- PRST, Inc. (PRST) – A not-for-profit entity organized on December 28, 2016. The purpose of PRST is to act as a Qualified Promoter as defined in Section 2034.01 of the newly enacted Incentives Code of Puerto Rico. A Qualified Promoter is authorized by the Department of Economic Development and Commerce to engage in the promotion of new companies established in Puerto Rico and to obtain decrees under Act No. 20 of 2012, to establish and expand their export services.

These consolidated financial statements include the accounts of the Trust and its Subsidiaries (collectively referred as the Trust and its Subsidiaries) as of and for the years ended June 30, 2021 and 2020.

- B) Summary of significant accounting policies – The Trust and its Subsidiaries prepare its consolidated financial statements in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP) for not-for-profit organizations. The significant accounting policies used by the Trust and its Subsidiaries are as follows:

Principles of consolidation – The accompanying consolidated financial statements include the accounts of the Trust and its Subsidiaries, as described in Note 1A. Intercompany transactions and accounts have been eliminated in consolidation.

Basis of presentation – The consolidated financial statements of the Trust and its Subsidiaries report information regarding its financial position and activities according to the following net assets classifications:

- Net assets without donor restrictions – Net assets that are not subject to donor-imposed restrictions and may be expended for any purpose in performing the primary objectives of the organization. These assets may be used at the discretion of the Trust and its Subsidiaries' management and the Board of Trustees.
- Net assets with donor restrictions – Net assets subject to stipulations imposed by donors and some grantors. Some donor restrictions are temporary in nature; those restrictions will be met by actions of the Trust and its Subsidiaries or by passage of time. Other donor restrictions are perpetual in nature, whereby the donor has stipulated the funds be maintained in perpetuity.

Donor restricted contributions are reported as increases in net assets with donor restrictions. When a restriction expires, net assets are reclassified from net assets with donor restrictions to net assets without donor restrictions in the statements of activities. However, if a restriction is fulfilled in the same period in which the contribution is received, the Trust and its Subsidiaries report the support as without donor restrictions.

As of June 30, 2021 and 2020, the Trust and its Subsidiaries' net assets with donor restrictions include the following:

Purpose restrictions:

- Federal funds for the implementation of programmatic initiatives, and funds from private sources for the implementation of initiatives related to recovery efforts after the passing of Hurricane Maria through Puerto Rico on September 20, 2017.



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

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- Monies for the Scientific Investigation Fund for the Centenary of the University of Puerto Rico. This fund was created to improve the infrastructure, activities and environment of investigative activities of the University of Puerto Rico and to facilitate the commercialization of the innovations that are developed there. Among the activities to be supported are the recruitment and retention of researchers and the promotion of technology transfer.

Perpetual in nature:

- Consist of a land, described in Note 11 that was contributed with the restriction of using it for the purpose described in Act 214, as amended, through the implementation of a Master Plan.

Accounting estimates – The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, at the date of financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Allowance for doubtful accounts – The Trust and its Subsidiaries provide an allowance for doubtful accounts equal to the amount of estimated uncollectible amounts. The estimate is based on the review of the current status of donor pledges, contributions and grants.

Investments – Investments represent a Puerto Rico government bond, private equity securities and Simple Agreements for Future Equity (SAFE) investments, that are recorded at its market value. Net investment return (loss) is reported in the statements of activities and consists of interest and dividend income, realized and unrealized capital gains and losses, less external and direct internal investment expenses.

Fair value measurements – Fair value is defined as the exchange price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants on the measurement date. The valuation techniques are based upon observable or unobservable inputs. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect the entity's market assumptions. Market or observable inputs are the preferred source of values, followed by assumptions based on hypothetical transactions in the absence of market input. These two types of inputs create the following fair value hierarchy:

- Level 1 – Quoted prices for identical instruments in active markets.
- Level 2 – Quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active and model-derived valuations whose inputs are observable or whose significant value drivers are observable.
- Level 3 – Significant inputs to the valuation model are unobservable.

The Trust and its Subsidiaries maintain policies and procedures to value financial instruments using the best and most relevant data available.

Property and equipment – Property and equipment are stated at cost, or if donated, at the fair value at date of receipt. Maintenance and repair costs that do not improve or extend the useful life of the respective assets are expensed as incurred. Costs of renewals and betterments which extend the useful life of the respective assets are capitalized.



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES

### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

June 30, 2021 and 2020

Depreciation and amortization are computed using the straight-line method over the estimated useful lives of the related assets, as follows:

Description	Estimated Useful Life
Furniture and fixtures	5 years
Computer and laboratory equipment	3 to 5 years
Leasehold improvements	Lease term

At the time property and equipment is sold or otherwise disposed of, the cost and related accumulated depreciation or amortization are removed from the books and the resulting gain or loss, if any, is credited or charged to operations.

