



Puerto Rico
Science, Technology
& Research Trust

RESEARCH & INVESTIGATION



RESEARCH GRANTS
PROGRAM
FUNDS TO GROW



PRCCI
Puerto Rico Consortium
for Clinical Investigation



TECHNOLOGY
TRANSFER OFFICE



Cultural Heritage
Innovation Program



STEM
EDUCATION PROGRAM



RESPONSE
INNOVATION
LAB



RECUPERACIÓN
AGRÍCOLA



Science City



CENTER FOR TROPICAL
BIODIVERSITY
A program of Puerto Rico Science, Technology & Research Trust



PR RESEARCH
& INNOVATION
Meet-ups

PUBLIC HEALTH



Puerto Rico
Public Health Trust



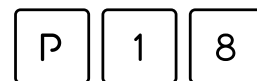
Unidad de Control de
Vectores de Puerto Rico



Puerto Rico
Hurricane Hub
Technical Assistance Center

ENTREPRENEURSHIP

parallel¹⁸



Colmena66
Tu Conexión Empresarial



Resiliency and
Business Innovation

Annual Report
FISCAL YEAR 2019-2020



Puerto Rico
Science, Technology
& Research Trust

ANNUAL
REPORT

FISCAL YEAR
2019-2020



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Letter to our Stakeholders



Lucy Crespo

CEO Puerto Rico Science, Technology and Research Trust

Welcome to the 2019-2020 Annual Report for the Puerto Rico Science, Technology, and Research Trust (PRSTRT). As I write this message, Puerto Rico and the world are facing one of the most significant health threats of our time.

I hope that everyone is doing well, and that you are taking all the prevention, protection, and social distancing measures to protect yourself and your family from COVID-19. We are incredibly grateful that all our employees and trustees are safe and healthy.

The current pandemic situation has accelerated the adoption of new technologies at a rate that has never been seen before. I am enormously proud of how quickly all PRSTRT employees and collaborators have adapted to the new work and life environment and transformed the delivery and implementation of the existing and new PRSTRT programs through a mainly virtual and remote work format. Our Information and Communication Technology team, under the leadership of the PRSTRT's Chief Information Officer, Cesar Piovanetti, played an essential role in enabling this digital transformation based on cutting-edge platforms and applications as well as robust cybersecurity framework, policies, and processes.

In this annual report, we look forward to informing about PRSTRT's major accomplishments in our three main pillars of activities: Research & Development, Public Health, and Entrepreneurship.

We also take this as an opportunity to inform you of our financial and operational performance. During the year, **we signed 27 Collaboration Memoranda of Understanding with different organizations.** We are also celebrating recognitions received for some of our key efforts and programs and by members of our team. One of these was the **Zenith Award, which was granted by the Puerto Rico Chamber of Commerce in recognition of PRSTRT as the Organization of the Year 2020.** Two educational and social responsibility campaigns, of two of our programs and which are prepared by the BCW agency, received the **Excel 2020 Award at P.R. Public Relations: Puerto Rico Vector Control Unit's (PRVCU) "Páralos en seco" and the PRCCI blood donation campaign "Lo llevamos en la sangre".**

In the same way, 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 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's 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.

To close such a special year, one of our Trustees, Dr. Daniel Colón Ramos, was selected to the prestigious National Academy of Medicine of the United States. This is one of the highest honors in the field of science and health, which makes us very proud.



Public Health Pillar

In its second year of operation, the **Puerto Rico Public Health Trust (PRPHT)**, under the direction of Dr. Jose Rodríguez Orengo, is making relevant contributions to guide how Puerto Rico addresses the **COVID-19 pandemic** and to advance their mission of promoting and improving public health initiatives based on evidence, while also providing ways to improve Puerto Rico's economy.

Since the beginning of the pandemic in the island (since March 2020), the PRPHT has played a leading role in the research, management, and development of scientific data to prevent COVID-19. Specifically, it has spearheaded important tasks such as developing the '**Consorcio de Laboratorios Clínicos de Referencia**', to facilitate molecular testing on the island, promoting new technologies to optimize the number of tests with the Pooling Methodology, collaborating with Ponce Health Sciences University (PHSU) for the Syndromic Surveillance System of public health monitoring, and, recently, developing the Municipal Contact Tracing System. The PRPHT is almost ready to release "**Rastrea el Virus**", an application that will facilitate contact tracing through Bluetooth technology for both Android and Apple operating systems. The PRPHT has worked closely with the Department of Health to propose evidence-based measures, including: the positivity index, municipal pandemic monitoring, percentage of testing, tools for testing in the last 14 days, and the **Risk Index Models** for decision-making in the management of the novel virus in Puerto Rico.

The Secretary of Health recently announced the creation of the **Puerto Rico Diagnostic Tests Evaluation Commission (PRoDTEC)**, which will introduce and submit a protocol for the accelerated evaluation of COVID-19 diagnostic tests for consideration and, if approved by the Puerto Rico Department of Health (PRDOH), this protocol will be used in Puerto Rico during the COVID-19 emergency. The PRSTRT is facilitating and hosting this initiative, which is providing Puerto Rico a capability only available in less than 10 other U.S. jurisdictions. Additional PRPHT programs include: **The Puerto Rico Hurricane Hub, the Community Engagement Program, the Health Promotion Program (funded by the Medtronic Foundation), and the Telemedicine and Telehealth Program**, as well as a robust education and communications program. Four projects were selected to receive public health research funding, all with the purpose of achieving sustainable health equity in Puerto Rican communities as well as improve their health and quality of life through innovation, collaboration, and community engagement.

The PRVCU, under the direction of Dr. Grayson Brown, expanded its laboratory capacity by including a molecular laboratory for virological surveillance and by opening a second facility in the southern region of Puerto Rico. The molecular laboratory has the capacity to process 5,000 pools per week by implementing a super pooling technique and the rt-PCR Triplex method to detect dengue, Zika, and chikungunya in mosquito pools.

As part of an integrated approach and to build capacity in vector management, collaborations with municipalities, non-profit organizations, and government agencies have been established. One of the most important collaborations is with the Puerto Rico Department of Education (PRDE) to train hundreds of health and science teachers to provide lectures about *Ae. aegypti* biology and control. To expand on this type of effort, a vector management association was created to bring together groups that are interested in the field and to provide updated information and training on vector control practices.

With over 100 media appearances, the PRVCU is recognized by the public as a trustworthy leader in vector control in Puerto Rico. Outreach and educational activities have reached over 130,000 people and 42,000 students throughout the island. Moreover, the PRVCU became a first responder during the recent earthquakes that hit the southern region of Puerto Rico, distributing 16,000 repellents in one month and offering emotional support to families sleeping in shelters or outdoors for fear of being inside vulnerable structures.

Most importantly, the PRVCU is becoming a leader in exploring and deploying sustainable and environmentally friendly vector management technologies. The Wide Area Larvicide Spray (WALS) was expanded to additional communities, resulting in a decrease in the number of areas with more than 3 mosquitoes per trap per week, potentially reducing the risk of disease transmission. This October marked the beginning of another important technology deployment: the release of male mosquitoes with Wolbachia; its results will be evaluated in the coming months.



Entrepreneurship Pillar

Colmena66, our entrepreneurial ecosystem builder program, is fulfilling the PRSTRT's commitment to our local entrepreneurs who are change makers that drive innovation and economic activity. Comena one of the newest members of the nationwide network of over 50 organizations of ecosystem builders, being **ranked among the top 5 affiliates on key performance indicators**. Despite the major challenges that we faced this year, Colmena66 increased the number of resource partners to 240. **Colmena66 assisted more than 2,300 entrepreneurs and business owners, and over 7,300 referrals were forwarded to our resource's partners**. One of the new features added by Colmena66 was the Personalized Action Plan, a customized checklist and referral based on each customer's needs so they can have a guide to move their business forward. Colmena66 published the second version to the "Tu Camino Empresarial 2.0" and the first version of "Tu Camino AgroEmpresarial" to support agricultural enterprises.

This year, for the first time, **Colmena66 coordinated with the SBA to create the first SBIR/STTR Road Tour in Puerto Rico** with the participation of 15 federal agencies and the Federal Laboratory Consortium. Colmena66 drove the **"Levanta Tu Negocio"** survey, Earthquake and COVID-19 editions, to support the entrepreneurs and small and medium-sized enterprises (PYMES, by its Spanish acronym) impacted by those events. As I write this report, Colmena66 has just hosted this year's **BE Fest virtually, with over 4,000 participants and over 12 sessions**. Demonstrating outstanding resiliency, Colmena66 just started a new program with the Puerto Rico Department of Economic Development to deliver e-commerce online capacity building sessions for small and medium-sized businesses.

In 2020, we successfully completed the seventh generation of **Parallel18 (P18)** and are currently running its eight generation. Since the program's inception, **198 companies have been accelerated and over 606 jobs have been created**. Some of the key performance indicators for this period are:

- a. Grants distributed = \$8.0 MM
- b. Total revenues = \$120 M, with \$40 M from local revenues
- c. 40% of foreign companies have maintained part of their operations in Puerto Rico
- d. Total private investment raised - \$100 M, with \$15 M from local capital.

Our current **P18 Ventures investment is \$1.7 M and as of August 2020 include: GoPanza, Amasar, Vozy, and DataWiFi, among others**. This year, BrainHi raised \$500 K, Abartys Health raised \$2.5 M, and Raincoat raised \$150 K. During the COVID-19 pandemic, P18 launched and deployed a \$1 M business continuity fund to support previous participants, investing in 39 startups. P18 Connect's effort aims to create connections with large corporations by facilitating that first introduction through group meetings, conferences, and pitching events. So far, they have 80 partners and have completed 130 meetings and have facilitated 30 deals and connections.

PRE18, a pre-acceleration program that P18 & the PRSTRT launched after Hurricane María. During its two years and three generations, it has received 814 applications from Puerto Rican entrepreneurs with developed concepts or prototypes. These efforts (from Gen.1 and Gen.2) led to 33 Puerto Rican companies being selected for P18, demonstrating the quality and caliber of the PRE18 pipeline, where companies compete to join our international accelerator. As I write this report, we are starting the PRE18 Gen. 3 with 42 new companies. In terms of the P18's Give Back program, they hosted 440 engagements which impacted 11,897 people.

One very ingenious project was the creation of **Parallel18's Corporate Innovation Program**. This program exposes top employees of big companies to an entrepreneurial state of mind, encouraging them to solve their company's most significant challenges by using disruptive trends and technology. In January 2020, they deployed the first cohort of this program with one corporate partner, Puma Energy. A post-program survey revealed that 100% of the surveyed participants felt that the objectives were met and 85% of the surveyed participants were extremely likely to recommend this program to other companies.

Demonstrating outstanding resiliency, the COVID-19 situation forced P18 and its team to adapt to the present circumstances once again. This time, adaptation meant transforming the in-person program into a fully virtual program for its eighth P18 cohort, and by focusing most of their effort into supporting and helping the alumni startups of the program.



The Resiliency and Business Innovation Program (RBI) is the other key program the PRSTRT supports to enhance the entrepreneurial ecosystem. In 2020, over 1,500 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 the RBI's key accomplishments, we can mention the following: (a) a series of trainings by international disaster preparedness and recovery expert Leann Hackman, CEO of Economic Developers of Alberta, Canada, and author of the series of guidebooks **"Master Your Disaster"**, including a special international networking event with the Women's Chapter of the Puerto Rico Manufacturers Association (PRMA); (b) a free webinar series titled "Building a Resilient Business: Before, During, and After a Disaster," delivered by faculty members from George Mason University and designed to help individuals, businesses, and communities prepare, respond, and recover from a disaster; and (c) provided four (4) research funds for the following thematic areas:

1. Best practices used by a company, an industry sector, or a community that can serve as a model to replicate, or
2. The development of products and/or concepts that improve resilience following a disaster and have commercialization potential.

Research & Development Pillar

On June 30th, 2020, the **Puerto Rico Consortium for Clinical Investigation (PRCCI)** successfully completed its fourth year of operations. During this year **the consortium grew to 27 members/clinical research sites in Puerto Rico with more than 73 board certified physicians/researchers at three universities, hospitals, family practices, and specialized research centers across the island**, covering more than twenty therapeutic areas. **The PRCCI brought more than 300 clinical trial opportunities to the island and, as capacity is being built, it has executed 17 clinical trial agreements** on oncology, infectious diseases, pulmonology, cardiovascular medicine, and dermatology.

We are achieving excellent results from our **Research Grant program**. The 25 recipients of last year's \$3.1 M grants are securing external funding, which impacted over 65 students at the public and private Puerto Rican universities. Their research will be included in peer-reviewed publications. We are particularly proud that Dr. Ricardo Pappas from the University of Puerto Rico -Río Piedras Campus made the cover page of Proceedings from the National Academy of Sciences. During the COVID-19 pandemic, we implemented a Rapid Grant process that allowed the distribution of over \$700 K among 7 research projects. This year, we also collaborated with the University of Puerto Rico (UPR) to facilitate their grants program by using our platform and reviewers.

Our **Technology Transfer Office (TTO)** continues to increase the participation of inventors; the use of best-in-class IP analytics, patent counsel, marketing platforms, and licensing and related agreements. Moreover, it is also pursuing resources to support technology transfers and a more robust innovation ecosystem. **Last year, over 22 disclosures were evaluated, 8 new patents were filed, and 3 patents were issued.** We marketed over 20 technologies from our portfolio and closed two licensing agreements. A member of the SE XLerator Network (NIH supported), our TTO team provided sub-awards to the UPR Medical Sciences Campus, Ana G. Méndez University-Gurabo (UAGM), and Ponce Health Sciences University (PHSU) as Site Leads to engage life/bioscience researchers in accelerating life/bioscience innovations. This year, the PHSU received an award from the Ideas 2 Products competition.

In its second year of operations, the **STEM Education Program** completed the STEM Education Strategic Plan outline for the PRDE, rolled-out its STEM videoconferences for schools, and began the **"STEM en tu Pueblo"** initiative sponsored by Fundación Ángel Ramos. During June 2020, the second Resuélvelo, Boricua student competition was completed. This year, the participating teams prepared their proposals and prototypes to provide for solutions in the areas of food security, renewable energy, and health. The summer of 2020 also saw the birth of the **STEM Boxed Kit Experience**, a unique opportunity to continue high-quality STEM education at home and online. The project developed the **Engineering in Agriculture and the 3D Design & Virtual Reality experiences for students in middle school and high school.** After 728 requests were received, only 120 kits were mailed to students (as selected by draw). This program is expected to scale up its impact as an 8-week after-school program to be developed with the sponsorship of New Fortress Energy starting in January 2021.

In 2020, we concluded **Recuperación Agrícola**, a 15-month initiative sponsored by the American Red Cross. **We impacted 525 small farmers: 29% women farmers, 16% agroecological farms, 5% veteran farm owners, and 8% apiculture farms. We delivered and distributed over \$450 K in cash grants and \$1.5 M in supplies and equipment, provided 75 recovery work brigades, and delivered 35 capacity building sessions**, including how to develop successful agribusiness and agrotourism experiences.



We also provided over 80 drone farm assessments, integrating the latest technologies to understand crop health, irrigation maps, and soil composition. This program was fundamental in PRDOH's selection of the PRSTRT as the administrator of CDBG-DR Re-Grow PR Urban and Rural Agriculture Program, a \$92 M grant designed to spur economic recovery, with special focus in the agriculture sector.

In summary, from earthquakes to the pandemic, we can honestly say that this has been a challenging year. However, the Puerto Rico Science, Technology, and Research Trust associates and trustees demonstrated resiliency and courage to maintain, grow, and enhance our programs. We will continue incorporating innovation and technology in our activities to deliver on our mission of investing, facilitating, and building capacity that will continually advance Puerto Rico's economy and its citizens' well-being through innovation-driven enterprises, science, and technology, and working with our industrial base.

Although we are still operating with a certain level of uncertainty, I am confident that our organization is committed to overcoming the circumstances this pandemic has brought by using science, technology, and research to take better and more meaningful care of the communities and people we serve and by collaborating to move forward with our agenda and vision for the future.

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



Puerto Rico
Science, Technology
& Research Trust



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

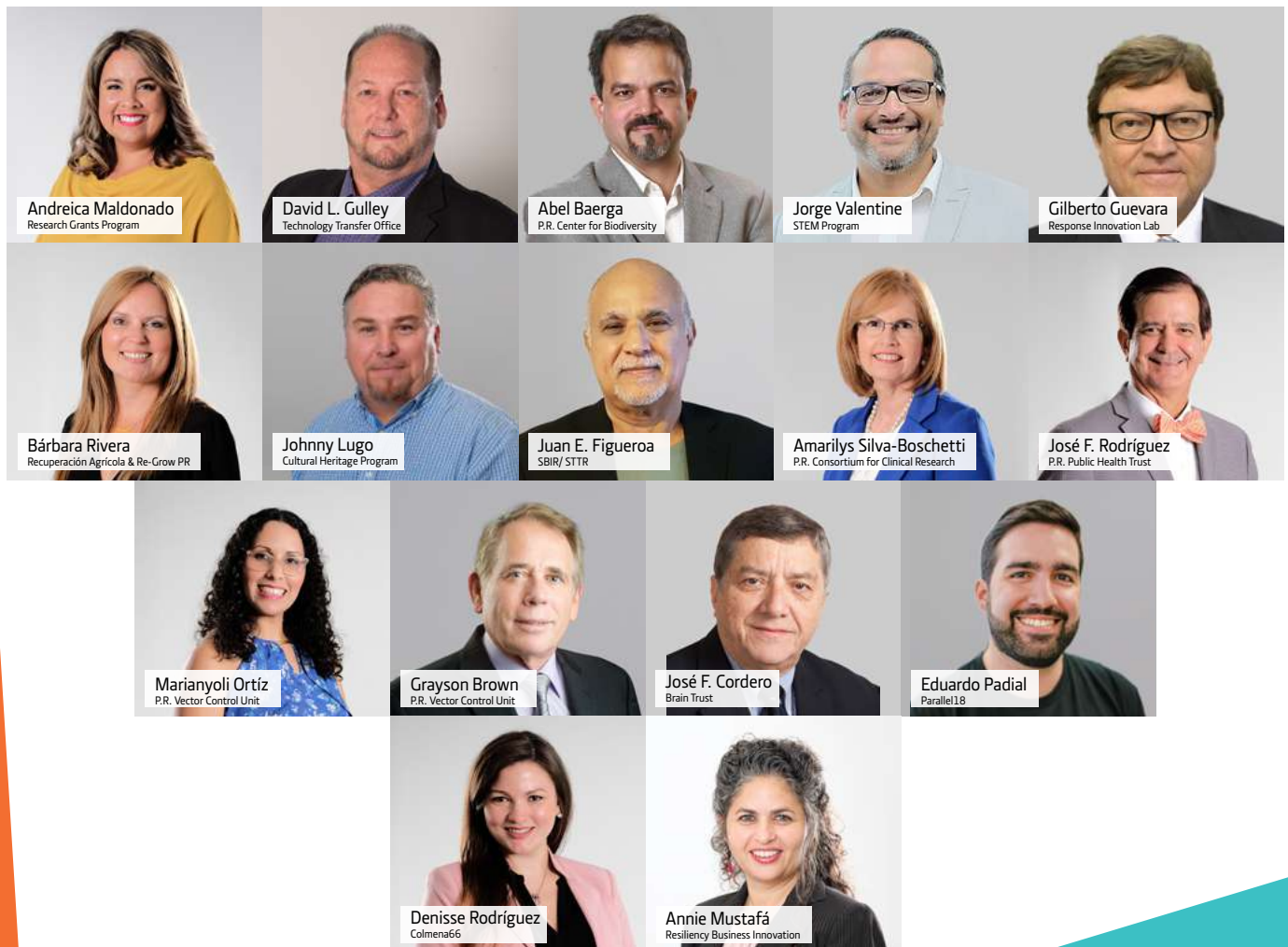
By 2022, Puerto Rico is a globally recognized innovation hub that develops, attracts, and retains scientists, technology entrepreneurs, and enterprises to unlock world class creativity and competitiveness.