**Building** – Is carried at cost less accumulated depreciation. Depreciation is provided on a straight-line basis over the useful life of 35 years. Maintenance and repair costs that do not improve or extend the useful life of the building are expensed as incurred while the costs of renewals and betterments which extend its useful life are capitalized. When the asset is sold or disposed of, the cost of the asset and the related accumulated depreciation are removed from the books and the resulting gain or loss, if any, is credited or charged to operations.

**Accounting for the impairment or disposal of long-lived assets** – The Trust and its Subsidiaries' long-lived assets held and used in operations are tested for recoverability whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. Assets are considered to be impaired if the carrying amount of the asset exceeds the sum of the undiscounted cash flow expected to result from the use and eventual disposition of the asset.

If such assets are impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceeds its fair value. Assets to be disposed of, other than by sale, continue to be classified as held and used until they are disposed of. Assets to be disposed of by sale are classified as held for sale in the period in which certain criteria are met and reported at the lower of the carrying amount or fair value. At the time such criteria are no longer met, such assets are reclassified as assets held and used in operations.

**Land development costs** – Represent costs for a land site consultation approval, certification of environmental compliance, architectural design, and other costs incurred in connection with land received by the Trust and its Subsidiaries for the construction of its facilities.

**Contributions and support revenue** – The Trust and its Subsidiaries mainly derive its revenues from state and federal grants, contributions received from the government, corporations, sponsors and individuals. The Trust and its Subsidiaries recognize contributions when cash, securities or other assets; an unconditional promise to give; or a notification of a beneficial interest is received. Grants, contribution, and conditional promises to give with a measurable performance or other barrier and a right of return are not recognized until the conditions on which they depend have been met. All revenues and contributions are considered to be available for unrestricted use, unless specifically restricted by the donor. Amounts received that are designated for future periods or restricted by the donor for specific purposes are reported as donor-restricted support that increases the net assets with donor restrictions class. However, if a restriction is fulfilled in the same period in which the contribution is received, the Trust and its Subsidiaries report the support as an increase in net assets without donor restrictions. The Trust and its Subsidiaries also reports donor restricted contributions that were initially conditional as increases in net assets without donor restrictions if both the donor-imposed restriction and the condition are met in the same period. The Trust and its Subsidiaries has a similar policy for reporting gains and investment income that are limited to specific uses by donor-imposed restrictions and the restrictions on the gains and income are met in the same reporting period as the gains and income are recognized.



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

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A portion of the Trust and its Subsidiaries' revenue is derived from cost-reimbursable federal and state contracts and grants, which are conditioned upon certain performance requirements and/or the incurrence of allowable qualifying expenses. Amounts received are recognized as revenue when the Trust and its Subsidiaries has incurred expenditures in compliance with specific contract or grant provisions. Amounts received prior to incurring qualifying expenditures are reported as refundable advances in the statements of financial position. There are no refundable advances as of June 30, 2021 and 2020.

Contributed services – Contributions of services are only recognized if services received: (a) create or enhance non-financial assets or would typically need to be purchased if not provided by donation, (b) require specialized skills and are provided by individuals possessing those skills. The contribution revenue for services received is recognized at the fair value of those services. There were no contributed services during the years ended June 30, 2021 and 2020.

Functional allocation of expenses and operational expenditures – The costs of providing the Trust and its Subsidiaries' programs and other activities have been summarized on a functional basis in the accompanying consolidated statements of activities. The statements of functional expenses present the natural classification detail of expenses by function. During the years ended June 30, 2021 and 2020, certain costs have been allocated among the following programs and support activities:

- *Research and data*: includes expenses aimed to improve, analyze and/or strengthen the local research and development (R&D) infrastructure and the breadth of science and technology activity in Puerto Rico. It also includes support activities to strengthen science, technology, engineering and mathematics (STEM). Expenses within this function include: clinical trials, grants to support laboratory infrastructure, research grants, research institute and educational organization initiatives, grants to attract or retain distinguished researchers, studies to determine R&D, innovation, knowledge economy activity in the Island; and, salaries and professional services to support this area.
- *Public health initiative*: includes expenses incurred regarding the *Puerto Rico Public Health Trust*, an initiative established by the Trust and its Subsidiaries to act as Public Health Institute (PHI). Acting as a PHI, the Trust implements programs which aim is to improve public health capacity, systems and outcomes by fostering innovation, leveraging resources and building partnerships to improve the publics' health. Expenses within this function include: integrated vector management initiatives, farmers support, health-outcome-and-measures research and studies, and salaries and professional services to support this area.
- *Technology transfer and commercialization*: includes expenses incurred in initiatives to support technology transfer and commercialization and direct investments in technology development projects which have a clear commercialization aim. Expenses within this function include: intellectual property assistance, sponsorship, grants for technology developments; investment in technology commercialization accelerators and startup incubators, salaries and professional services to support this area.
- *Science City development*: includes non-capitalizable expenditures necessary for the on-going development and construction of sites at the Science City. These expenditures include salary and professional services to support this area, planning and assessment projects, security services to enable construction work, etc.
- *Management and administrative*: includes all administrative expenses incurred to support all functional areas as described above which are not directly allocable to any of them. These expenses include administrative staff salaries, accounting fees, depreciation and amortization, utilities, etc.





## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

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- *Fundraising*: includes expenses incurred in soliciting contributions, gifts, grants, etc. These expenses include publicizing and conducting fundraising campaigns, soliciting grants from foundations and government agencies, costs of participating in federated fundraising campaigns, preparing and distributing fundraising manuals, instructions and other materials. The Trust and its Subsidiaries did not engage in any fundraising activity during the years ended June 30, 2021 and 2020.

Certain categories of expenses are attributed to more than one program or supporting function. Therefore, expenses require allocation on a reasonable basis that is consistently applied. The expenses that are allocated include mainly salaries, fringe benefits and payroll taxes, which are allocated on the basis of time and effort.

Income taxes – The Trust and its Subsidiaries are exempt from Puerto Rico income taxes under the provisions of Act 214, as amended, and from federal taxes under the provisions of Section 501(c) of the Internal Revenue Code. Accordingly, no provision for income taxes has been recorded in the accompanying consolidated financial statements.

The Trust and its Subsidiaries follow the guidance for uncertainty in income taxes issued by the Financial Accounting Standards Board (FASB). Management evaluated the Trust and its Subsidiaries' tax positions and concluded that the Trust and its Subsidiaries had taken no uncertain tax positions that require adjustments or disclosure in the consolidated financial statements.

All applicable tax returns have been appropriately filed by the Trust and its Subsidiaries. The Trust and its Subsidiaries' open audit periods are fiscal years ended June 30, 2017 to 2021.

Advertising and promotion – The Trust and its Subsidiaries charge to operations advertising and promotion costs as they are incurred. During the years ended June 30, 2021 and 2020, the Trust and its Subsidiaries incurred in advertising and promotion expenses of approximately \$143,000 and \$160,000, respectively.

Adoption of accounting standards – In June 2018, the FASB issued Accounting Standard Update (ASU) 2018-08, *Not-for-Profit Entities (Topic 958): Clarifying the Scope and the Accounting Guidance for Contributions Received and Contributions Made*. The ASU 2018-08 clarifies the guidance for evaluating whether a transaction is reciprocal (i.e., an exchange transaction) or nonreciprocal (i.e., a contribution) and for distinguishing between conditional and unconditional contributions. The ASU 2018-08 has different effective dates for resource recipients and resource providers. During the year ended June 30, 2021, the Trust and its Subsidiaries adopted the ASU 2018-08 for resource providers and during the year ended June 30, 2020, adopted the ASU 2018-08 for resource recipients, as management believes the standard improves the usefulness and understandability of the Trust and its Subsidiaries' financial reporting.

During the year ended June 30, 2021, the Trust and its Subsidiaries adopted the ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)*. This new accounting standard that requires recognition of revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which we expect to be entitled in exchange for those goods or services. The new standard supersedes U.S. GAAP guidance on revenue recognition and requires the use of more estimates and judgments than the present standards. It also requires additional disclosures.



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

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In addition, during the year ended June 30, 2021, the Trust and its Subsidiaries adopted the ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement*, which modifies the disclosure requirements for fair value measurements by removing, modifying, or adding certain disclosures.

Accounting standards with future applicability - In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. The guidance in this ASU supersedes the leasing guidance in Topic 840, *Leases*. The new standard requires lessors to account for leases using an approach that is substantially equivalent to existing guidance for sales-type leases, direct financing leases and operating leases. In addition, under this ASU, lessees are required to recognize lease assets and lease liabilities on the statements of financial position, for all leases with terms longer than 12 months, and to classify the leases as either finance or operating, with classification affecting the pattern of expense recognition in the statements of activities. Expanded disclosures with additional qualitative and quantitative information will also be required. The FASB has also issued several updates to ASU 2016-02. The standard will be effective for annual reporting periods beginning after December 15, 2021.

In January 2020, the FASB issued ASU 2020-01, *Investments-Equity Securities (Topic 321), Investments-Equity Method and Joint Ventures (Topic 323), and Derivatives and Hedging (Topic 815)*, which clarify certain interactions between the guidance to account for certain equity securities under Topic 321, the guidance to account for investments under the equity method of accounting in Topic 323, and the guidance in Topic 815, which could change how an entity accounts for an equity security under the measurement alternative or a forward contract or purchased option to purchase securities that, upon settlement of the forward contract or exercise of the purchased option, would be accounted for under the equity method of accounting or the fair value option in accordance with Topic 825, *Financial Instruments*. These amendments improve current U.S. GAAP by reducing diversity in practice and increasing comparability of the accounting for these interactions. For non-public entities, the amendments are effective for fiscal years beginning after December 15, 2021. Early adoption is permitted. The amendments in ASU 2020-01 should be applied prospectively.