Administrative Team



Directors Team





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.



Esteban Santos

Mr. Santos is the Senior Vice President of Manufacturing Operations at Amgen Inc., where he is responsible for Amgen's global commercial manufacturing operations. As a Puerto Rican who ranks among the top 16 executives at Amgen's worldwide, Santos offers extensive experience and access to networks that are instrumental for the Trust. He has also been part of several initiatives geared toward improving biotechnology education on the island. Santos holds an Electrical Engineering BSEE from the UPR-Mayagüez and an MS in Management from the Rensselaer Polytechnic Institute in New York.



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.



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.



Manuel Laboy

Department of Economic Development and Commerce of Puerto Rico (DDEC) and Puerto Rico Industrial Development Company (PRIDCO).



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. 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.



Glorimar Ripoll

Glorimar Ripoll Balet is the Chief Innovation Officer of the Government of Puerto Rico and Executive Director of the Puerto Rico Innovation and Technology Service office in La Fortaleza. Mrs. Ripoll Balet holds Bachelor of Science and Master of Engineering degrees from the Massachusetts Institute of Technology (MIT). Her focus is to enable the transformation of Puerto Rico through an innovative approach that focuses on collaboration and leverages the use of modern technology and design. She envisions Puerto Rico evolving into a world-class innovation ecosystem that optimizes the development of human capital and results in economic growth.



José Lasalde Dominicci

Dr. Lasalde is the former Acting President of the University Of Puerto Rico (UPR). He is also the UPR's Vice President of Research and Technology, as well as a Professor in its Biology Department, the Comparative Medicine Department, and the Institute of Neurobiology of the UPR's School of Medicine. He has extensive postdoctoral training from Stanford University, University of Puerto Rico, and the University of California-Davis.



Ubaldo Córdova

Dr. Ubaldo M. Córdova-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).

PROGRAMS AND PROJECTS

The background features abstract geometric shapes. A large orange triangle is in the top right corner. A dark grey triangle is positioned below it, pointing towards the center. A large, light grey triangle occupies the middle and bottom-left portions of the page. The text 'PROGRAMS AND PROJECTS' is written in orange, bold, uppercase letters in the upper left area.

RESEARCH & INVESTIGATION



RESEARCH GRANTS
P R O G R A M
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PRCCI
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A program of Puerto Rico Science, Technology & Research Trust



**PR RESEARCH
& INNOVATION**
Meet-ups



**Puerto Rico
Science, Technology
& Research Trust**



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 85 research grants through its competitive and non-competitive initiatives for a total investment by The Trust of \$10.8 million with a return of investment of over \$21 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.



Strategic Sectors



Aerospace



Conservation Sciences



Agriculture



Electronics

Biotechnology and
Natural Sciences

Environmental Sciences

Clean Technologies and/or
Renewable EnergyInformation and
communication technologies

Clinical Trials



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.

Currents Grantees

In September 2019, the Research Grants Program granted \$3.1M to 25 research projects in Puerto Rico.

The seismic activity at the beginning of the year 2020 and 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.

During the first 6 month period, the grantees reported the following achievements:

Students Impacted

- 37 undergraduate students
- 32 graduate students

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 two (2) PhD dissertations were completed. In addition, there is an additional PhD dissertation in progress.

1 MS Thesis

PI - Dr. Idhaliz Flores

Name of student: Miguel X. Oyola MS

Thesis Title: Evaluation of potential immunomodulators as a non-hormonal treatment for endometriosis



3 PHD Dissertations

PI - Dr. Luis Medina:

Name of student: Cesar Serna.

Dissertation Title: Value distribution of elementary symmetric polynomials and their perturbations over finite fields

PI - Dr. Suranganie Dharmawardhane:

Name of student: Maria del Mar Maldonado, Ph.D.

Dissertation Title: Biochemical pharmacology of the metastatic cancer inhibitor MBQ-167

PI - Dr. Marco Menegozzo:

In progress: This work will constitute part of the PhD Thesis of the Graduate Student Orlando J. Flores Velez.

External Funding

From December 2019 through July 2020, the total amount of external funding that the grantees secured is **\$239,683**. 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

In a short period of time (approximately seven months), our grantees have published in the following peer reviewed journals:

ARG – 9

- Biomedicines
- PNAs (añadir reporte foto portada)
- Frontiers in Molecular Biosciences
- Experimental Biology and Medicine
- Cryptography and Communications
- Finite Fields Their Applications
- Insect Biochemistry and Molecular Biology (3 manuscripts)

CRG – 4

- Proceeding of the Royal Society
- Neurobiology of Learning and Memory
- Plos One
- Ecology and Evolution

press

Investigadores de Río Piedras publican estudio en prestigiosa revista científica

Los expertos encontrarán nueva información sobre la comunicación química entre mariposas



Ricardo Pina, profesor e investigador de la Universidad de Puerto Rico Recinto de Río Piedras (pina.ricardo@upr.edu)

La revista científica estadounidense Proceedings of the National Academy of Sciences (PNAS (<https://www.pnas.org/>)) desplegó en su portada el estudio sobre mariposas comandado por el doctor Ricardo Pina, profesor e investigador de la Universidad de Puerto Rico Recinto de Río Piedras (<https://www.elnuevodia.com/topicos/recinto-de-rio-piedras-de-la-upr/>), titulado "Divergence of chemosensing during the early stages of speciation".



→ Cover image: Pictured is a postman butterfly (*Heliconius melpomene rosina*) perched on a leaf. Bas van Schooten, Jesyka Meléndez-Rosa, et al. uncovered sensory tissue gene-expression profiles in a pair of recently diverged butterfly species, *H. melpomene rosina* and *Heliconius cydn chioneus*, and identified candidate genes involved in chemical signal recognition, which were not physically linked to wing-color pattern genes. The results suggest that genes associated with chemical perception and vision evolved independently in *Heliconius* butterflies, with implications for the role of chemosensing in speciation. Image credit: Luca Livraghi (University of Cambridge, Cambridge, United Kingdom).

Conferences, Abstracts, Proceedings and/or Presentations

During the reporting period, the grantees participated in a variety of activities in which they showcase their research projects and significant results. For the ARG, 30 activities were reported and 14 for the CRG. Among them:

ARG

- International Society for Microbial Ecology (ISME) First Latin America Congress, Viña del Mar Chile, Sept 11-14 2019
- AACR The Microbiome, Viruses, and Cancer, February 21 - 24, 2020, Hyatt Regency Orlando
- International Papillomavirus Congress, (IPVC 2020). Barcelona, Spain
- 40th Annual Research and Education Forum, San Juan, PR January 17 2020
- 2020 ASCCP Oral Presentations, Journal of Lower Genital Tract Disease
- Proceedings of the AACR Special Conference on the Microbiome, Viruses, and Cancer; 2020 Feb 21-24; Orlando, FL. Philadelphia
- PRADOS won the First TOP Prize Cash Award for the category "Creating Resilient People and Places." from the US Census program The Opportunity Project.
- Case Study published by the U.S. Census as one of the positive experiences of the Opportunity Project. US Census June 2020
- RCMi (Research Centers in Minority Institutions) bi-annual meeting in Washington DC.
- San Antonio Breast Cancer Meeting-December 2019
- Puerto Rico Coastal Hazards Symposium (invited speaker), December 2019, San Juan, PR
- 104th Annual meeting of the American Association of Immunologist (AAI) May 8-12, 2020, Honolulu, Hawaii.
- Immunobiology Gordon Research Conference, Barcelona, Spain, June 2020
- American Mathematical Society Fall Southeastern Sectional Meeting, Gainesville, FL. November 2019.
- Puerto Rico Honey Bees and Evolution of Invasive Organisms on Islands. August 13-15, 2019, San Juan, Puerto Rico, USA

Dr. Idhaliz Flores (ARG Grantee) Poster presentation: Validation of Putative Endometriosis Antigens in an in-vitro model Miguel X. Oyola, Dianisse Rodriguez, Ignacio Pino, Idhaliz Flores Ponce Health Sciences University Scientific Conference, May 2019





Dr. Filipa Godoy (ARG Grantee) Learning from ecology: Our microbial selves, UPR School of Medicine, School of Dentistry, Amphitheater B103, UPR Medical Sciences Campus, San Juan, PR, February 7, 2020

CRG

- American Association for Cancer Research Annual meeting, June 2020, Virtual Conference.
- Annual Meeting of the Entomological Society of America. St. Louis, MO, November, 2019
- 2020 Society for Integrative and Comparative Biology, Jan. 2020, Austin, TX
- NIH sponsored Stem Cells in Cancer advanced training course Morehouse University, Atlanta, GA USA
- 4th P.R Cancer conference in Ponce, Ponce, P.R.
- Neurobiology Symposium. University of Puerto Rico – Rio Piedras. November 7, 2019
- NASA HBCU/MSI Technology Infusion Road Tour - Instituto de Aeronáutica y Aeroespacial de Puerto Rico (IAAPR) , Aguadilla - Thursday, November 14, 2019

Dr. Nawal Boukli (CRG grantee) from Universidad Central del Caribe participating at the NIH sponsored Stem Cells in Cancer advanced training course Morehouse University, Atlanta, GA USA

Collaborations ARG

(collaborations with other local researchers and universities)

36

- NIH
- Smithsonian Research Institute - Panamá
- US Postal Service
- US Census
- Federal Geographic Data Committee
- Oakridge National Laboratory
- Moffitt Cancer Center
- Department of Energy
- Thomas Jefferson University
- Paul Spring Harbor Lab
- USDA
- John Hopkins University – Department of Molecular Biology and Genetics
- Naval PostGraduate School
- Avara Pharmaceuticals
- UC San Diego
- Pacific Northwest National Laboratory
- Puerto Rico Address Data Working Group
- Ana G Méndez - Filipa





Collaborations CRG

32

- Regina University, Canada
- University Paul Sabatier, France
- Saviors University of Louisiana
- SUNY Upstate Medical University
- USDA
- Northeastern University
- Smithsonian Research Institute - Panamá
- Mississippi State University
- University of Tennessee at Knoxville
- Boeing Company
- W.M. Keck Center for 3D Innovation, University of Texas at El Paso
- University of New Mexico
- Texas A&M University
- Universidad Politécnica
- UPR other campuses

TV Appearances & Scientific Communication

The Research Grants Program coordinated interviews with Noticentro al Amanecer (WAPA). This is an effort to promote scientific communication. This participation allowed some of the grantees to present their research project and other interests in a simple language to the general public.

- 11/7/2019 - Ciencia y Meteorología: Seguridad en las playas y surfing (Dr. Miguel Canals)
- 11/29/2019 - Ciencia y Meteorología: Investigación con mariposas (Dr. Riccardo Papa)
- 12/16/2019 - Ciencia y Meteorología: Deslizamiento de terreno después de María (Dr. Stephen Hughes)
- 12/19/2019 - Ciencia y Meteorología: Problema de infraestructura de direcciones (Raúl Ríos)
- 12/20/2019 - Ciencia y Meteorología: Nuevas terapias contra el VIH (Dr. Marvin Bayro)





22nd Annual Conference “Leading Changes: Maximizing Research Administration.”

On September 27, 2019, the Sociedad de Administradores de Investigación, Inc. (SAI), the Puerto Rico Chapter of the Society of Research Administrators International (SRAi), held its 22nd Annual Conference, “Leading Changes: Maximizing Research Administration”. This is the main event in the island that offers continuing education to those that oversee and execute the pre-award and post-award processes in their respective organizations.

Grace Rendón, Research Grants Program Specialist had the opportunity to present the Research Grants Program initiatives and outcomes. Also, during the event Ms. Rendón connected with pre-award and post-award representatives of other research institutions of which the Program has grantees.



The Trust sponsored 20 Scholarships to allow Research Administrators to enroll in the conference and participate in the continuing education activities.

Meet the Trust

The Research Grants Program led the “Meet the Trust Event” held in September 2019. The goal of the event was to connect researchers, entrepreneurs and students from the University of Mayagüez Campus (RUM), and the western area, with the programs of the Puerto Rico Science, Technology and Research Trust.

Andreica Maldonado (Grants Program Director) providing orientation during the informative event.





Collaboration with Florida International University

On November 6th, 2019, Andreica Maldonado, Research Grants Program Director, participated in 'The Role of Water' in Washington, D.C. The event included a curated mix of national researchers, key federal and state agency partners, associations and foundations, and representatives from Florida and other critical regions. Participants explored opportunities for federal, state, local, corporate and university collaboration on solutions and technologies relating to water quality, water resilience, and long-term restoration efforts. During the event Ms. Maldonado connected with other researchers to explore possibilities of collaboration between FIU and The Trust. Since FIU has hosted so many Puerto Rican researchers and students at the university, especially after Hurricane María, it would be excellent if together we could create a preparedness plan for students and researchers in the event of a disaster. An initiative in the Grants Program pipeline is to create an asset mapping tool to see where the researchers are, what type of equipment they have and with which external academic institutions they have relations. We also want to create a preparedness plan that will include how to protect samples, research continuity, who are our allies, among other things, in order to better serve the research community.



Andreica Maldonado (Research Grants Program Director) in a roundtable discussion at the 'The Role of Water' event.

Puerto Rico Honey Bee and Evolution of Invasive Organisms on Islands (August 13 – 15, 2019)

Between August 13 and August 15, 2019, Dr. Tugrul Giral, a grantee, led the "Puerto Rico Honey Bee and Evolution of Invasive Organisms on Islands" conference. This event was sponsored by The Trust.

Honey bees play a key role as pollinators in agricultural systems worldwide and are under threat by human activities. The aim of this three day conference was to examine the Puerto Rico Gentle Africanized honey bee, through the lens of invasion biology and island biogeography. Participants gave presentations on the first day of the conference. On the second day, attendees visited several apiaries on the Island. For the third day, attendees formed breakout groups for round table discussions leading to a strategic plan on research directions, resources, and policy advice on honey bees and other invasive organisms on island.



Participants of the Puerto Rico Honey Bees and Evolution of Invasive Organisms on Islands conference included researchers, students, beekeepers and agronomists from various countries, states, and institutions. Their aim was to identify new directions in research and honey bee management, and to determine a strategy for the development of a certification process for the export of the Honey Bee of Puerto Rico.

Sara ElShafie: Science through Story: Engaging Broad Audiences

On November 1, 2019, the Research Grants Team facilitated “Science through Story: Engaging Broad Audiences,” a communication conference presented by Sara ElShafie from the University of California, Berkeley. ElShafie is an expert in science communication and storytelling techniques. Her work seeks to enable a general and diverse public to understand scientific and complex issues. Her visit was sponsored by the Centro de Apoyo a la Innovación y Comercialización (upr i+c).



Sara ElShafie: Science through Story: Engaging Broad Audiences. Innovation Center, Puerto Rico Science, Technology & Research Trust. November 1, 2019



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:

- Resiliency and Business Innovation (RBI) Project - Request for Proposals for Research Projects, January 2020
- Puerto Rico Public Health Trust (PRPHT) - Request for Proposals for Public Health Research, January 2020
- SBIR/STTR Evaluation Form - In progress

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.

2020 Advanced and Catalyzer Grants Call

On March 18, 2020, the Letter of Intent (LOI) Phase for the Advanced Research Grant and Catalyzer Research Grant began. As part of the outreach efforts, the Research Grants Team conducted info sessions at various universities across the Island:

- Universidad Central del Caribe: March 05, 2020.
- University of Puerto Rico at Rio Piedras: March 09, 2020.
- Ponce Health Science University: March 12, 2020.
- University of Puerto Rico, Mayagüez campus: March 13, 2020.
- University of Puerto Rico, Utuado campus: March 17, 2020.

LOI Phase

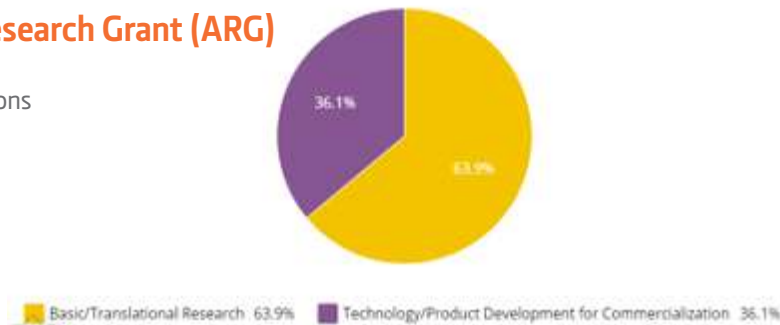
During the LOI phase, the Grants Program received 97 LOIs for the Advanced Research Grant and 33 for the Catalyzer Research Grant





Advanced Research Grant (ARG)

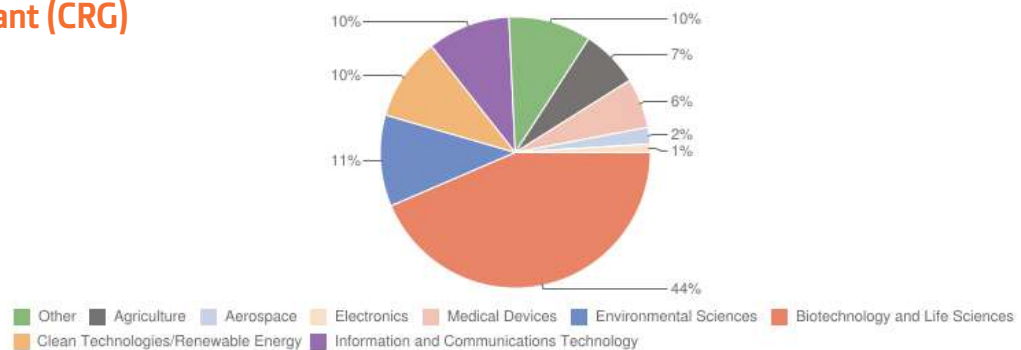
Type of Applications



Catalyzer Research Grant (CRG)

Type of Applications

Strategic Sectors



The Research Grants Team paused the current call efforts due to the ongoing COVID-19 Pandemic. Although the initial evaluation of the LOIs was completed and the reviewer selection process is in progress, we had to focus our efforts in developing a mechanism to fund research projects to help mitigate the current public health emergency.