In September 2020, the FASB issued ASU 2020-07, *Not-for-Profit Entities (Topic 958) - Presentation and Disclosures by Not-for-Profit Entities for Contributed Nonfinancial Assets*. The objective of the amendments in ASU 2020-07 is to increase transparency of contributed nonfinancial assets for not-for-profit entities through enhancements in presentation and disclosure requirements. Not-for-profit entities will now be required to present contributed nonfinancial assets as a separate line item in the statement of activities, apart from contributions of cash and other financial contributions. Not-for-profit entities will also be required to disclose various information related to contributed nonfinancial assets, including additional disclosure requirements for recognized contributed services. The amendments in ASU 2020-07 should be applied on a retrospective basis and are effective for fiscal years beginning after June 15, 2021. Early adoption is permitted.

The Trust and its Subsidiaries is evaluating the impact of these guidance on its financial statements.

#### 2) Concentrations of credit risks:

Financial instruments, which potentially subject the Trust and its Subsidiaries to concentration of credit risks, consist of cash deposits and accounts receivable.

The Trust and its Subsidiaries maintains its cash deposits in various financial institutions. The cash deposits, at times, may exceed the amount insured by the Federal Deposit Insurance Corporation (FDIC) of \$250,000 per financial institution or the amount protected by the Securities Investor Protection Corporation (SIPC) of \$250,000 per brokerage firm. As of June 30, 2021 and 2020, the Trust and its Subsidiaries' cash deposits exceeded the insured limits of FDIC and SIPC by approximately \$21,919,000 and \$31,339,000, respectively.



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

For the years ended June 30, 2021 and 2020, grants and contributions from state and federal entities represent approximately 64% and 79%, respectively, out of total revenues. The balance due from these state and federal entities represent approximately 93% and 79%, respectively, of total accounts receivable.

#### 3) Liquidity and availability:

As of June 30, 2021 and 2020, financial assets available for general expenses, that is, without donor restriction or other limiting their use, within one year of the financial position date, comprises the following:

Description	2021	2020
Cash	\$ 23,530,989	\$ 33,040,055
Account receivable	869,527	703,527
Due from governmental entities	5,428,877	1,128,892
Investments	4,273,838	6,235,611
Endowment fund	<u>54,081,742</u>	<u>35,609,069</u>
	<b>88,184,973</b>	76,717,154
Less amount not available to be used within one year:		
Net assets with donor restrictions	<u>(4,903,435)</u>	<u>(3,920,749)</u>
Financial assets available to meet general expenditures over the next twelve months	<u>\$ 83,281,538</u>	<u>\$ 72,796,405</u>

#### 4) Investments:

As of June 30, 2021 and 2020, investments consisted of the following:

Description	2021	
	Cost	Fair value
Fixed income:		
Puerto Rico government bond	\$ 2,651,613	\$ 2,439,642
Private equity securities	1,299,196	1,299,196
SAFE investments	<u>535,000</u>	<u>535,000</u>
	<u>\$ 4,485,809</u>	<u>\$ 4,273,838</u>
Description	2020	
	Cost	Fair value
Fixed income:		
Puerto Rico government bond	\$ 7,060,614	\$ 4,721,415
Private equity securities	1,174,196	1,174,196
SAFE investments	<u>340,000</u>	<u>340,000</u>
	<u>\$ 8,574,810</u>	<u>\$ 6,235,611</u>



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

#### 5) Fair value measurement:

For certain of the Trust and its Subsidiaries' financial instruments, including cash, accounts receivable, accounts payable and accrued liabilities, the carrying amounts approximate fair market value due to their short-term maturities.

Below is a description of the methodology used for instruments recognized at fair value, including the classification of such transactions in accordance with the valuation hierarchy.

Puerto Rico government bond – The fair value of this bond is obtained from third party pricing service providers that use a pricing methodology based on an active exchange market and quoted market prices for similar securities. This bond is classified as Level 2.

Private equity securities and SAFE investments – The objective of these investments is to achieve current income by providing debt and equity financing alternatives to targeted privately-held companies that are mostly organized or engaged in trade or business in Puerto Rico. These investments are classified in Level 3 since its market value was determined based on unobservable inputs that are significant to the market value measurement.

As of June 30, 2021, and 2020, the Trust and its Subsidiaries' investments are classified as follows:

Description	2021			
	Level 1	Level 2	Level 3	Total
Fixed income:				
Puerto Rico government bond	\$ -	\$ 2,439,642	\$ -	\$ 2,439,642
Private equity securities	-	-	1,299,196	1,299,196
SAFE investments	-	-	535,000	535,000
	<u>\$ -</u>	<u>\$ 2,439,642</u>	<u>\$ 1,834,196</u>	<u>\$ 4,273,838</u>
Description	2020			
	Level 1	Level 2	Level 3	Total
Fixed income:				
Puerto Rico government bond	\$ -	\$ 4,721,415	\$ -	\$ 4,721,415
Private equity securities	-	-	1,174,196	1,174,196
SAFE investments	-	-	340,000	340,000
	<u>\$ -</u>	<u>\$ 4,721,415</u>	<u>\$ 1,514,196</u>	<u>\$ 6,235,611</u>



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES

### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

The change in carrying values associated with investments measured at fair value on a recurring basis using significant unobservable inputs (Level 3), are as follows:

Description	2021		
	Private equity securities	SAFE investments	Total
Balance at July 1, 2020	\$ 1,174,196	\$ 340,000	\$ 1,514,196
Purchases	125,000	270,000	395,000
Realized losses	-	(75,000)	(75,000)
Balance at June 30, 2021	<u>\$ 1,299,196</u>	<u>\$ 535,000</u>	<u>\$ 1,834,196</u>

Description	2020		
	Private equity securities	SAFE investments	Total
Balance at July 1, 2019	\$ 1,167,292	\$ 225,000	\$ 1,392,292
Purchases	81,904	115,000	196,904
Realized losses	(75,000)	-	(75,000)
Balance at June 30, 2020	<u>\$ 1,174,196</u>	<u>\$ 340,000</u>	<u>\$ 1,514,196</u>

The table below presents qualitative information for all assets and liabilities measured at fair value on a recurring basis using significant unobservable inputs (Level 3) as of June 30, 2021 and 2020:

Description	Valuation Technique	Unobservable Input
Private equity securities	Acquisition cost	None
SAFE investments	Acquisition cost	None





## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

#### 6) Convertible promissory notes receivable:

As of June 30, 2021 and 2020, the Trust is the holder of the following convertible promissory notes:

Description	2021	2020
5% interest bearing promissory notes, convertible to shares of common stock of the issuers. The notes are due in August 2022.	\$ 780,000	\$ -
2% interest bearing promissory note, convertible to shares of common stock of the issuer. The note was due in April 2021 and a repayment agreement is in progress.	75,000	75,000
7% interest bearing promissory note, convertible to shares of common stock of the issuer. The note is due in August 2022.	25,000	-
2% interest bearing promissory note, convertible to shares of common stock of the issuer. The note is due in August 2022.	100,000	-
6% interest bearing promissory note, convertible to shares of common stock of the issuer. The note is due in November 2022.	75,000	75,000
3% interest bearing promissory note, convertible to shares of common stock of the issuer. The note was originally due in January 2020 and was extended to December 2022.	75,000	75,000
3% interest bearing promissory note, convertible to shares of common stock of the issuer. The note was due in July 2020 and an extension agreement is currently in progress.	50,000	50,000
7% interest bearing promissory note, convertible to shares of common stock of the issuer. The note was due in October 2020 and was extended to April 2022.	75,000	75,000
5% interest bearing promissory note, convertible to shares of common stock of the issuer. The note was due in June 2020 and a repayment agreement is in progress.	25,000	25,000
Promissory note convertible to shares of common stock of the issuer. The note bears interest at 8% during the first year and at 12.5% thereafter, until maturity in July 2022.	110,000	110,000
5% interest bearing promissory note, convertible to shares of common stock of the issuer. The note was due in January 2021.	75,000	75,000
	<u>1,465,000</u>	<u>560,000</u>
Less: Allowance for doubtful accounts	<u>(150,000)</u>	<u>-</u>
	<u>\$ 1,315,000</u>	<u>\$ 560,000</u>

The notes are converted upon the occurrence of certain events, including the issuer's failure to pay in full the principal and accrued interest upon its maturity or a change of control transaction.



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES

### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

#### 7) Endowment fund:

During the year ended June 30, 2020, the Trust and its Subsidiaries established an investment fund that has a perpetual investment horizon and is tax exempt. Its main purpose is to provide for long-term sustainable growth, while addressing any current operational expenses and those public financial responsibilities established by applicable law, rules and regulations.

The endowment fund includes funds designated by the Board of Trustees to function as endowments, including reserves created by the Trust and its Subsidiaries to assist in assuring its sustainability and its projects into perpetuity. The endowment fund might be nurtured as well of donations from individuals, private corporations and the U.S. government. Net assets associated with endowment funds, including funds designated by the Board of Trustees to function as endowments, are classified and reported based on the existence or absence of donor-imposed restrictions.