In March 2020, the Trust's Research Grants Program issued the COVID19 RAPID Grant. At the beginning of the year, the World Health Organization declared a worldwide public health emergency in response to the 2019 novel COVID-19 pandemic. Accordingly, the COVID19 RAPID grant aimed to support projects that will improve our understanding and available control measures for COVID-19.

The Trust's RAPID funding mechanism is used for proposals having a severe urgency with regard to the availability of, or access to data, facilities or specialized equipment, including quick-response research on natural or anthropogenic disasters and similar unanticipated events.

The COVID-19 RAPID grant was open to researchers in public and private universities, colleges, and affiliated non-profit research institutions located in Puerto Rico. Startups and established companies based in Puerto Rico are also invited to apply.

To be eligible for funding, projects were presented in one of the following strategic activities:

- Pathogenesis of the disease
- Epidemiology
- Clinical Research
- Pharmacology
- Mental health and Social Sciences
- Cyberinfrastructure and solutions
- Research & Development



The request for proposals opened on March 31, 2020 and closed on April 7, 2020. The **COVID19 RAPID** grant was open to researchers in public and private universities, colleges, and affiliated non-profit research institutions located in Puerto Rico. Startups and established companies based in Puerto Rico were also invited to apply.

For this call, the Research Grants Program received 80 full applications in one week. All applications were checked for completeness and responsiveness by the grants team. After the first screening, 20 applications were disqualified and 60 were assigned for review. Internal and external qualified reviewers, based on scientific and technical qualifications, were recruited. The grants team assigned two reviewers per proposal. 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.

According to the COVID19 RAPID Grant guidelines, proposals were scored individually by approach and technical merit, significance, investigator(s), environment, and budget justification. 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.

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 not only to the creation of meaningful jobs and economic growth in Puerto Rico, but to the mitigation of the COVID19.



CORRECCIÓN

Científicos boricuas ingenian antidotos contra el COVID-19

Investigadores de todo el mundo están inmersos en distintos proyectos relacionados con este virus en busca de tratamientos.

Este artículo y sus contenidos han sido publicados más de 20 veces.



El laboratorio para Ciencia, Tecnología e Investigación de Puerto Rico analiza muestras relacionadas con el COVID-19. (Santibañez)

Desde que se descubrió el COVID-19 (<https://www.elnuevodia.com/topicos/coronavirus/>) en China, el mundo entero ha estado viendo cientos de investigadores en el mundo -incluyendo a puertorriqueños en la isla y el exterior- han tratado de descubrir el virus que causa la enfermedad en busca de tratamientos.



NOTICIAS

Noticias de la UPR

Cuatro investigadores de la UPR reciben sendas subvenciones para innovadores proyectos para combatir al COVID-19

Noticias de la UPR



El Departamento de Investigación y Desarrollo de la UPR anunció el día de hoy que cuatro investigadores de la UPR han sido seleccionados para recibir subvenciones para innovadores proyectos para combatir al COVID-19.

Los investigadores seleccionados son: Dr. Carlos A. Torres, Dr. Carlos A. Torres, Dr. Carlos A. Torres y Dr. Carlos A. Torres. Los proyectos de investigación se centran en el desarrollo de nuevos tratamientos y vacunas para combatir al COVID-19.

El Departamento de Investigación y Desarrollo de la UPR anunció el día de hoy que cuatro investigadores de la UPR han sido seleccionados para recibir subvenciones para innovadores proyectos para combatir al COVID-19.

Los investigadores seleccionados son: Dr. Carlos A. Torres, Dr. Carlos A. Torres, Dr. Carlos A. Torres y Dr. Carlos A. Torres.

Los proyectos de investigación se centran en el desarrollo de nuevos tratamientos y vacunas para combatir al COVID-19.

El Departamento de Investigación y Desarrollo de la UPR anunció el día de hoy que cuatro investigadores de la UPR han sido seleccionados para recibir subvenciones para innovadores proyectos para combatir al COVID-19.



In April 2020, the Government of Puerto Rico approved an appropriation of \$1,714,000 to the University of Puerto Rico to finance research and development projects related to COVID-19 at the Medical Sciences Campus and other campuses of the institution. This initiative allows professors and researchers at the University of Puerto Rico to develop research projects to address and mitigate the impact of COVID-19. This funding represents an opportunity for the development of projects by professors and researchers of the first teaching center in Puerto Rico. Projects may be subsidized in amounts ranging from \$125,000 to \$175,000. The recommendation for funding will be based on research experience, scientific merit and programmatic objectives that support quality research in response to the current COVID-19 pandemic.

In order to evaluate the proposals, the University of Puerto Rico partnered with the Trust and its Research Grants Program to conduct a peer review process. After the UPR developed the Request for Proposals (RFP) and evaluated the guidelines, the Trust's Marketing and Communications Team developed a [microsite](#) for this initiative that included important dates, guidelines, memorandum of call for proposals, and access to the application portal.

The application opened on May 4, 2020 and closed on May 11, 2020. The Grants Team pre-screened the applications and identified potential reviewers. A total of 38 proposals were received and evaluated by two subject matter experts.

Due to the ongoing pandemic, numerous potential reviewers were unavailable, due to research and review commitments related to the COVID-19 at their institutions. A total of 183 invitations were sent in order to comply with the 76 proposal revisions. The Trust offered an honorarium to the reviewers of \$150 per proposal for a total of \$11,400.

A total of 56 reviewers from the following countries participated in the process:

1. United States
2. Canada
3. Colombia
4. Spain
5. Finland
6. India
7. Italy
8. New Zealand
9. South Africa
10. Saudi Arabia
11. United Kingdom



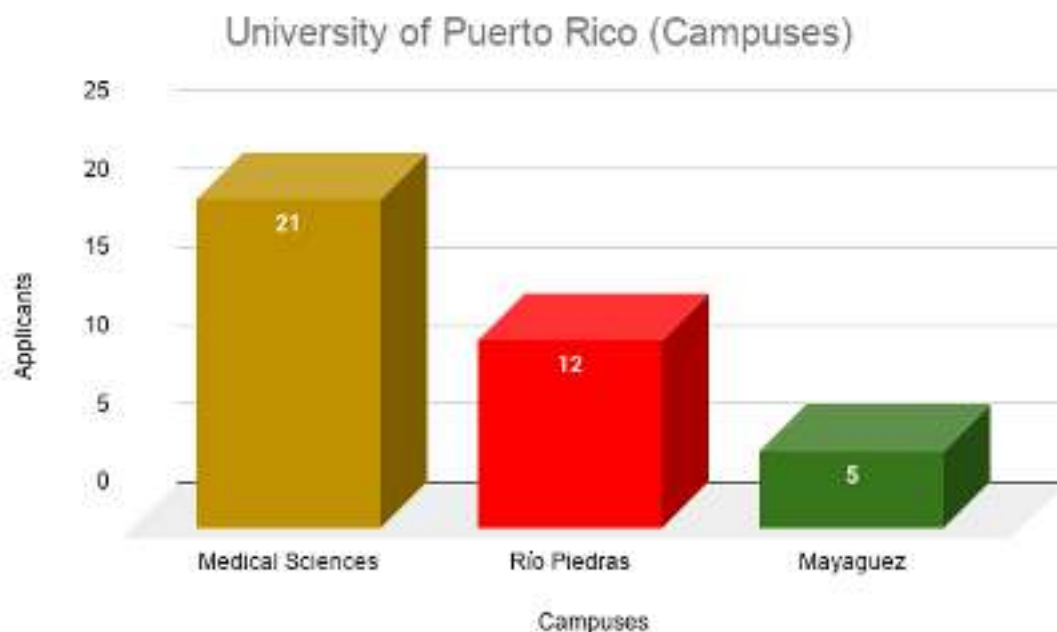
The research institutions involved in the process were:

- Massachusetts Institute of Technology (MIT)
- Stanford University
- University of Oxford, England
- Rutgers, The State University of New Jersey
- Georgia Institute of Technology (Georgia Tech)
- University of Connecticut
- George Washington University
- University of Edinburgh
- NIH - National Cancer Institute
- Valdosta State University
- Pennsylvania State University
- Montana State University
- University of North Texas
- Louisiana State University
- University of Illinois at Urbana-Champaign
- University of Illinois at Chicago
- Fundación Cardiovascular de Colombia
- Board of Governors Federal Reserve
- University of Kentucky
- University of Toronto
- University of Florida
- University of Canterbury, New Zealand
- Fred Hutchinson Cancer Research Center
- King Faisal University, Saudi Arabia
- University of Cincinnati College of Medicine
- University of Bari Aldo Moro, Italy
- Monmouth University
- Wayne State University
- Istituti Clinici Scientifici Maugeri IRCCS, Italy
- University Hospital Germans Trias, Spain
- Universidad Tecnológica de Pereira, Colombia
- Hospital Universitario Marqués de Valdecilla, Spain
- Universidad Industrial de Santander, Spain
- CiaoLapo Foundation, Italy
- Kazi Nazrul University, India
- Adamas University, India
- University of Valencia
- Center for Biomedical Research of La Rioja (CIBIR), Spain
- Long Island University-Brooklyn
- Georgia Southern University
- University of Wisconsin - School of Medicine & Public Health
- University of Helsinki, Finland
- University of the Western Cape, South Africa
- Hospital Internacional de Colombia
- University of Colorado Denver
- University of California, Merced



University of Puerto Rico campuses

Of the **38** proposals, **21** were from the Medical Sciences campus, **12** from the Río Piedras campus and **5** from the Mayaguez campus.



Strategic Areas

- Clinical Research - 3
- Data Sciences - 2
- Epidemiology - 4
- Mental health and Social Sciences - 7
- Pathogenesis of the Disease - 8
- Pharmacology - 6
- Research & Development - 6
- Other - 2

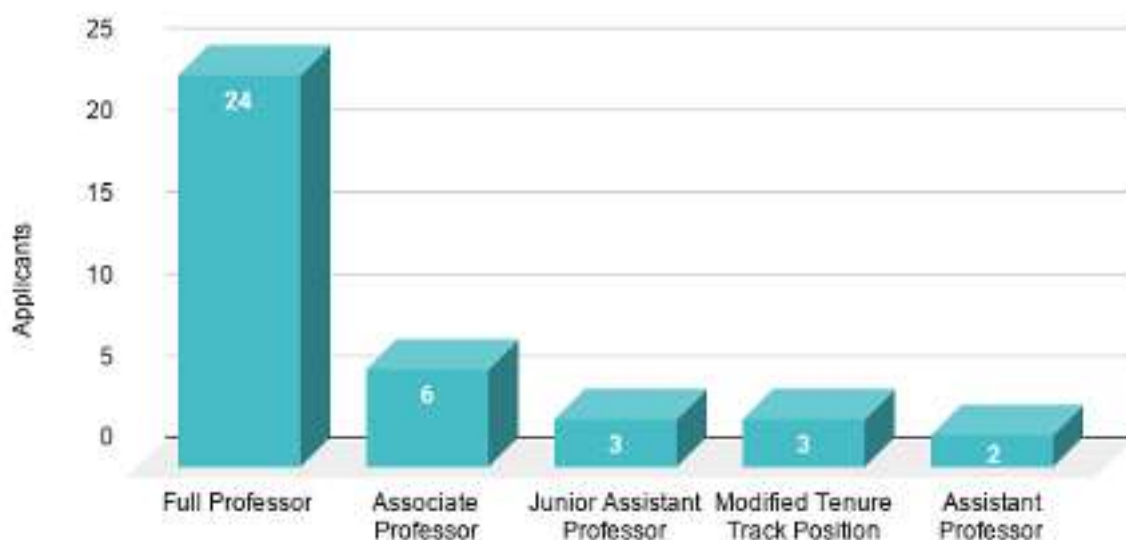




Faculty Title

In order to be eligible for the grant, the applicant must fall under one of the following categories: Full Professor, Associate Professor, Junior Assistant Professor (within 5 years of appointment), Modified Tenure Track Position (under contract) and Assistant Professor (less than 5 years of appointment). The majority of the applicants were Full Professors (see chart below).

Faculty Title



Primeros HORA

La UPR busca detener el COVID-19 con estas 10 investigaciones

Un comité interdisciplinario por investigadores involucrados en 10 proyectos piden \$ por las siguientes para otorgar a cada una fondos adicionales a \$25,000



Por Juan Carlos Maglio
10 de agosto de 2020 | 11:45pm

¿Cuál es la secuencia genética del coronavirus SARS-CoV-2 en Puerto Rico? ¿Desde dónde fue llevado? ¿Tiene alguna conexión con la gravedad de la enfermedad en el país? ¿Existirá algún medicamento aprobado que sirva como tratamiento contra el COVID-19? <https://www.primeroshora.com/hora/coronavirus/> ¿Cuál es la prevalencia de la enfermedad en la isla? ¿Los anticuerpos realmente neutralizan al virus? ¿Cuáles serán las consecuencias a largo plazo en los sobrevivientes?

Este contenido es una reproducción autorizada por la UPR de la información contenida en el sitio web de la UPR.

Investigadores de la UPR laborarán en 10 proyectos relacionados al COVID-19

Los proyectos de investigación fueron elegidos entre un total de 38 que fueron sometidos



En el primer de evaluación participaron más de 30 instituciones, incluyendo el Recinto de Ciencias Médicas de la UPR de Río Piedras, (Venezuela, Santa Cruz).

Profesores de los recintos de Río Piedras, Mayagüez y Ciencias Médicas de la Universidad de Puerto Rico (<https://www.elnuevodia.com/toquios/upr/>) (UPR) liderarán 10 investigaciones que ayudarán en la lucha contra la pandemia provocada por el coronavirus SARS-CoV-2 (<https://www.elnuevodia.com/toquios/coronavirus/>), informó la institución universitaria.

Jorge Haddock (<https://www.elnuevodia.com/toquios/jorge-haddock/>), presidente de la UPR, indicó que el gobierno de Puerto Rico otorgó \$1.2 millones para financiar los proyectos seleccionados.



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 the new grantees for the Advanced and Catalyzer Research Grants.
- Currently, the Grants Team along with the Technology Transfer Office is working with the deployment of Symplectic, a digital platform that will allow the measurement of scientific activity on the island. The platform is expected to go live in February 2021. Outreach activities will take place in order to inform the universities and the research community about the tool.
- The Program will continue providing support with the SBIR/STTR efforts.
- The Program will launch a new blog called “En Rice and Beans” to promote scientific communication and showcase the grantees.
- The Program will explore new funding mechanisms in order to continue supporting the local scientific community.



Grants Team



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Juan Figueroa
Entrepreneurship Advisor and
Associated Re-searcher



Events

2019-09 Grants Announcement



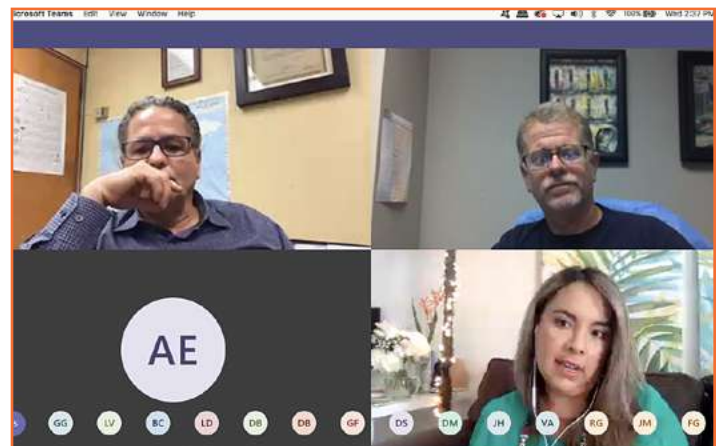
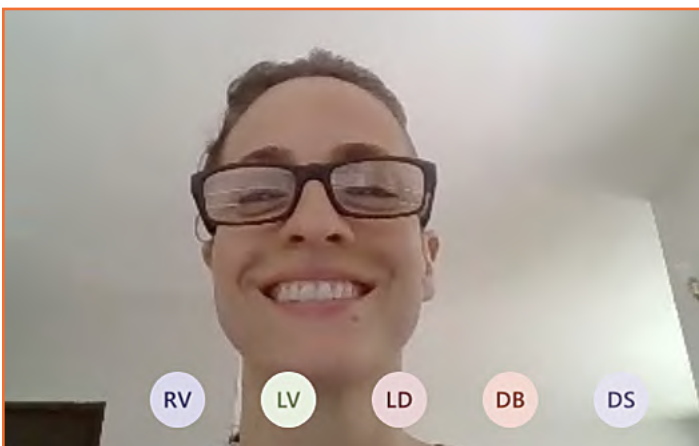


2019-09 Grants Announcement





2020-06 Rapid Grant Virtual Recognition





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 2019-20

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

1) A repository for Covid-19 samples

As of August 27th, 2020, the COVID-19 pandemic has claimed over 822,000 lives with over 24 million confirmed cases worldwide. Its causative agent, the severe acute respiratory syndrome-related coronavirus (SARS-CoV-2), has spread with tremendous speed to over 200 countries and regions. So far, there is no approved pharmaceutical treatment for the disease, although there are several promising compounds undergoing clinical trials.



In Puerto Rico alone, clinical laboratories have tested over 400,000 individuals by PCR with **each test generating important sample remnants that could be useful to local or regional research efforts**. With the goal of capturing the samples and sample remnants discarded by the clinical laboratories, the Center for Tropical Biodiversity (CTB) has established a **Covid-19 Sample Repository** at the Center of Excellence in Quarantine and Invasive Species (UPR-CEQIS-AES), Botanical Garden South. Samples will be stored in a -80 °C freezer located at the CEQIS Facility room #4 that has recently been made available in whole to the CTB for these purposes. With this facility,

we will provide long-term storage unit for samples collected as part of the Covid-19 testing protocols in place at many hospitals, clinical laboratories and other medical facilities. The freezer is connected to a constant electrical power supply with a robust back-up generator facility within a BSL-2 lab facility with the appropriate air quality system.



Facilities for the **Covid-19 sample repository**. Samples are being stored in a -80oC freezer located in the Center of Excellence in Quarantine and Invasive Species (UPR-CEQIS-AES) in the Botanical Garden in San Juan.

The samples stored in this facility will be available for coronavirus-related research projects. In fact, two researchers have already contacted the CTB for samples: Dr. Riccardo Papa will perform full RNA sequencing for the local strains of the virus to investigate the genetic hallmarks of the different contagion peaks, and Dr. Filipa Godoy will assess the presence of other microbes in the nasopharyngeal samples.

Significant impact metrics:

Covid-19 positive samples: **132**

Covid-19 negative controls: **25**

Mycoplasma positive samples: **65**

Researchers benefitted: **2**

2) Turning ecosystems into searchable data -

Artificial intelligence and machine learning (AI//ML) have had a profound impact in our modern data-driven world. Nearly every aspect of human existence in the developed world generates vast amounts of data that is routinely analyzed to predict behaviors, to detect social, financial or cultural trends and to identify possible foreign or domestic threats. AI/ML has also been implemented in high technology applications in computer vision, voice analysis and route selection in highly transformative ways. **AI/ML has also expanded into the study of biodiversity**, since ecosystems and their description can also generate large amounts of data (through photography and chemical techniques) that could be transformed into knowledge.

As part of our efforts to bring the study of biodiversity and natural product discovery to the age of Big Data, Puerto Rico must undertake efforts to “digitize” ecosystems, or convert them into data that can be shared, mined and monetized. Here we present three efforts in which the CTGB has been positioning the island toward the data-driven study of ecosystems:

2A. Digitizing the invertebrate collection. Puerto Rico’s humid tropical climate makes it a hotbed for the evolution and diversity of insects and other land invertebrates. The UPR’s Museum of Entomology is an effort to capture this part of our natural heritage and history. In 2017, the CTB funded the purchase of an automatic stereoscope (SZX2 series) from Olympus to enhance the curatorial work at the UPR’s entomology museum and to generate high-end images that could be contributed to global biodiversity databases under the supervision of entomologist Dr. Rosa A. Franqui from UPR Mayagüez.

Since its purchase, the new equipment has been available to the UPR academic community, including graduate and undergraduate students and faculty. With this equipment, a total of 3,033 specimens have been identified to species level and deposited in the UPR’s Entomology Museum database. Three undergraduate and one High School student received training in insect taxonomy and curatorial methods including



digital imaging. The Museum hosted 4 individual visits by researchers and university students (N= 26 visitors) to study the museum holdings and research resources including a digital imaging. Currently we have processed 220 digital images using an Olympus SZX16 with DP camera on specimens of the following orders; Coleoptera, Diptera, Heteroptera and Orthoptera.

Significant impact metrics:

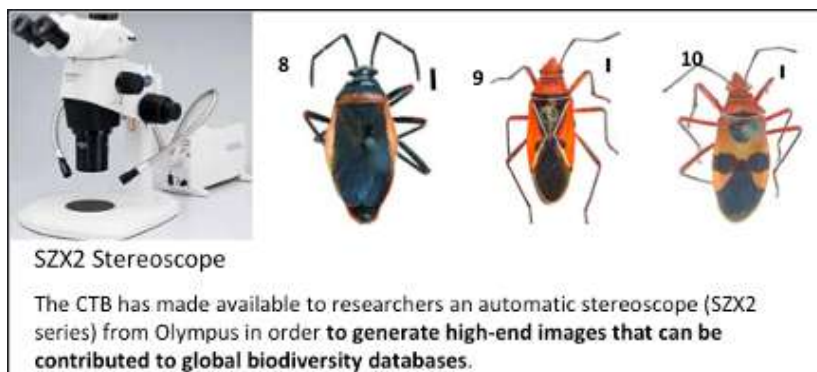
Users: **26**

Students: **3** undergraduates + **1** high school student

Specimens analyzed: **37,574**

Peer-reviewed publications: **3**

Images contributed: **1504** to the **Forest Insect Survey Catalog**

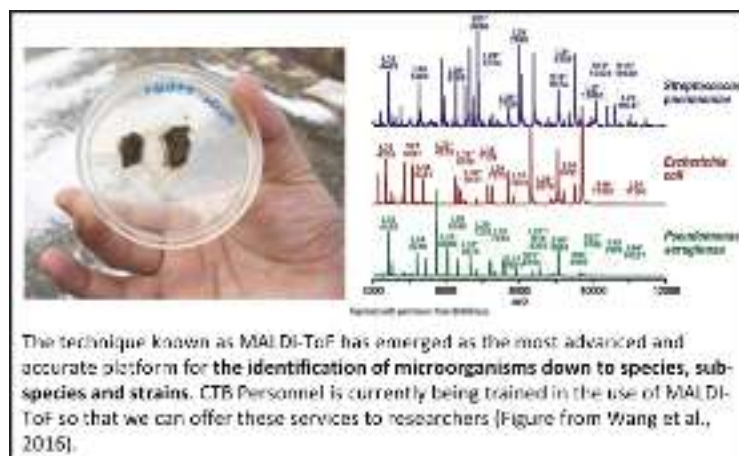


This facility is available to all biodiversity researchers interested in the detailed identification and description of insect, plant and fungal species.

2B. Quick identification of microorganisms by MALDI-ToF. Historically, the identification of microorganisms has always been a laborious process involving the isolation of cells and careful observation through a microscope. With the advent of new methods for DNA sequencing entire microbial populations could be examined through their ribosomal RNA genes (16S for prokaryotes and 18S for eukaryotes). This automated process greatly enhanced the identification of numerous species of microorganisms. However, the level of conservation of the 16S rRNA genes only allows to approximate or to estimate taxonomy to the level of genus.

Today, the technique known as Matrix-assisted laser desorption ionization (MALDI) coupled with time-of-flight detection (ToF) represents the most advanced and accurate platform for the exact identification of microorganisms down to species, sub-species and strains. The method relies on the exact mass of well-defined protein markers that are unique to each bacterial strain. Its use has proven highly valuable for the identification of bacterial pathogens in clinical settings and is currently being optimized for the analysis of antibiotic-producing microbes found in the environment. However, although there are some MALDI-ToF systems for chemical analysis available in Puerto Rico for research, there are no dedicated MALDI-ToF systems for microbial identification.

Recently, the Puerto Rico Department of Health acquired a Bruker MALDI-ToF System for microbial identification. In an effort to maximize the use of the equipment the Department of Health and the CDC have invited the Center for Tropical Biodiversity to design protocols for the identification of environmental bacteria, such as the ones generated in our five cornerstone projects (Table 1). The implementation of MALDI-ToF in these projects would mean very quick identification turn-around at a fraction of the cost of DNA sequencing, resulting in a faster, cheaper discovery of species likely to produce antibiotics, or antifungals



**Table 1. Projects that could benefit from MALDI-ToF microbial ID service**

Project	PI	Inst.	More Info.
Coquí Llanero	I. Rodríguez/ N. Ríos	UPR-H	https://youtu.be/NKoumU2UFts
Mangrove Termite	M. Cafaro	UPR-M	https://youtu.be/Fhr4cojIUlc
Hypersaline Lagoons (Cabo Rojo)	L. Casillas	UPR-H	https://youtu.be/qacU0EIJNFY
Biomphalaria snails	M. Miller	UPR-RCM	
Marine natural products	A. Rodríguez	UPR-RP	

In addition to using MALDI-ToF in our cornerstone projects, we propose to offer MALDI-ToF services for microbial identification much in the same way that we have offered the microscopy services for the generation of digital images at the entomology museum. Researchers will prepare their microbial samples and send them to the CTB for MALDI-ToF analysis. The data generated as part of these services will be incorporated into the international microbial database for MALDI-ToF spectra, where it will be available to the research community.

2C. The Social Molecular Networks.

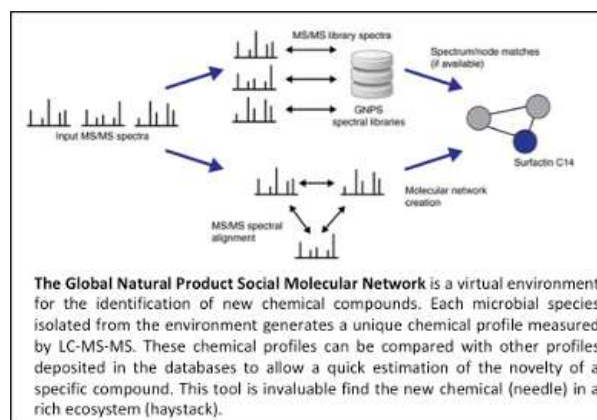
The discovery of natural products has been greatly enhanced by advances in mass spectrometry (MS), which allows the identification of chemicals in crude environmental samples with very little sample requirements and minimal processing. Essentially, a crude environmental sample can be quickly analyzed for its chemical composition. However, these MS experiments can generate vast amounts of data consisting of mostly low-priority compounds (compounds that are not new or useful but are in high abundance). The problem thus becomes akin to finding the needle in the haystack.

To enable filtering the data and finding the gold nugget among a vast MS/MS dataset, scientists at the University of California at San Diego (UCSD) created the **Global Natural Products Social Molecular Networking** (GNPS; <http://gnps.ucsd.edu>), an open-access knowledge base for community-wide organization and sharing of raw, processed or identified tandem mass (MS/MS) spectrometry data. Using this powerful tool, a researcher can analyze raw data from environmental isolates with the goal of identifying those isolates that produce 'known' compounds and separating them from those isolates that produce entirely new chemicals: an elegant and user-independent way to simplify the problem.

The CTB is fully invested in developing GNPS for its associated researchers.

In fact, last year, CTB Director Abel Baerga-Ortiz and Jeffrey Marrero were invited to the Annual Meeting of the American Society for Pharmacognosy (ASP) in Wisconsin (July 13-17 Madison WI) titled "Innovations in Natural Products Chemistry: an Interdisciplinary Approach to Understanding Nature's Chemical Library".

During this meeting, we attended a hands-on workshop on implementing GNPS in the MS/MS facility at UPR's Molecular Science Research Center. **We propose to offer GNPS search services** much in the same way that we have offered the microscopy services for the generation of digital images at the entomology museum. Researchers will prepare their microbial samples and send them to the CTB for GNPS analysis.





3) Building a searchable database of Puerto Rico's natural chemicals.

During 2019-20, the CTB reported the identification of numerous species from both the Coquí Llanero project and the Mangrove Termite project. Both of these projects have yielded a number of species that are known to produce biologically active compounds that could be further developed as antimicrobials. 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, and to make them available for academic or commercial use, we have built the **CTB Natural Product Database**. The database is weeks away from being implemented as a searchable online tool that will display Puerto Rico's chemical diversity for academic or commercial purposes. Furthermore, Puerto Rico's natural product research community will be trained on how to contribute compounds in an OpenShare model for chemical data.

Scaevola Cordia	Termites	Bioluminescence	Alkaloids	N/A	Antibacterial antifungal cytotoxic	Anticancer antiparasitic (marine alkaloids)		C. corda	2013	1510111111 prod. 000007
Scaevola Cordia	Termites	Bioluminescence	Alkaloids	N/A	Antibacterial antifungal cytotoxic	Anticancer antiparasitic (marine alkaloids)		C. corda	2013	1510111111 prod. 000007
Scaevola Cordia	Termites	Bioluminescence	Alkaloids	N/A	Antibacterial antifungal cytotoxic	Anticancer antiparasitic (marine alkaloids)		C. corda	2013	1510111111 prod. 000007
Scaevola Cordia	Termites	Bioluminescence	Alkaloids	N/A	Antibacterial antifungal cytotoxic	Anticancer antiparasitic (marine alkaloids)		C. corda	2013	1510111111 prod. 000007

The CTB Natural Products Database will be an online, searchable collection of all the chemical compounds that are present (or highly likely to be present) in Puerto Rico's ecosystems. The database will include links to the researchers who contributed the structures and to the papers where information about the compounds can be found.

Future Plans

1) Going live with the CTB Natural Products Database.

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 exists only offline as a locally stored. 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 that are either currently offered (stereoscope for high-quality images) or are under development (MALDI-ToF; GNPS). In order to expand the user base for these services, the CTB will organize online workshops to raise awareness of the services that are provided. We will begin by organizing a workshop for stereoscopic images using the Olympus equipment currently in the Entomology Museum. We have also contacted the creators of the GNPS (Social Molecular Network) at UC-San Diego to provide a training workshop for potential users and similar with the MADLI-ToF services.

3) Business Development Pipeline.

The CTB Natural Products 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 so that natural products and biodiversity are included in Puerto Rico's value proposition.





4) Identification of Grant Opportunities in Chemical Defense.

Earlier this year, before the global Covid-19 situation, the CTB held conversations with the US Department of Defense, specifically with Dr. David Hone, from the Chemical and Biological Defense Division of the Joint Science and Technology Office (JSTO) at DoD, which has specific programs for the discovery of new antibiotics and other medical countermeasures. In November 2019, the Director of the CTB attended the Annual Science and Technology Conference for Chemical and Biological Defense, and officers expressed much interest in developing the Social Molecular Network platform for the discovery of natural products. With the spread of Covid-19, the priorities of the JSTO had to be re-focused, but we expect to re-engage in the conversations surrounding Puerto Rico's potential for drug discovery in the antiviral space.

5) 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.

Contact



Abel Baerga

Program Director

Web: <https://prsciencetrust.org/center-for-tropical-biodiversity/>

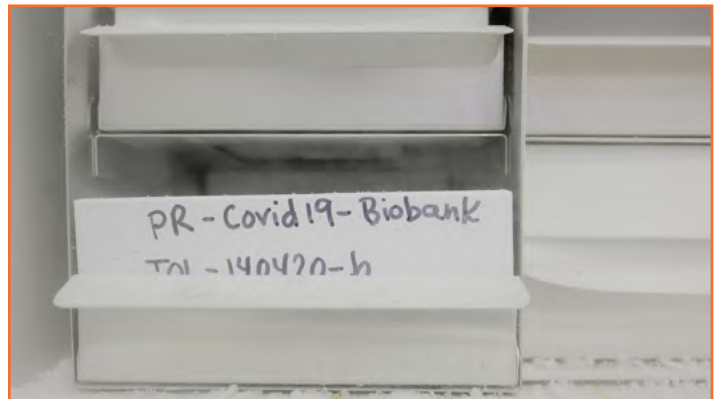


Events

Bio Philadelphia - June, 2019



Sampling Lab - June, 2020





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 delivers best-in-class technology transfer services in order to improve Puerto Rico's universities' performance and to improve Puerto Rico's overall innovation ranking.

ACHIEVEMENTS

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



Innovation Ecosystem Development

Capacity Building

Expanded Presence to Mayagüez

- Satellite office located on University of Puerto Rico Mayagüez (UPRM) campus
- TTO Technology Manager for engineering/agriculture at TTO satellite office
- Technology Transfer Internships
- Two tech transfer interns trained in invention screening and evaluation

Knowledge Transfer

Events

- Meet the Trust at UPRM
- Technology Transfer in Puerto Rico

Workshops

- Molecular Imaging to Support Drug Development
- Licensing Your Research Tools and Reagents
- Technology Transfer for the Life Sciences

Special Topics

- Technology Transfer Week
- TTO Blogs
- COVID RAPID grants, IP interviews of 14 PI/co-PIs

Resource Development

SE XLerator Network (NIH supported)

- Subawards to UPR Medical Sciences Campus, Ana G. Mendez University-Gurabo (UAGM), and Ponce Health Sciences University (PHSU) as Site Leads to engage life/bioscience researchers in accelerating life/bioscience innovations
- Ideas2Product program: 8 applicants; one award to PHSU

Innovation Training at UPRM (NSF supported)

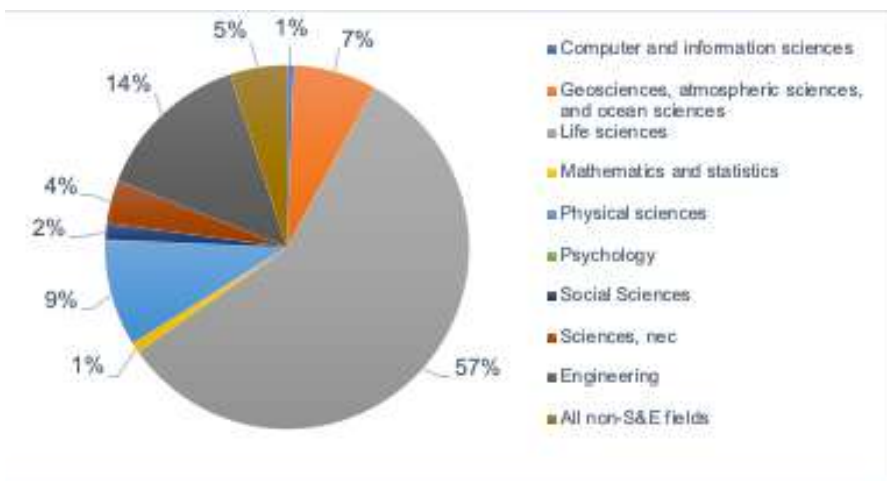
- Strategic Doing Leader Training, by Purdue Agile Strategy Lab



Technology Transfer Process Technology Portfolio in FY2020

Research Expenditures by Field

Research and development (R&D) expenditures by Puerto Rico's universities totaled \$103,935,000 in FY2018, the most recent official report from the National Science Foundation. This total is about 16% lower than the 5-year average of \$124,045,000 likely because of the hiatus and damage from the 2017 hurricane season. The chart below reflects the percentages of R&D in each scientific field and is consistent over the past 5 years.