The Trust and its Subsidiaries have adopted an investment policy for endowment assets, as approved by the Board of Trustees, that attempts to provide a predictable stream of funding while seeking to maintain their purchasing power. Under this policy, total investments' return should exceed the rate of inflation, as measured by the Consumer Price Index plus 3%, net of fees, expenses and taxes. This objective should be achieved in such a manner that the fund is protected from unwarranted market risk. Actual returns in any given year may vary from this amount. To satisfy its long-term rate-of-return objectives, the Trust and its Subsidiaries rely on a total return strategy in which investments' return is achieved through both capital appreciation (realized and unrealized) and current yield (interest and dividends). The Trust and its Subsidiaries targets a diversified asset allocation and provides its managers appropriate guidelines to achieve its long-term objective within prudent risk constraints. The preferred asset mix, expressed in lower-upper limits, is: 10%-70% global equities, 10%-40% global fixed income, 0%-25% alternative investments and 0%-5% cash and equivalents.

As of June 30, 2021 and 2020, the endowment fund is presented in the net assets without donor restrictions as designated by the Board of Trustees. Changes in the endowment fund for the years ended June 30, 2021 and 2020, consisted of the following:

Description	2021	2020
Endowment fund at beginning of year	<b>\$ 35,609,069</b>	\$ -
Investment return:		
Investment income, net	<b>444,934</b>	212,635
Net appreciation	<b>9,687,537</b>	630,184
Total investment return	<b>10,132,471</b>	842,819
Contributions	<b>8,340,202</b>	34,766,250
Endowment fund at end of year	<b>\$ 54,081,742</b>	\$ 35,609,069



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

#### 8) Property and equipment:

As of June 30, 2021 and 2020, property and equipment consisted of the following:

Description	June 30, 2021		
	Cost	Accumulated depreciation and amortization	Book value
Furniture and fixtures	\$ 123,050	\$ 105,115	\$ 17,935
Computer and equipment	2,282,560	617,554	1,665,006
Leasehold improvements	829,068	678,367	150,701
Vehicle	39,425	9,199	30,226
	<u>\$ 3,274,103</u>	<u>\$ 1,410,235</u>	<u>\$ 1,863,868</u>
Description	June 30, 2020		
	Cost	Accumulated depreciation and amortization	Book value
Furniture and fixtures	\$ 123,050	\$ 100,727	\$ 22,323
Computer and laboratory equipment	540,434	245,279	295,155
Leasehold improvements	796,179	475,474	320,705
Vehicle	39,425	1,314	38,111
	<u>\$ 1,499,088</u>	<u>\$ 822,794</u>	<u>\$ 676,294</u>

#### 9) Building:

As of June 30, 2021 and 2020, building consisted of the following:

Description	2021	2020
<i>Innovation Center Building</i> - A three-story building that houses the Trust's headquarters and provides space for both, the incubation of local hi-tech startups and strategic service providers, creating a synergistic effect to accelerate the commercialization of technologies.	\$ 3,114,055	\$ 3,114,055
<i>Puerto Rico Environmental Quality Board's Laboratory</i> - Building that houses the laboratory facilities of the Puerto Rico Environmental Quality Board and the laboratory facilities of the Puerto Rico Vector Control Unit.	<u>3,546,932</u>	<u>3,546,932</u>
	<u>6,660,987</u>	6,660,987
Less: Accumulated depreciation	<u>(977,868)</u>	<u>(789,196)</u>
	<u>5,683,119</u>	5,871,791
Construction in progress	<u>1,164,215</u>	<u>248,853</u>
	<u>\$ 6,847,334</u>	<u>\$ 6,120,644</u>



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

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As of June 30, 2021 and 2020, the construction in progress is related to the construction of the Forward Center Building, a 30,000 square feet, three-story building to be located at the Science City. This construction is partially funded by the US Department of Commerce - Economic Development Administration.

#### 10) Land and property for research, development and infrastructure project related to science and technology:

On October 22, 2007, the Trust received prime real estate in the metropolitan area of San Juan, which includes the former Río Piedras Correctional Facilities (Oso Blanco State Penitentiary). The land and property were valued based on a market appraisal opinion report, dated October 20, 2008.

As established by Act 214, as amended, the Trust and its Subsidiaries plan to develop the land of Oso Blanco State Penitentiary site into a research park, which combines residential, retail, educational, and civic facilities with laboratory and research and development facilities with the purpose of facilitating the development of infrastructure favorable to the research and development of science and technology. Costs related to the design, development and improvements of the campus are capitalized as incurred.

In July 2020, the Trust and its Subsidiaries received 8.3 acres of land from the Puerto Rico Department of Transportation and Public Works (DTPW). The Trust and its Subsidiaries donated this land on fiscal year ended June 30, 2017 to DTPW to enable the agency to seek financing from the Federal Highway Administration (FHA) for the construction of the Science City Boulevard. Since the financing from the FHA did not materialize, the land was transferred back to the Trust and its Subsidiaries. The donated acres of land were recognized at the fair value at the date of receipt.