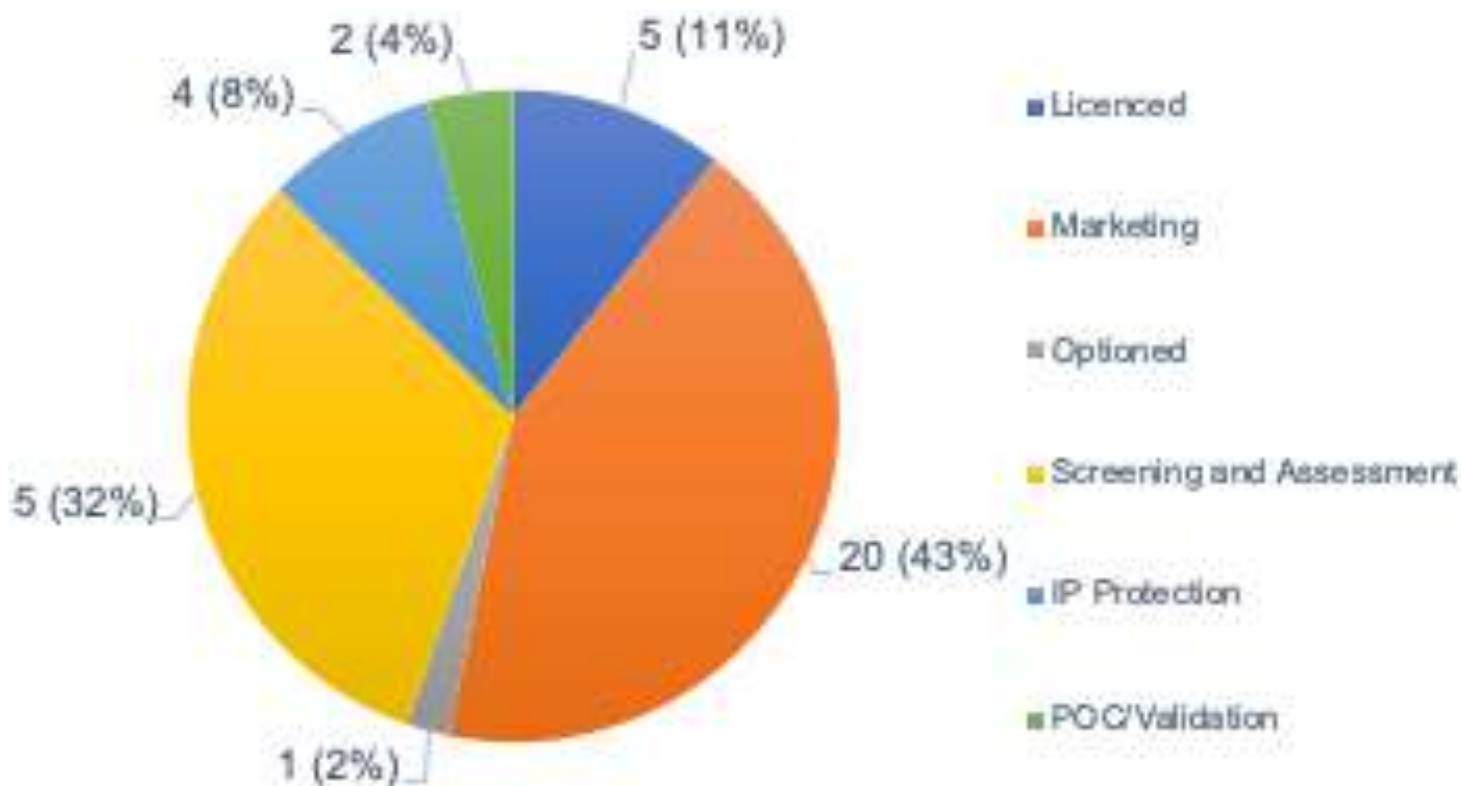


R&D activity can generate research discoveries, which feeds the pipeline for identifying new invention disclosures and the beginning of the technology transfer process. Source: National Center for Science and Engineering Statistics, National Science Foundation, Higher Education Research and Development Survey, Fiscal Year 2018. <http://ncesdata.nsf.gov/herd/>.



Existing Active Technologies by Status

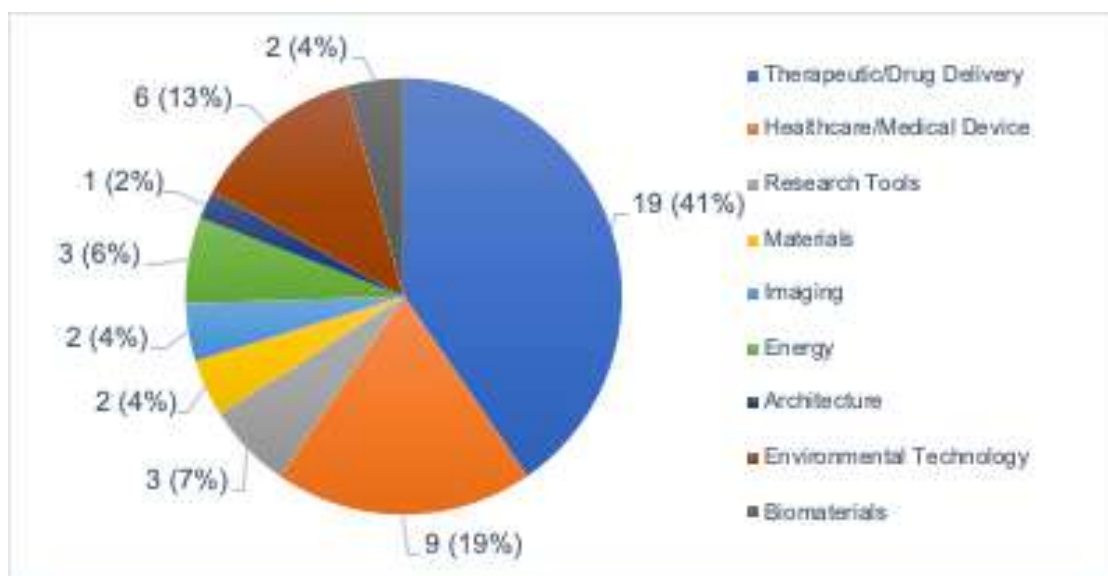
The TTO had an active portfolio of 47 technologies in FY2020. Each technology may include multiple patent applications, a single patent application, and/or non-patentable intellectual property. The TTO's marketing efforts advanced considerably in FY2020 as more disclosures advanced through the evaluation stage and the TTO's marketing platforms enabled this increase.





Existing 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.



Portfolio Management



Inteum Minuet™ is the TTO's IP management software platform that integrates new disclosures, IP assets, technology activities, agreements, expenses, revenues, and analytics tools essential to technology transfer.



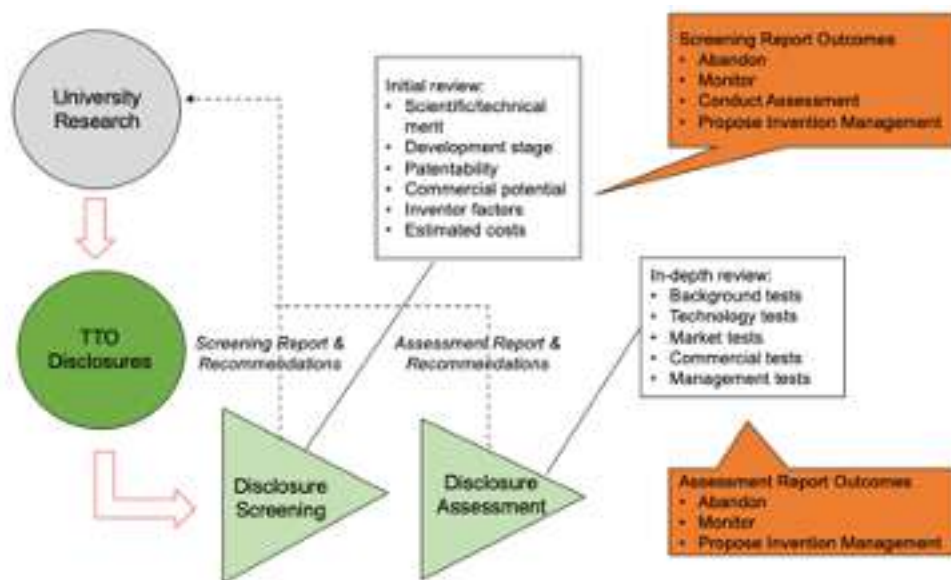
The cloud-based TTO "Inventor Portal" allows researchers and scientists to disclose their inventions easily and include posters, manuscripts, and other supporting information for review by TTO's professional staff.

Screening and Assessment

Once an invention disclosure is submitted, reviewed, and approved on the Inventor Portal, the TTO initiates a formal evaluation ("screening") of the disclosure. The TTO uses a number of standard research tools as well as two unique platforms to examine scientific and technical merit, the development stage of the invention, patentability, commercial potential, inventor factors, and estimated costs. This Screening Report and a set of recommendations are provided to the inventor(s) and the University. In FY2020, the TTO completed 18 Screening Reports.



In some cases, the market position of the technology is a key factor. In such cases the TTO will seek additional expertise to complete an Assessment Report. From time to time, an Assessment Report may be completed and based upon a patentability opinion from patent



counsel. In FY2020, the TTO completed 5 Assessment Reports.



PatSnap is an IP analytics and business intelligence platform used to support the evaluation and decision-making for all new TTO disclosures and generate our Screening Reports. R&D and IP datasets provide access to more than 140 million patents worldwide, chemical structure searches, R&D intelligence, and industry trends.



Invention Evaluator is used for our Assessments when and understanding of the technology's market position is critical for decision-making and recommendations. It combines industry-expert analysts and propriety research algorithms that produce actionable results we share with our inventors.

Patent and Legal Resources

The TTO has six 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



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



Barnes & Thornburg, LLP
14 U.S. offices



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



Ferraiuoli, LLC
San Juan, Puerto Rico



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



Marketing Platforms



IN-PART connects university research assets and R&D companies in two ways. First, it is a digital partnering platform for 250+ research institutes/universities that promote their inventions and discoveries to over 5,500 R&D companies in the network. Second, Discovery is an open innovation platform that allows corporate R&D teams to leverage the university network. This is the TTO's major marketing platform.



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.

Global Market Penetration

At a glance...

- 39 Cities
- 9 Countries
- 3 Continents

Top Countries

- 56% United States
- 15% Japan
- 7% Canada

Top Continents

- 63% North America
- 20% Asia
- 17% Europe

Audience Map

Global viewership of Puerto Rico Science, Technology & Research Trust technologies during the current subscription period.





Key Performance Indicators

Performance Metrics/KPIs	Total
Research Expenditures (\$000s)	\$103,935
Principal Investigators	477
Invention Disclosures	22
Evaluation	23
Screening Reports	18
Assessment Reports	5
New Technologies Managed	21
Total Active Portfolio	47
Intellectual Property	
New Patents Filed	8
US Provisional	2
US Nonprovisional	3
PCT	3
Foreign	0
Patents Issued	3
Patent Expenses	\$210,048
Patent Expenses Reimbursed	\$104,446
Marketing	
Technologies Marketed	20
Targeted Companies	345
Licensing	
Material Transfer Agreement	2
Option	3
Term Sheets	2

Looking Forward

Capacity Building

- Hire Technology Transfer Analyst
- Hire Technology Transfer Interns
- Complete TTO office renovation at UPRM

Knowledge Transfer

- Support the Research Institute's Symplectic Elements initiative to identify, organize, and promote Puerto Rico research assets (university researcher profiles; expertise, grants, publication, patents)
- Plan and conduct researcher workshops and programs on special topics (XLerator Network and on-demand)
- Design and implement a "TTO Bridge" program to engage research leaders to mentor other campus researchers in technology transfer
- Support professional development of TTO staff

TTO Proof-of-Concept Gap Fund

- Design and conduct pilot funding mechanism to rapidly respond to feedback and interest from industry for high value technologies. The TTO internal fund will be deployed in cooperation with the Grants Program. The fund will support the "next critical experiment" (e.g. in vivo, proof-of-concept) with industry input and guidance.

Life Science/Healthcare Startup Acceleration

- Southeast XLerator Network, year three 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.

R&D Collaborations

- Support the Research Institute through promotion of university-industry collaborations using IN-PART's "Industry Calls for Opportunity" and Discovery platform.
- Advocate for an "Innovation Challenge Grant" approach for university-industry cooperative agreements and express licensing.

The Staff



Josiah Hernandez, BS
Technology Manager

Alba L. Marrero
Intern

David L. Gulley, PhD, RTTP, CLP
Director

Esmarine De León
Intern

Carlos A. Baéz, PhD, MBA
Technology Manager



Events

Round Table Tech Transfer Recognition Week - August, 2019





TTO & Columbia University visit - January, 2020





Mission & 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 2019-2020

- The construction drawings for the Forward Center Building have been finished. Break ground of the project will be on November 2020. The location will be adjacent to the Innovation Center – as part of new offices spaces for R&D for Medical Devices, Parallel 18 Alumni and a startups incubator.
- The Trust is working with a proposal to PRIDCO to acquire the BDTC in Mayaguez. Meetings with Secretary Manuel Laboy and his team have been held.
- Meetings with Dr. Pablo Rodriguez and his team have been held to consider a Caribbean Trauma Hospital of in Science City.
- Meetings with the Department of Transportation and Public Works have been held for the return of the Science City Boulevard's parcels.

Plan for 2020-2021

- Meetings with Hector Pomales, from Farm in the City, have been performed to establish a Farmer Training Center with a vertical farm technology.
- The Trust is working with the rehabilitation of 13,000 square feet building (Building 45) in Science City. We are considering with the possibility to have Fab-Lab and a Teaching, Practice and Development of Student Robotics.

Contact



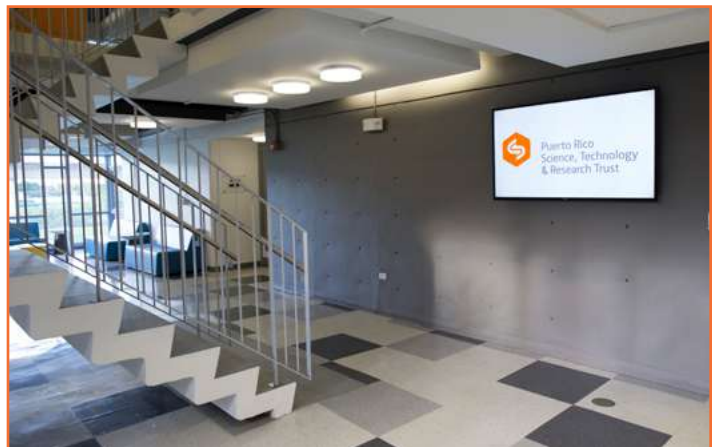
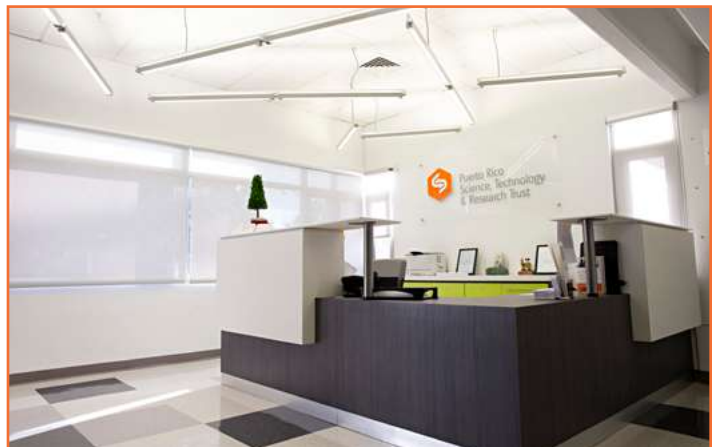
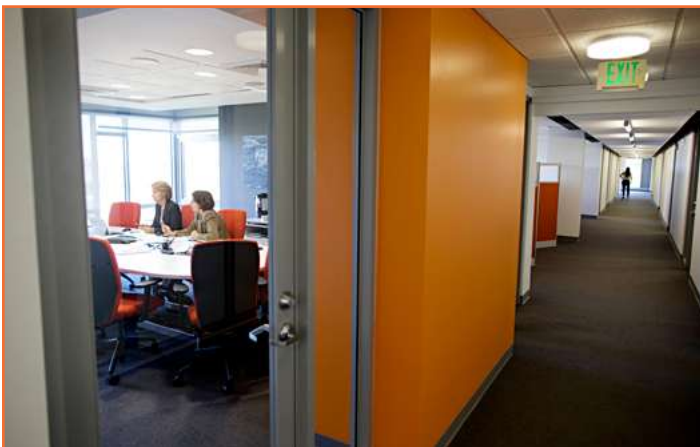
Jerry Melendez

Project Manager

Web: <https://prsciencetrust.org/science-district-new/>



PRSTRT Facilities



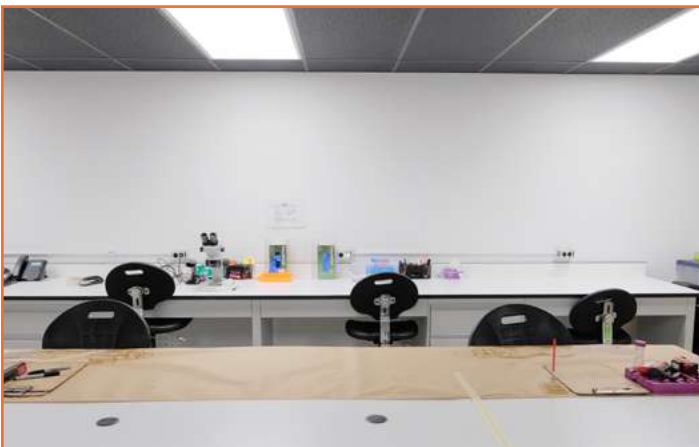


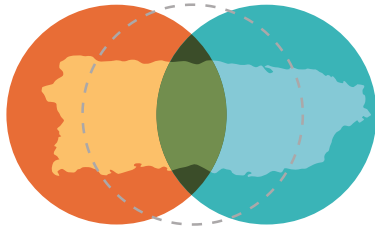
P18 Facilities





PRVCU Ponce Facilities





PR RESEARCH
& INNOVATION



Meet-ups

Mission & Vision

The Meetups Program crafted a new vision and mission statements (below) as the foundational blocks of our future endeavor.

Vision statement

A community that thrives on diversity and creativity as the basis for its social economic prosperity.

Mission statement

To foster productive dialogue leading to solutions that increase citizen wellbeing while promoting innovation and economic development.

MeetUps Program – Achievement Report (2020-2021)

The Research and Innovations MeetUps Program continue to be a platform for the sustained dialogue among stakeholders of the existing and emerging research and innovation ecosystem with the aim of tackling complex problems that impact the wellbeing of our citizens through innovative solutions based on science, research and technology. While present-day circumstances have driven us to adapt and modify our day-to-day engagements, we remain focused on increasing social capital from the vantage point of science and technology-based solutions, shared leadership and collaboration, as well as more sensible and intelligent business practices. Salient achievements for the Meetups Program are presented below.

Meetup events

The Meetups Program adapted to recent challenges and remains an effective convener of a wide variety of stakeholders aligned with the Trust's mission and vision, from supporting nascent industries, tackling complex problems that affect our citizens wellbeing to exploring new possibilities. We facilitated 4 meetup events, with an aggregate attendance of **121 persons**, and **16 speakers**. The topics of discussion were: Industrial hemp Research & Innovation in Puerto Rico (29 attendees), Waste Management in Puerto Rico (60 attendees), and exploration of support for a Modular Manufacturing Facility in PRSTRT's Science City (19 attendees), and a Pre-Meetup on Social Entrepreneurship (13 attendees).



PRSTRT program support

This last year saw a flurry of collaboration, as the Meetups Program supported efforts for the successful engagement of **9 initiatives** pertaining to **6 PRSTRT programs**, for example: **Colmena 66** - Validation of concept design, and contributions to the stakeholders mapping, for Tu Camino Agroempresarial; **Cultural Heritage Innovation Program** - Networking introductions to Fundación Angel Ramos to explore potential funding opportunities; co-design and lead of the elaboration of a strategic plan for the development of the Creative Economy in Puerto Rico; **Response Innovation Lab** - Facilitation of the Modular Manufacturing Facility Meetup to explore its development on PRSTRT grounds; **STEM Education** - Networking introductions to Fundación Ángel Ramos to explore potential funding opportunities and the Peter Alfond Foundation; **Recuperación Agrícola** - Assisted with USDA grant applications and the Peter Alfond Foundation grant; provide technical support on program development and strategic direction; **Parallel 18** - Networking and mentoring support for Parallel 18 companies in the agricultural sector.

PRSTRT Special Projects

The Meetups Program engaged a wide variety of special projects, and the reasons for them may be equally varied, whether it results from a meetup event or leading to one, strategic networking, the facilitation of a key stakeholders meeting or event, or under the direction of our CEO, Lucy Crespo. The Meetups Program's strategic visioning and intelligent opportunism have allowed the program's leadership to generate and seize opportunities that position the Trust to consciously grow its capabilities. During the last year we engaged over **15 special initiatives** along three core areas: strategic networking, MOU support, and grant development.

Strategic Networking

The year was characterized by an increase of canvassing efforts among a variety of stakeholders in government, civil society and the non-profit sector, all of them geared at increasing the possibilities of economically sustainable initiatives to improve Puerto Rico's economic recovery efforts. To that end, our strategic networking efforts in 2020-2021 focused on:

Fostering civil society leadership focused on collective action

The Meetups Program collaborated in the design and facilitation of the **2nd Social & Solidarity Economy Conference**, while simultaneously exercising leadership in the **Social and Solidary Economy Network**, as we are strategically focused on increasing canvassing efforts and awareness among existing business and startup leadership aimed at meeting the highest standards of verified social and environmental performance, public transparency, and legal accountability, in order to balance profit and purpose while building a more inclusive and sustainable economy. Also, we exercised leadership in the **Waste Management Round Table**, a multi-stakeholder initiative that aims to jointly tackle the challenges posed by Puerto Rico's existing waste management practices and increase awareness and canvassing efforts by contributing resources to advance the discussion of sustainable waste management practices on the Island. In addition, we belong to the **Food Sovereignty Round Table**, a multi-stakeholder initiative, focused on maximizing resources, collaboration, information sharing, to foster food sovereignty in Puerto Rico. Lastly, we convoked and facilitated a **special meeting with Confluence Philanthropy**, a membership network of private, public and community foundations focused on value-aligned investment advisors, and philanthropic asset management.

MOU support

On occasion, these multi-stakeholder, collaborative dialogue result in the formalization of agreements to enable collaboration and citizen wellbeing. During this past year the Meetups Program was an active agent in the crafting of relationships leading to the formalization of MOU's for Water Coalition, an EPA supported initiative to address the needs of rural community aqueducts, and considered a novel approach to build community relations and engagement in discussions to enable the application of solutions on an island wide scale, and the Caribbean Science Consortium, another EPA supported initiative for which we have facilitated dialogues geared at organizational development, collaboration, and resource sharing. It is worth noting that the Trust extended MS Office 365 licensing to the Consortium's membership so as to allow increased productivity, based on collaborative work, research, and communications, for a group that is geographically separated.



Outreach

Outreach initiatives led to connecting with 3 U.S. Federal agencies to increase awareness and visibility of the Trust's capabilities to engage dialogue and collaboration, as well as the possibility of funding applications that helps to meet Puerto Rico's recovery and economic development needs. These efforts have brought us closer to the U.S. Environmental Protection Agency, the U.S. Department of Agriculture – Rural Development, and the U.S. Department of Housing and Urban Development. In addition, we connected with 5 local and U.S. based non-profit entities to explore possibilities of collaboration, as it happened with Fundación Ángel Ramos, who was introduced to the Trust and engaged both the STEM Education Program and the Cultural Heritage Innovation Program, and Fundación Segarra Boerman e Hijos; as well as, the Closed Loop Foundation, the Rockefeller Foundation, the Peter Alfond Foundation.

Grants Development - Design of a Grant Qualification Tool

The Meetups Program and the Cultural Heritage innovation program to collaborate in the research and design of a **digital U.S. Federal Grant Pre-Qualification Tool**. Preliminary design validations from the Technology Transfer Office (David Gulley) and QA/QC experts (Ida Calero) were positive and encouraging as a tool that may improve quality control, cost efficiency, productivity, and economic growth for the Trust. This is the result from the learning experience of engaging an outreach exercise that led the program's leadership to identify potential opportunities. The Meetups Program engaged **3 grant applications with U.S. Federal agencies**: Rural Business Development Grant (a USDA grant application in collaboration with the Cultural Heritage Innovation Program and Corporación de Servicios de Salud del Otao (COSSAO); the Farmer's Market Promotion Grant (a USDA grant done in collaboration with Recuperación Agrícola); and the Sustainable Materials Management Grant (an EPA grant, done in collaboration with Asset Shelf, a P18 alumni). In addition, the Meetups Program engaged **3 private U.S.-based nonprofit entities**, with Closed Loop Foundation, which enabled a \$21K donation to create a digital educational product to build capacities among the membership of the Coalición de Coordinadores de Reciclaje Municipal (CCOREM), and with the Rockefeller Foundation (Vision Prize) and the Peter Alfond Foundation, who invited the STEM Education Program and Recuperación Agrícola to apply for support.

Future Plans

The aspiration of our endeavors is to expand outreach activities that widen PRSTRT's audience base while improving the mapping that allows for improved support of emerging leadership in business and society. As we move forward, the Research and Innovation platform will continue furthering its mission objective of identifying relevant and pertinent areas of discussion and action to further linking social capital, as well as bridging social capital, while simultaneously aiming to expand and solidify the Trust's capabilities.

The Meetups Program enters the new year (2020-2021) with four main areas of focus to include:

Alignment with global trends and opportunities, so as to curate discussion topics that carry a high potential of success as viable economic sectors; this will enable better focus related to the continued facilitation of dialogues and collaborative action, as well as the **exploration of innovation for social wellbeing with an entrepreneurial approach**, all of which are geared at the canvassing and **fostering of newer and more sustainable economic development initiatives**.

Likewise, we are **committed to providing strategic support to the operations and development of PRSTRT programs, participating and facilitating collaborative multi-stakeholder dialogues**, and the sustained engagement in strategic projects for the Trust, especially those that exhibit a higher potential for the creation of new initiatives and programs.

Contact

Ricardo Burgos

Program Manager

Web: <https://prsciencetrust.org/research-innovation-meetups/>



Impact Metrics

- 4 Meetup events
- 49 Meetings with key stakeholders
- 121 Community stakeholders engaged
- 16 speakers
- 4 Stakeholder community dialogues
- 2 Formal MOU's
- Supported 9 initiatives in 6 PRSTRT programs
- Outreach to 3 U.S. Federal Agencies
- Outreach to 5 private philanthropic funds
- 15+ Special Projects

Areas of Impact

- Industrial Hemp
- Waste Management
- Food Security
- Social Entrepreneurship
- Modular Manufacturing
- Social and Solidary Economy
- Creative Economy
- Rural Community Aqueducts
- STEM Education
- Environmental scientific community (PR & USVI)
- Grant Development

Event

Hemp Meetups - December, 2019





Cultural Heritage Innovation Program

Welcome to the Cultural Heritage Innovation Program, a program of the Puerto Rico Science, Technology and Research Trust. The term Cultural Heritage was reformed after WWII, when nations agreed to protect their cultural, historical and material cultural values under military conflict during war. Because of this, the Educational, Scientific and Cultural Organization (UNESCO) ratified an agreement along with the creation of a program which aimed to preserve material culture, including the world's tangible, intangible and natural legacy for the enjoyment of future generations.

Cultural Heritage and technological innovation have become important economic resources developing worldwide, aligning as a means to safeguard the identity of each society. Even though Puerto Rico is not under this agreement, it is possible to follow UNESCO and ICOMOS guidelines for the development of a new cultural policy aligned to the intrinsic values and conditions of Puerto Rico in the Caribbean.

Mission & Vision

Our mission is to develop capabilities and facilitate knowledge to promote Cultural Heritage as a means of progress through the integration of economic strategies that support the well-being of citizens with a sustainable, self-sufficient conservation model. This concept is deployed with the successful integration and support of communities, while its development is achieved through innovation, technology and cultural creativity.

Our vision is to enable the integration of a sustainable, economic and culturally driven model to the rest of the Caribbean and other Latin-American regions, making Puerto Rico a center of sustainable innovation, recognized worldwide. Our aim is to articulate a new cultural policy within the Caribbean's self-sustainable economic developmental strategies.

Since November 2017, Puerto Rico is facing extraordinary challenges. The non-stopping earthquakes felt from the Puerto Rican south since the beginning of 2020, have summed to hurricanes Irma and Maria's destruction. Since March of the current year, COVID 19 pandemic has only completed the depth of these phenomena's effects, profoundly transforming the cultural sense of normalcy and wellbeing. Relying on both the cultural and the creative sector, the Cultural Heritage and Innovation program makes use of innovative tools such as Digital Humanities and innovative research concepts such as Vulnerability and Cultural Risk to provide efficient improvement upon social and culturally conscious strategies to face these challenges.



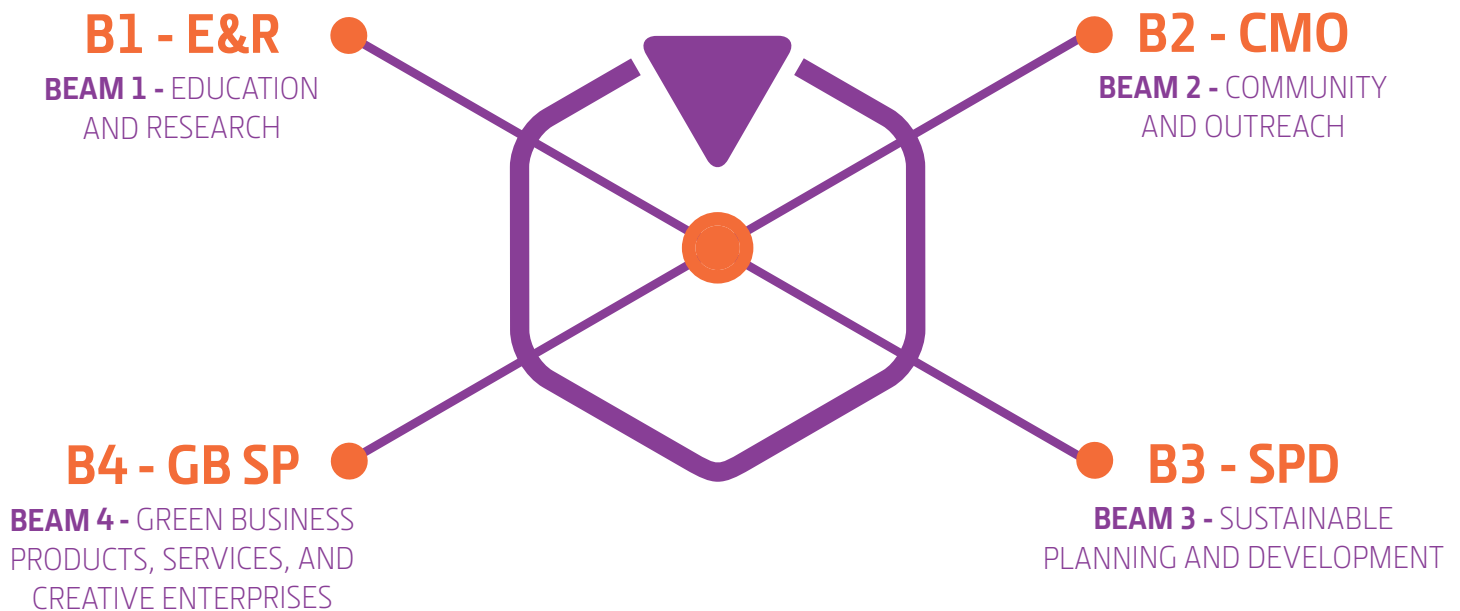
Program Description

THE MODEL: “THE POSITIVE VIRUS” ECOSYSTEM BODY

“When humans take materials from nature and create(negative) forms to destroy it, a (positive) virus emerge to balance the equation, then nature is transformed to an environment-human ecosystem” -JLV

As part of the mission of the PRSTRT, we employ technology and innovation as a complementary tool to facilitate the development of the cultural economy within communities. Based on the proper assessment of the tropical ecological reality (environment) and its community’s historic contours (society), the preservation and conservation of heritage should be proposed as a core driven force to unify sustainability and resilience. This can be modeled by a simple shape within a strategic axis of actions that promote several interactions. This model is part of an adopted environmental planning scheme for a sustainable auto reliable ecosystem. Due to the possible positive interactions that amplify but not deform the system’s body, I called “The positive virus ecosystem.”

THE POSITIVE VIRUS ECOSYSTEM



The model proposed for the Cultural Heritage Innovation Program is based on the identification of four (4) beams, now categorized as “pillars” employed to conjugate the possibility of a sequence infinite interactions. The strategy proposed based on this model, is to provide a modal synergic element that is introduced to sustain, both, economic and environmental integration of knowledge production into an action that promotes economic development. Using the technology and -state of the art- programs under the trust, the first principle of the model initiates the effect of its expansion making possible initial interactions for collaborations.

The education and research beam can better determine what is the most distinguished element of a community, and what is its necessity, by selecting the proper type of interaction. The model also aims to discover and employ a most intrinsic quality of human society: traditional environmental knowledge (Tsuji and Ho, 2002). This is not new, but it can be thought of as an isolated idea. Culture and its conservation constitute the nature of a community’s resiliency. Also, as we approach a linear deployment of resources, a social behavior study is proposed as a synchronic strategy to promote heritage (and natural) resources conservation which implies the input of an educational strategy, based on distributed leadership. (Bolden, 2011).



Program's Achievements by Areas of plans or projects developed

The cultural heritage and creative sectors are complex in its development and application because its necessary integration with the depth of social organizations that constitute the makings of a functional society. In that sense, we describe our achievements by means of our progressive efforts to participate, collaborate, design, build, create and manage many points of action in the vast mapping of the cultural heritage world. Established in 2018, our program efforts may comprise of distinctive activities which lead up to creating key projects that fundamentally constitute the seeding efforts to provoke efficient and productive collaborations of cultural and social nature. The following projects aim to attend a vuca¹ society, in need of science, technology, research innovation and creative minds while considering social concepts of social depth such as solidarity, justice, equality and accessibility that make up the significant notion of wellbeing.

From the operational perspective, we are managing our plans and projects using as guideline our Strategic Plan, created in 2019. Every project is meant to be accessible to everybody in our organization.

The screenshot displays the 'Planner hub' interface. On the left is a sidebar with navigation options: 'New plan', 'Planner hub' (selected), 'My tasks', 'Favorites', and 'Recent plans'. Below 'Recent plans' is a list of plan thumbnails with labels like 'FI', 'OB', 'TC', 'DS', 'SP', 'PP', 'PT', 'EO', and 'CE'. The main area shows a 'Welcome jlugo@prsciencetrust.org' message and a 'Favorite plans' section. Below this, there are tabs for 'Recent plans' and 'All plans'. The 'Recent plans' tab is active, displaying a grid of plan cards. Each card has a colored square icon, a title, and a subtitle. The cards include: 'Fundación Ismael Rivera', 'Oso Blanco Components Description', 'The history and culture of COV...', 'Development of the Strategic ...', 'Strategic Plan for Museum at t...', 'Fundraising Plan For NEH Shor...', 'Workforce Development PLAN', 'Pulsar la Tierra: Una reconexió...', 'Echale un Ojo al Arte-Plan Estr...', 'Copy of Echale un Ojo al Arte-...', 'Historic Site Community Comp...', and 'Puerto Rico's Poets Digital Arc...'. Each card also has a three-dot menu icon in the top right corner.

The strategic areas presented continue to promote interdisciplinarity through a network of connections which are foremost cultivated from the cultural heritage and the creative sectors. Exited to contribute to Puerto Rico's cultural development and with the utmost commitment to our organization's mission and vision, we aim to produce a complete array of fundamentally skilled efforts that deliver efficient and carefully planned local opportunities envisioned from a global scale.



Area 1: Prevention of accidents, Preservation and Management of Natural Disasters for Museums, Archives and Collections and Cultural Heritage



Training and workshops

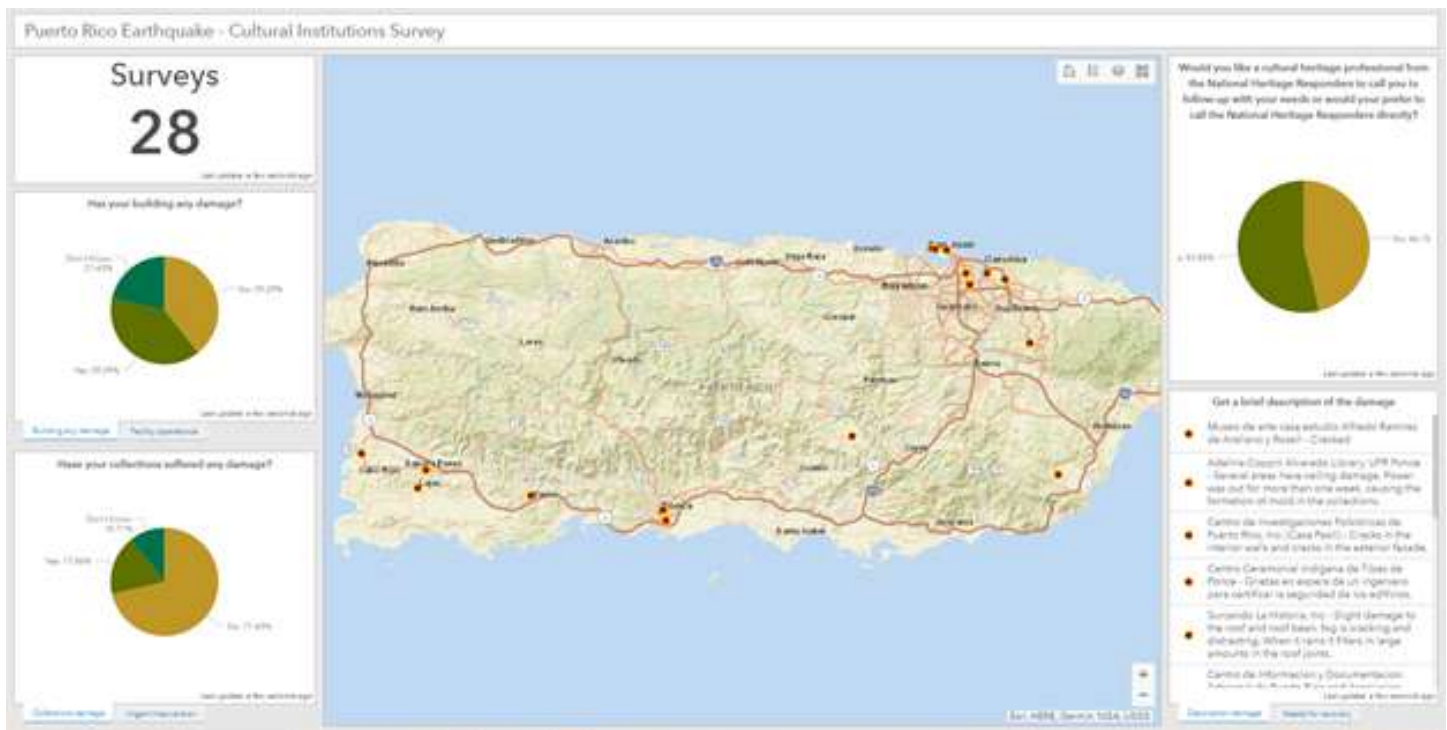
The Cultural Heritage Innovation Program (CHIP now on) is a founder member of the Puerto Rico Cultural Emergency Alliance, a local branch of FEMA's Heritage Emergency National Task Force (HENTF). From September 5 to October 23, 2019, a series of workshops were offered to archives, island wide. After COVID-19, we developed a series of webinars to continue our efforts for the completion of archives.