As of June 30, 2021 and 2020, the land was restricted by donor for research, development and infrastructure project related to science and technology.

#### 11) Construction in progress - Science City:

The Trust and its Subsidiaries' main infrastructure-related initiative is the Science City, located in a 69-acre mixed-use land located in San Juan, in a dense concentration of hospitals, universities, and other science and technology resources. The aim for the development of the Science City is to strengthen Puerto Rico's research infrastructure and enable its use as a tool to develop, attract, and retain a vibrant research ecosystem.

Since the year ended June 30, 2016, the Trust and its Subsidiaries are executing a plan of action with the ultimate goal of facilitating such an innovation ecosystem, including the identification of a Master Development Partner (MDP) to lease, finance, develop, and manage the Science City project. To facilitate the identification and attraction of a MDP, the Trust and its Subsidiaries have invested approximately \$11,150,000 in critical infrastructure comprised of the construction of the Laboratory Road and major improvements for the interconnection of Highway 21 and 28 to the Science City. These projects will be further developed and finalized after the identification of the MDP.

#### 12) Loan payable and gain on extinguishment of debt:

On May 1, 2020, the Trust and its Subsidiaries received a loan of approximately \$1,786,000, under the Payroll Protection Program, created by the Coronavirus Aid, Relief, and Economic Security Act (CARES Act). The money received from the loan was used for certain eligible expenses such as payroll costs, group health care benefits, rent, and utilities, among others. During the year ended June 30, 2021, the Trust and its Subsidiaries complied with the restrictions and conditions included in the CARES Act and the loan balance of \$1,797,415, including interest accrued at 1%, was fully forgiven and presented as non-operating income in the consolidated statements of activities.



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

#### 13) Rental income:

The Trust and its Subsidiaries lease building spaces under operating lease agreements. The lease agreements are for periods of one year with a renewal option for an additional year on month to month basis.

In addition, as of June 30, 2021 and 2020, the Trust and its Subsidiaries leases a facility under a lease agreement that expired on June 30, 2021. After the expiration date, the lease is on a month to month basis. The monthly rental payments approximate \$18,000.

For the years ended June 30, 2021 and 2020, revenues on rental agreements amounted to approximately \$349,000 and \$269,000, respectively.

Future minimum collections related to the lease agreements after June 30, 2021, are approximately \$36,000.

#### 14) Operating lease agreements:

The Trust and its Subsidiaries entered into a lease agreement for the use of the facilities. The agreement calls for escalating monthly rental payments ranging from \$13,510 to \$14,321 through December 2023. Total rent expense related to this agreement for the years ended June 30, 2021 and 2020, amounted to approximately \$162,000 and \$159,000, respectively.

In addition, the Trust and its Subsidiaries entered into a lease agreement for the use of a two-story office building and one annex in Ponce, Puerto Rico. The agreement calls for monthly rental payments of \$7,500 through September 2021. The new lease agreement is currently under negotiation. Total rent expense related to this agreement for each of the years ended June 30, 2021 and 2020, amounted to approximately \$90,000.

Future minimum lease payments subsequent to June 30, 2021, are as follows:

Year ending June 30,	Amount
2022	\$ 187,056
2023	169,422
2024	85,926
Total future minimum lease payments	<u>\$ 442,404</u>

#### 15) Retirement plan:

The Trust and its Subsidiaries have established a defined contribution retirement plan (the Plan) that covers all full-time employees who have reached 21 years of age, without requiring eligibility service requirements. Under the Plan, participants may contribute an amount not exceeding \$15,000 per year. The Trust and its Subsidiaries is not required to make matching contributions but reserves its right to start making matching contributions based on a maximum of 3% out of each dollar contributed by the employee, up to 10% of compensation. The Trust and its Subsidiaries may contribute a discretionary amount in addition to the matching contribution for all eligible participants. Amounts contributed by the Trust and its Subsidiaries are 100% vested after an employee completes one (1) year of service. Total contributions made by the Trust and its Subsidiaries during the years ended June 30, 2021 and 2020, amounted to approximately \$151,000 and \$107,000, respectively.





## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

#### 16) Risk and uncertainty:

On January 30, 2020, the World Health Organization declared the coronavirus outbreak a "Public Health Emergency of International Concern" and on March 11, 2020, declared it to be a pandemic. Actions taken around the world to help mitigate the spread of the coronavirus include restrictions on travel, and quarantines in certain areas, and forced closures for certain types of public places and businesses. The coronavirus and actions taken to mitigate it have had and are expected to continue to have an adverse impact on the economies and financial markets of many countries, including Puerto Rico. While it is unknown how long these conditions will last and what the complete financial effect will be to the entity, to date, the Trust and its Subsidiaries have not experienced material impact on financial results.