"Emergency Pocket Plan."

CHIP and the GIS Division of the Trust developed a GIS Map with the locations of a series of cultural institutions in Puerto Rico. This was an extensive and significant effort between, FEMA, ACEPR, CHIP, the National Endowments for the Arts, and the Municipalities of Puerto Rico.

CHIP acknowledges and appreciates the efforts from our IT Manager, César Piovanetti and Ms. Tatiana Ortiz for the collaboration. An Example of the product currently in progress is to be concluded during this year, in 2020:

Link: <https://gis.prsciencetrust.org/portal/apps/opsdashboard/index.html#/3273ffde290943a08c9cd0a36d97a67f>



IMPACT: 8 municipalities and an estimated 150 individuals through the workshops. With the GIS application we can contact approximately 250 cultural institutions in Puerto Rico.

STATUS: 95% - in progress. Some institutions have insufficient information and have not completed the survey.

Between Arts and Science

On February 2020, The Puerto Rico Science Technology and Research Trust hosted one of the workshops “Between art and Science” with the participation of 20- 30 representatives of cultural institutions island wide. The workshop successfully delivered important information regarding current conceptual, artistic and research explorations in disciplines such as archaeology, art, physics, preservation and conservation.

Between Arts and Science

A MERGED EXPERIENCE IN CONSERVATION

We are inviting professors, researchers and students in the area of Arts and Science as well as professionals in the museums and cultural area to get together in this unique experience and learn about the field of conservation science in the United States and the opportunities of development in Puerto Rico.



Friday, February 7, 2020



T2 Conference Room, 2nd floor.
Puerto Rico Science, Technology,
and Research Trust.
105 Carr. #21, Km. 0.8 Bo. Monacillo
San Juan, PR 00927



1:00 p.m. - 5:30 p.m.



Cultural Heritage
Innovation Program



УПР



南京江北新区



STEM
EDUCATION PROGRAM



NU
ACCESS



UNIVERSIDAD
ANA G. MÉNDEZ
UAGM
Recinto de Cerral

Programs of:



Puerto Rico
Science, Technology
& Research Trust

More Information:
jlugo@prsciencetrust.org
www.prsciencetrust.org/chip



As part of the ACEPR-HENTF collaboration our program visited the southwest municipalities affected by the earthquakes. Two brief reports were delivered to FEMA in order to contribute to the efforts of the preservation of our historic buildings. Our program was able to record almost 25 structures damaged during the seismic activity between Yauco- Guánica and Guayanilla- and Ponce Municipalities.

Within the efforts accumulated to ensure our mission to connect with the communities, CHIP in collaboration with the Public Health Program, also participated in some caring/preventive health activities during the earthquake relief.



Area 2: Digitization and Innovation in Humanities



Asociación de
Museos de Puerto Rico

This area is one of the most demanding and productive areas we expect to continue to develop. Before COVID-19, some cultural institutions and organizations such as the Puerto Rico Museum Association (AMPR, in Spanish), (Now the PR Museum Alliance), were trying to support some efforts in this area. As a member of the Board of Directors of the AMPR, while also being familiar to the concerns and necessities of the creative, artistic and other culturally related endeavors, a plan was immediately drawn. When the COVID19 pandemic expanded to Puerto Rico, the cultural sector was shut. Our program started to develop a repertoire of distinct efforts and plans under this area. This project is the carefully thought product of our vision which fully assimilate the importance of the social and cultural interactions. Some of them, are as follows:

- a. The Art & Culture Healing Project- This project was created under the necessity to attend the social and physical distancing affects in mental health cases in Puerto Rico and their effect on the cultural landscape. The project consists in the development of three components using significant, cultural, artistic and heritage related content to create accessible virtual products that deliver substantial information to communities.
 - A podcast series
 - A virtual educational series
 - A workshop in video game and VR series

This project is to be started on September 2020.



IMPACT: We expected to impact around 100,000 persons/year, as we look forward to using social media and social networks as mechanism of distribution.

STATUS: 98% - We are currently working with the Media Division of the Trust awaiting the acquisition of the sound, video and gaming equipment with materials.

- b. B) The Cultural Data Management subcommittee of the Cultural Committee from the Social Task Force of PR Government under COVID-19

As a member of the Board of Directors of the Puerto Rico Museum Association, the involvement with the creation of a Cultural Committee continues to be an important effort extended to the interests of our program. The Cultural Committee under the Social Task Force has become an important means of representation of the culturally oriented economy and its community during the logistics related to the COVID19 pandemic. It is widely noted that the cultural sector was not properly acknowledged within the better recognized economic sectors, as a priority, neither was undertaken through the governmental actions aiming to provide support during the current economic upheaval. The absence of this recognition is delivered in spite of the cultural sector signifying a representative resource of mental health relief for the wellbeing of quarantined communities.

Between June and through August 2020, the Puerto Rican Museum Association delegated to CHIP the task of designing a proposal with the objective of gathering data while the cultural disaster is assessed. During the initial phase of this assessment, CHIP was active in the preparation, planification and the participation of two extraordinary public hearings in which the cultural sector had accessible means of gathering knowledge upon the current cultural and economic status. CHIP also was active during the preparation of two surveys and another one prepared by the Puerto Rico Museum Association. We are aiming to continue pursuing the labor at work upon this task regardless the Social Task Force's relevance of function within the pandemic social and economic developments.





On May 7 2020, CHIP director delivered a magistral conference on the uses and functions of Digital Humanities as part of an event organized by the Puerto Rico Museum Association.



UNA BREVE INTRODUCCIÓN AL PANORAMA Y ADAPTACIÓN DEL CONCEPTO “DIGITAL HUMANITIES” EN EL PUERTO RICO ACTUAL

Johnny Lugo Vega, PhD.

Director- Programa de Innovación del Patrimonio Cultural
Fideicomiso para Ciencias Tecnología e Investigación de Puerto Rico



IMPACT: During the selected activities under this collaboration with the PR Museum Association we reach contact and communication with almost 100 cultural institutions and the participation of more than 500 persons during the virtual activities, including the public hearings.

STATUS: 100%

c. The Ismael Rivera Foundation Preservation Plan

On May 28th, 2020, we received a petition for a possible collaboration with Casa Fundación Ismael Rivera (CFIR), one of the most prominent artists “Salsero” of the Puerto Rican popular music history.

The main element of the CFIR is the house which currently presents some damage as a result of the ongoing natural disasters. An operational administrative system needs to be implemented to undertake the task of preparing an inventory of the collection, thus generating an accessible archive to suffice public and educational access to this relevant part of our popular culture history. A strategic plan is underway.



The undertaking of this project is to begin in October 2020. The initial phase of the plan (phase 1) comprehends the total digitalization of Ismael Rivera’s material culture collection.



Area 3: Creative Sector and Creative Economy



The creative sector is one of the most important economic sectors of countries in the world. Countries such as Puerto Rico, who possess an extraordinary collection of cultural resources rely on the economy of culture for exposition, tourism, and entertainment. Due to COVID-19 Pandemic almost all the operations regarding cultural, touristic and recreational activities have been shut-down or closed. The negative economic impact over this sector is significant, worsening as the quarantine is extended. It is imperative to employ all possible efforts towards the revival and development of this sector so as the community can benefit from an array of strategies directed towards the promotion of cultural resources, tourism and cultural content consumption.

CHIP's undertaking of the possible cultural crisis has already begun in the form of research and our initiative of broadening the understanding of the sector with workshops and activities is in the works. Our strategic plan was presented to the Trust's CEO. The value of strong leadership is recognized through our initiative. Upon the betterment of the social distancing conditions we aim to deliver information to the actors and role models along with the niches and segments from the private sector of the economy, that will be supporting the creative economy of Puerto Rico for the first time.

Research over the historical data has been started to develop a statistical model that will help us to create a platform with the categories of class, types of occupations, industries, business and entrepreneurs underrepresented as a potential creative entity. We already established a connection with the PR Statistic Institute and ABEXUS Inc. Our expected model at the end of this research will be able to generate the baseline for the development of strong creative initiatives and leadership in the creative economy by means of 5 elemental steps:

4. Cluster models
5. A narrative of the creative sector
6. A platform of the creative sector
7. A directory of the Creative sector
8. A Data Statistic and Metrics Modeling management of the creative sector
9. A prioritization system for a sustainable and self-sustaining model

The creative sector undertaken in Puerto Rico, accordingly to the actual data (2012-2017), not validated by other entities, represents an estimated 8,000 artists and 1,590 creative entities, for a total estimation of 18,671 persons related to the creative sector. This data does not include the categories of Film or Filmmaking related categories ², the Film sector and other related types were not included in this data.

IMPACT: With CHIP's Strategic Plan introductory phase of implementation, we look aim to increase the representation



and participation of the creative sectors by a factor of 2x jobs multiplier. This means, if we tackle the sector with an accurate data management system and the deployment of the model, we expect to increase the demand and workforce potential from the creative sector near of a 28% of growth in the segment with the possible creation of 50,000 jobs by the end of July 2022³. This plan and its progress integrates our main areas of interest: Sustainable economy and tourism. STATUS: The final draft of strategic plan is at 90%. We are willing to start the deployment for the model, once our CEO approve this plan.

Area 4: Cultural Education and Research in Climate Change

A potential area of development in Climate Education and Climate Change is feasible in aiming to produce relevant information that cater the ongoing natural events that have been affecting Puerto Rico since January 2020. Hurricanes Irma and Maria's social, physical and economic crisis, earthquakes and a pandemic (COVID_19) establish a clear statement of the manners in which we need new strategies to manage and overcome the unfolding reality produced from environmental, economic and political crisis as result of natural disasters and economic embezzlement upon misinformation of cultural resources. To serve these possible undertakings, we have achieved 4 objectives in terms of collaboration with the academy and two federal agencies.

First, in terms of cultural education and research in climate change, have two Memorandums of Understanding (MOU's) that are in their respective final revisions. The first one is with the Graduate School of Planning in which we agree to develop an internship of 2 students and 1 temporary contract for (1) Geographic Information System Specialist. These have become crucial in the development of risk and vulnerability assessment for CHIP's innovation projects.

Second, we have a MOU with the USDA's Agriculture Extension Services in UPR Mayaguez in which we will share agricultural areas for a potential development in eco-agricultural systems. This proposal aims to be a model for a creative endeavor that makes possible creative economic developments in rural areas.

Third, we have been producing a collaboration agreement (CoA) with the USDA National Resources Conservation Services in which we will be responsible for the surveyance of approximately 140 new archeological sites. These sites have the potential of containing any type of archaeological presence. The execution of this project establishes the opportunity to integrate to the last-mentioned MOU, an inventory of material culture in agricultural areas as potential starting points for the development of a new sustainable economic environment. The NRCS_CHIP COA OU is crucial. Through this process we aim to produce significant contributions toward data generation starting with GIS maps following an updated inventory for archaeological sites in Puerto Rico. This could imply a meaningful contribution to the efforts of the Instituto de Cultura Puertorriqueña and the State Historic Conservation Office.

Finally, the MOUS described could be integrated into this fourth MOU that is currently in the final works to be agreed upon with the collaboration of Ana G. Méndez University, Turabo Campus. In this MOU we aim to develop CHIP'S Strategic Plan for Digital Humanities and Innovation technology for the Museum and Hispanic Studies Center Josefina Machado de la Nuez's. The plan will include, but is not limited to:

1. The design of a STEAM + History and Conservation Laboratory
2. A Curriculum for a Professional Certification in Heritage Conservation Technicians and Cultural Community Leadership (Among others)
3. A pilot for a Graduate Art Conservation Program
4. A pilot for the Historic Site Community Complex model deployment with in the Turabo-Caguas district.

The synergy within the Trust programs such as STEM, Public Health, IT, Grants, among others, facilitates the development of new research areas merging education, technology, arts, environment and health. Risk and vulnerability assessment will represent the base line for the self-sustainable rural units in each community on each municipality in the future.

3 Following as a model the Report on Seattle 2019. Supplied by the CEO Luz A. Crespo.

Area 5: Oso Blanco Project: A Multidimensional Opportunity to Grow in the Innovation of Culture

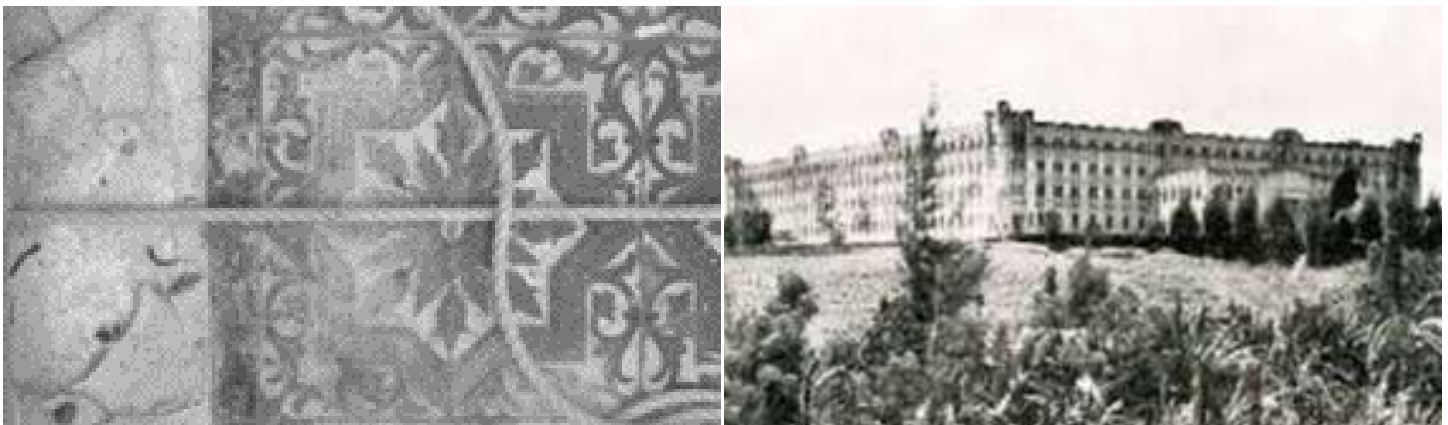


The Oso Blanco project is one of interdisciplinary approaches with an innovative discursive development and research objectives. Integrating, Science, History, Architecture, Conservation, Economy and Technological methodologies the Museum and Experimental Space of Oso Blanco aims to deliver a full multidisciplinary experience for the conservator, scientist, researcher and creative. This project can be evaluated from its multiple components:

- Museum (Museum Experimental Space of Oso Blanco or MESOB)
- Fernando Pico's research center
- Oso Blanco Caribbean Innovation Center
- Academic Investigation by CHIP's Cultural Heritage Specialist: Alitza Cardona.

The museum







The museum of experimental nature will be the home for the original Oso Blanco's Historical Building Collection. Complying with the Preservation Act, section 106, every piece of historical relevance of the original building will be preserved, categorized and its history cherished for the enjoyment of future generations. As it is planned, in collaboration with the Science City Project, the restoration of the Oso Blanco's collections items aims to be the first step in this multiscale project. Once the collection is restored, available space is may function as a professional facility for the production of conservation and preservation practices in Puerto Rico and the rest of the Caribbean.





Fernando Pico's research Center

**Phase 3 : The
Fernando
Pico's
Humanities
Healing Center**

-  F. Pico's legacy for Oso Blanco Penitentiary
-  UPR- RP MOU- NIH – Andrew Mellon Grants
-  A digital Archive and Library.
-  A re-Education program and center for youngsters and schools reenter population (12-17 years). Reconnect them to school and society
-  A VR experience in Jail as part of showcase
-  An Art and Culture Healing Process- to preventive and Clinical treatment of Mental health antisocial behaviour – Dr. Jose Rivera and VR proposal
-  Budget estimated- \$2.5 MM start up a 3 years program.

In honor of renowned researcher, geographer, historian and priest Fernando Picó, the Fernando Picó's research center is envisioned to be a facility dedicated to the historical research of cultural and historical fields. The facility will be able to continue Pico's philanthropic discourse towards rehabilitation of youth at risk while it guards some of the literature and research related to the original Oso Blanco. This space aims to provide the means to continue further investigations related to history, preservation, conservation, rehabilitation and other creative and technological practices.

Oso Blanco Caribbean Innovation Center

Aligned with the Andrew Mellon foundation the Oso Blanco Caribbean Innovation Center aims to complement the Fernando Pico's research Center. An ongoing proposal in synergy with the collaboration of the History Department in the Faculty of Humanities at the University of Puerto Rico, this space aims to contribute technological innovations in the historic and technological fields with the creation of a rehabilitation program where virtual reality will be employed to research and other technological applications in the fields of Psychology, Art, History and Science.

Academic Research Project

The concept of conservation/preservation and transdisciplinary applications of space will theoretically be transmitted through a professional research, supported by academic and scientific investigation. An academic research is ongoing at the foundation and development of MESOB. Oso Blanco and its historic development comprehends Alitza Cardona's research thesis for doctorate studies at the University College of London in Sustainable Preservation. This academic research not only supports MESOB to remain current with leading theory in global education, it also provides a continuous intellectual and scientific support of the content conveyed at the core of the components that constitute the experimental space and exposition in the museum

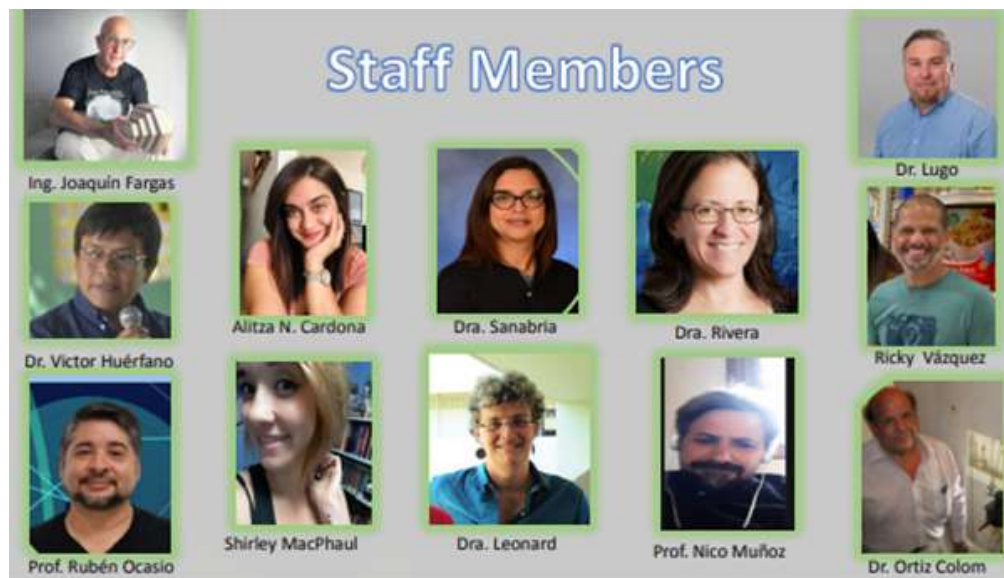
Area 6: Grants External Funding and Fundraising or Philanthropy Activities

Here we have some achievements and expectations to more achievements in our plans to be more sustainable and run CHIP's budget from external sources at a 75% level in 3 years.