#### 17) Supplemental disclosures for the statements of cash flows:

- A) Non-cash from investing and financing transactions – During the years ended June 30, 2021 and 2020, non-cash investing and financing transactions were as follows:

Description	2021	2020
Extinguishment of debt	\$ 1,797,415	\$ -
Property and equipment received as donation	\$ -	\$ 39,425
Land received as donation	\$ 2,000,000	\$ -
Unpaid equipment	\$ 129,000	-
Bond units received in lieu of interest payment	\$ -	\$ 169,116
Note receivable converted into investment in private equity securities	\$ -	\$ 75,000

- B) Other cash flows information – During the years ended June 30, 2021 and 2020, the Trust and its Subsidiaries make no interest payments.

#### 18) Subsequent events:

In July 2021, the Puerto Rico Department of Housing, a public agency of the Government of Puerto Rico and prime recipient of Community Development Block Grant- Disaster Recovery (CDBG-DR) funds from the U.S. Department of Housing and Urban Development (HUD) for disaster recovery assistance related to Hurricanes Irma and María, awarded a \$1,321,308 subaward to implement a project titled *Workforce Training Program*. The program's aim is to prepare Puerto Rican residents with the skills required to gain employment in industries that will drive the Island's economy over the next decade. The program expires in June 2023.

In August 2021, the Puerto Rico Department of Health, a public agency of the Government of Puerto Rico and prime recipient of American Rescue Plan Act of 2021 funds, awarded a \$15,628,813 subaward to implement a project titled *Puerto Rico COVID Variant Surveillance Initiative*. The program's aim is to establish the necessary infrastructure to enable the government early interventions resulting from new COVID-19 variants. The program expires in August 2023.



## PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2021 and 2020

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In August 2021, the US Department of Health and Human Services (US DHHS) Centers for Disease Control and Prevention awarded a \$2,999,721 grant to implement a project titled *Community Health Workers for Public Health Response and Resilient*. The program's aim is to train, deploy and engage community health workers to improve COVID-19 and chronic disease management response in Puerto Rico. The program expires in August 2022.

In September 2021, the US DHHS Health Resources and Services Administration awarded a \$474,959 grant to implement a project titled *Rural Telemedicine Grants*. The program's aim is to implement telehealth technology-enabled learning programs in Puerto Rico. The program expires in September 2022.

Subsequent events were evaluated through October 27, 2021, the date on which the consolidated financial statements were available to be issued.



Puerto Rico  
Science, Technology  
& Research Trust

# Credits





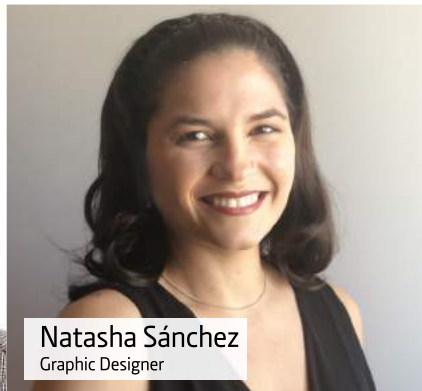
## Meet the team



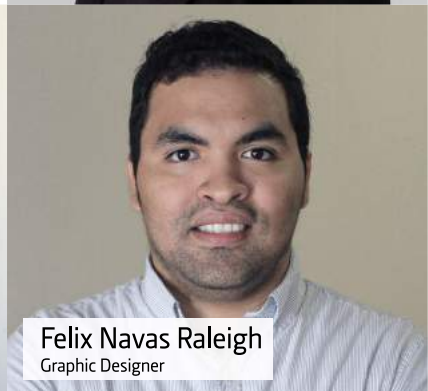
**Lupe Vázquez**  
Chief Communications & Marketing Officer



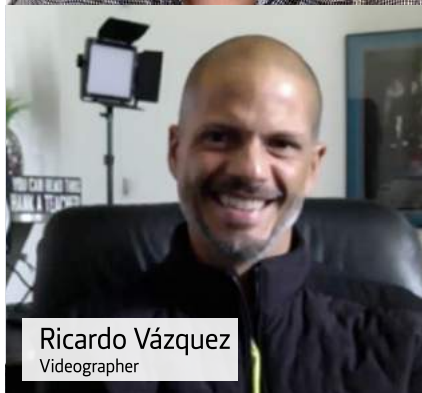
**Alexander Morales**  
Lead Graphic Designer



**Natasha Sánchez**  
Graphic Designer



**Felix Navas Raleigh**  
Graphic Designer



**Ricardo Vázquez**  
Videographer



**Xavier Ocasio**  
Lead Graphic Designer



**Samuel Betancourt**  
Graphic Designer

## Credits

### Production

Lupe Vázquez

### Art direction

Alexander Morales

### Design Concept

Alexander Morales  
Félix Navas

### Graphic & Layout design

Félix Navas  
Alexander Morales  
Natasha Sánchez  
Samuel Betancourt

### Videography

Ricky Vázquez