Grants: CHIP has submitted a total of 3 grants (also in collaboration with other programs). The NRCS – CHIP/PRSTRT Collaboration Agreement will bring to our budget around \$20,000.00 in benefits at the end of the scope of the work traced for the archaeological surveys. We are expecting to submit to two other funding opportunities.

1. National Endowments for The Arts – Short Film Project.

Our Program has developed a team of collaborators for the making of three (3) short film series (30 mins each) as our effort to submit a proposal to the National Endowment for the Humanities (Grant 20200812-TT).



IMPACT: The grant amount is \$300,000.00 and we expect to have a product for eventual promotion that could have a return of investment of a 50% (\$150,000.00) to the program and we estimated to impact the independent film and international film segments audition, including Puerto Rico as near of 1MM view in the first three months. (including the possibility to sell the rights for another investor ((NETFLIX) to promote the film, in which case will represent a cost of a \$1MM. transaction))

STATUS: We are at 80% of completion for the proposal, and at a 75% of the finished the script. Once we have the script, we will be able to deploy our plan already designed. Filming will take place in South America and Puerto Rico.



2. Development of a baseline for a Grant Development Tool based on a logistic flow plan incorporating a SWOT/ Scorecard and Cost Benefit Analysis system for the pre-qualification of grants.

This project is to be of use by Trust's Directors. This tool aims to incorporate machine learning and AI to an administrative process. The potential of both, development and commercialization are present.

IMPACT: The potential of this tool is huge both in terms of functionality to the organization as well as a commercialization item. The logic system suggests improving organization's grants effectiveness to be awarded and time and effort lost in traditional process.

STATUS: We are at a 90% of the conceptual design and approval with less than a 75% to deploy in a functional platform as a pilot.



We also achieved to enter into a friendly relationship with the Andrew W. Mellon Foundation on which we already identify a grant that represents a \$1.2 million dollars in external funding for the Fernando Pico's Reeducation Center

Area 7: The International Art Project

This area has the objective of promoting the PRSTRT and CHIP into the international level. We have been very active in this objective since 2019. Our major achievements are as follows:

1. Collaboration with Alitza Cardona as a platform of transdisciplinary research in conceptual and functional space adaptations.

Aligned with the program's mission, Alitza's doctoral research and thesis aims to produce adaptive methodologies to space and conceptual applications in function of future sustainable adaptation of Historical buildings. Mrs. Cardona's research has been a valuable contribution to the Oso Blanco's Museum and Experimental Space adaptation to fulfill the Trust and CHIP's mission. This aims to provide a great opportunity of international exposure to theories and research, current with modern and global methodologies.



2. ICOM COVID and Museums International Webinar (closed and waiting to reopen)-with Joaquin Fargas



This was an international forum where CHIP was invited to present a webinar related to COVID_19 Pandemic and museums. Shirley McPhaul and Joaquin Fargas will present the webinar: Game, Creative Art, and Culture under a Pandemic World: Simple tools to deliver a healing process under a Complex Thought Laboratory.

This webinar was planned to be presented on May 23 2020 but due a change in the ICOM administration we are waiting to retrieve this effort.

IMPACT: The audience for this series of webinars was estimated in more than 10-15 participants by countries arounds ICOM institutions and affiliate partners.

STATUS: 90%. The webinar was prepared and is waiting to install in the ICOM platform

3. Leadership in Steward of Cultural Heritage in Challenging Circumstances

As part of a fellowship awarded to CHIP's Director in The Netherlands in 2019, the positive achievement of this effort is that now the PRSTRT is represented in an international forum in where, for the first time a Caribbean Island is part of the recognition of a leadership effort in cultural heritage protection. The undertaking of this participation was crucial when we propose to consider Puerto Rico as a "country in crisis circumstances", as extraordinary natural events continue to trigger our heritage and society, and without any war conflict, the results of damage to our heritage ad society are similar. That is why this participation is a huge achievement not only to the Trust, but also for all Puerto Rico. That is why we need to promote it. Now we have a series of partners and a network to attend our heritage crisis with the aid of international recognized organization and institutions such as UNESCO.



As a direct result, CHIP represents the PRSTRT and was responsible of having a spot in the World Map of Heritage Rescue Network by means of a membership in www.culturecannotwait.org , This is a space developed by many institutions to have a webpage direct contact to help countries when disasters occurs in any place of the planet. We are now able to participate in this effort.

IMPACT: As we are at international level, we have access to get into a network of the network of the World Heritage's Culture Emergency Response.



Future Works

1. The International Art Project: Featuring Joaquin Fargas – Buenos Aires, Argentina

With the collaboration of the international artist Joaquin Fargas, we are very enthusiastic about the idea of working with the communities affected from Hurricane María, but after the earthquakes events, we seems that this last event was more interesting to develop a project that reconnects South America with the Caribbean, especially, the southwest Puerto Rico were earth still crumble.

While planning to receive Mr. Fargas, the CoVID-19 pandemic struck Puerto Rico and we were obliged to pause the plans towards the fulfillment of this project. Nevertheless, we remain going forward, taking the development of this project within a virtual platform. Currently we have the opportunity to have Joaquin Fargas helping us to create activities under our Digital Humanities Program and there are some interconnective materials and projects ahead with STEM and Public Health Programs.

Mr. Fargas will be developing three (3) projects with us.

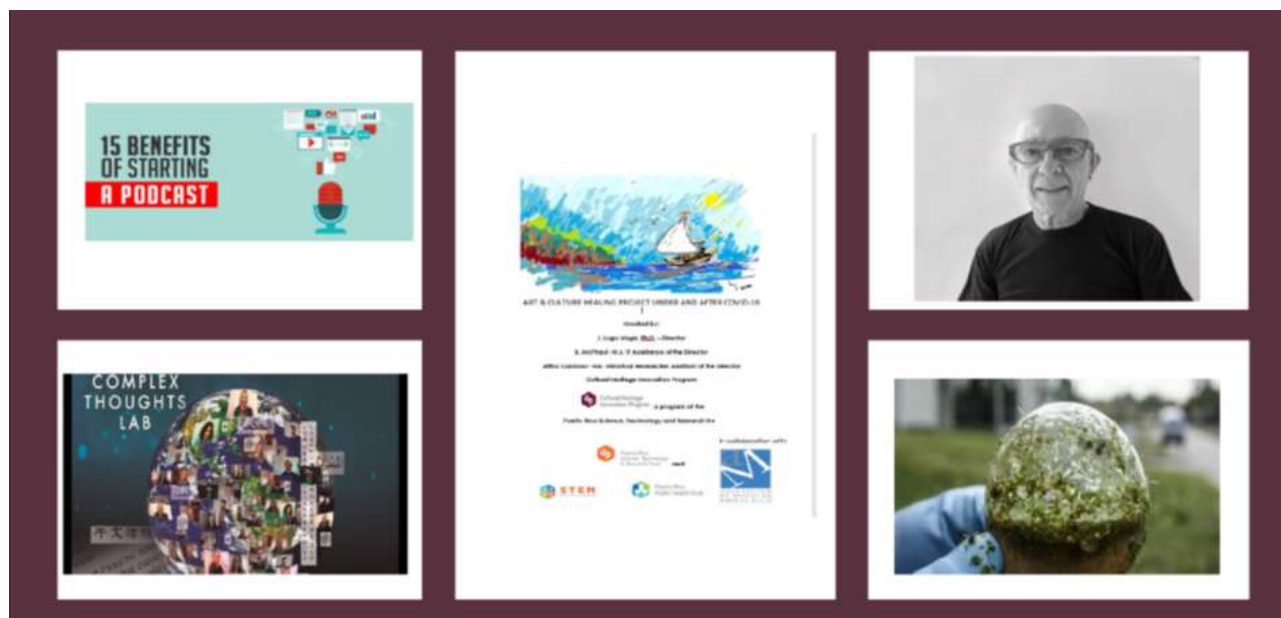
Project 1- Arts & Culture Healing Project

Mr. Fargas will be offering us art and technology content from his professional experience around the World. We will prepare the following activities under this project and a Podcast series – A series of three episodes with interviews to Mr. Fargas and his art, including a virtual educational workshop for kids doing the biosphere.

Project 2 - Ars Electronica 2020

This is an special invitation that Mr. Fargas offered to CHIP and the PRSTRT to participate as sponsor in one of the most important art expositions in the World. This year Ars Electronica celebrates his 50 anniversary and Mr. Fargas was invited and we will be participating in one of his programs scheduled for September 3- 10 2020. We will be sharing a virtual conference with UPR Students around Mr. Fargas “The Complex Thought Laboratory”. The program a webinar and a video conference will also have the support of the UNESCO.

Also, there are some interconnections with STEM.





Project 3 - CHIP's the International Art Project: Local Projects with Global Implications for a Sustainable Planet.

CHIP is undergoing the creation of an amazing educational, creative arts, scientific and social short film series, we called: **Pulsing Earth: The voices and Echoes from Pacha Mama to Atabey.**

Here Mr. Fargas will cover part of the south America pilot film shooting for our proposal to the National Endowments for the Humanities "Short Film series" with deadline on January 6, 2020.

This project is one of a kind and has the aim to develop a series of 3 episodes in a short film format (30 minutes or less) to promote the understanding of earthquakes from a global perspective, especially for the families at southwest Puerto Rico. Also, these projects synchronize with the protection of our Planet and the creation of a new state of mind – based on the individual potential as an agent of change under Fargas project: "The Complex Though Lab".

With Mr. Fargas we started a several great opportunities to merge Art, Science Technology and education with STEM and other programs, and go for grants funding under NASA, NSF, NIH, USGS, USDA among others.

2. Research project on Anthropology Medicine with Anthropologist Waleska Sanabria Leon

In response to quantitative measure of research, this project aims to fulfill the need of depth in the methodological applications of data and research with communities in synergy with its social context. Through multisectoral ethnography this multiple scale project aims to deliver in depth information of our current historical implications as a result of natural disasters.

3. Cultural Heritage Research Scope Project for Innovative responses

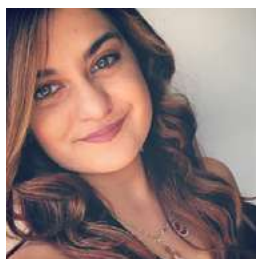
The Cultural Heritage Innovation Program of the Puerto Rico Science, Technology and Research Trust (PRSTRT) has been anointed the task of serving the Cultural Heritage and Preservation community in Puerto Rico, through the onset of entrepreneurial and sustainable preservation since the year of 2018. The PRSTRT is a private non-profit entity created through the 214 Law of the 18 of august 2004 with the task of rehabilitating economic development through the creation of public policy. This task, as the law dictates, demands to improve our economic vision in function of global economic tendencies, science advancement, research and technology. This project aims to generate sufficient data to produce a tool of measurement of the legal implications and scope of action surrounding CHIP's strategic research adaptations to innovative and community responses. This product of this investigative oriented research project will be able to define CHIP scope of action in relation to the governmental institutions so as its course of action may work in synergy with the public interests.

The Staff

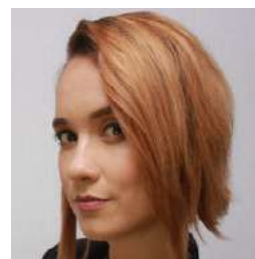


Johnny Lugo Vega, Ph.D.
Director

Web: <https://prsciencetrust.org/chip/>



Alitza Cardona



Shirley McPhaul



Events

Asamblea Museos - October, 2019





Dr. Carol Mancussi visits the PRSTRT - December, 2019





Conservation Science Workshop - February, 2020





STEM

EDUCATION PROGRAM

In its second year of operations, the STEM Education Program's primary focus has been on scaling the impact on program offerings and their capacity by increasing outreach, fostering participation on its initiatives while moving forward the Trust's position on the necessary STEM policies to continue developing interests and careers in science, technology, engineering and mathematics. While the end of the 2019 Quarter and all of 2020 have been fraught with challenges, from earthquakes to pandemics, to storms and lockdowns, the program has strived to maintain continuity of its functions, while developing small innovations to facilitate access to high-quality STEM informal learning for students in Puerto Rico even when difficult times abound.

Throughout the year, the STEM Education Program has also been an allied for teachers as well, curating valuable resources to facilitate engagement in meaningful distance education, and putting free materials from important organizations such as *NASA*, *NSF* and *Khan Academy* among others at the hands of educators at all levels.



Achievements For The Year



[2nd Resuélvelo, Boricua Highlights](#)



[STEM Boxed Kit Experience](#)

- On August 2019, the program rolled-out its STEM videoconferences for schools on the island. These included a variety of topics such as *microplastics and environmental stewardship*, which supplemented the curriculum while offering an engaging alternative to the regular classroom. As part of its partnerships, on September 30th, the STEM Education Program in collaboration with Hispanic Information & Telecommunications Network (New York) and the **Puerto Rico Department of Education connected 294 schools and more than 7,000 students to the first Mundo Salvaje live class**. During the experience, Miami-Dade Metro Zoo's Ron Magil served as the host for the live cast from Africa. This was the first experience of its kind for elementary and middle school students, and a solid demonstration of the Trust's capabilities to facilitate great content and innovation through its network of collaborators.
- On January 2020, a **\$45,000 three-year contract was signed with Sagrado Corazón University** to provide STEM professional development for faculty. This initiative is part of a federal Department of Education grant won by the university to improve STEM Education strategies and tools while positioning Sagrado on the road towards becoming a research-focused institution.
- On February 2020, **Fundación Ángel Ramos kindly sponsored the STEM en tu Pueblo initiative**, a program that placed high-quality STEM education alternatives for children in the Ponce-Guayanilla-Yauco area affected by the January 7th earthquakes. The **\$10,000** donation helped to serve more than 120 K-12 children in the including refugees at the **Educamos Donde Sea** tent school project at Parque Las Delicias 2 in rural Ponce. During the experiences, children and youth enjoyed STEM learning activities (design, chemistry, and engineering) as well as introductory sessions to virtual reality.
- As March approached, the STEM Education Program, in collaboration with Maryland based nonprofit **Learning Undefeated**, brought in the **Mobile Disaster BioLab**, a 45-foot trailer retrofitted to serve as a STEM classroom in emergency areas. Originally schedule to tour the southern towns affected by the earthquakes, the unit currently provides limited activities at the Trust's premises. The BioLab will serve its mission until November of 2020 when it is scheduled to return home and serve communities in distressed areas. The data gathered from this experience will support further program development on the island.
- During June 2020, the **2nd Resuélvelo, Boricua** competition was completed. RB is a student innovation and entrepreneurship competition where participant teams prepare their proposals and prototypes of solutions in the areas of food security, renewable energy and health, for a chance to win up to **\$20,000** in prizes for underwriting and mentoring their projects. This year winners include three public school teams: *Boricuapónico* (Naranjito, \$10,000), *Alfabetización Agrícola* (Las Piedras, \$7,500) and *Temperantia* (Ponce, \$2,500). You can see the competition highlights by clicking here.



- The Summer of 2020 also saw the birth of the **STEM Boxed Kit Experience**, a unique opportunity to continue high-quality STEM education at home and online. The project developed the Engineering in Agriculture and the 3D Design & Virtual Reality experiences for students in middle and high school. After 728 requests were received, only 120 kits were mailed. The program exhibited an *85% retention rate* (regardless of power loss due to storm Isaias, and a 100% of satisfactory reviews from participants and parents as an ideal alternative to learning during the Summer. This program is expected to scale up its impact as an 8-week afterschool program being developed with the sponsorship of **New Fortress Energy** starting in January 2021.

Our Work On Public Policy

The STEM Education Program fulfilled a year-long mission to submit a complete STEM Education Strategic Plan outline for the Puerto Rico Department of Education. The document highlights current education challenges, key points that need urgent address from an economic development standpoint, and the elements that can foster STEM ecosystems on the island. The peer revision and distribution of the original document will be ready for distribution by the close of 2020.

Strategic Partnerships



- Immersive Learning
- Emergent Tools
- Educamos Donde Sea

Contact



Jorge A. Valentine
STEM Education Program Manager
Web: <https://prsciencetrust.org/stem/>



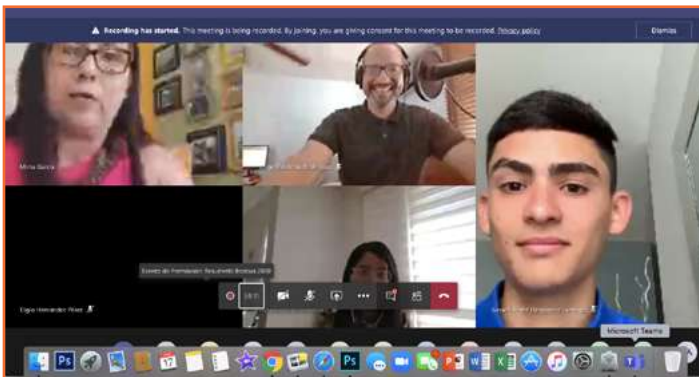
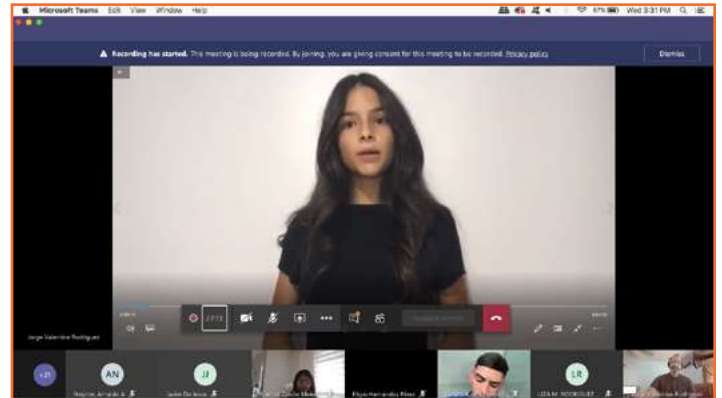
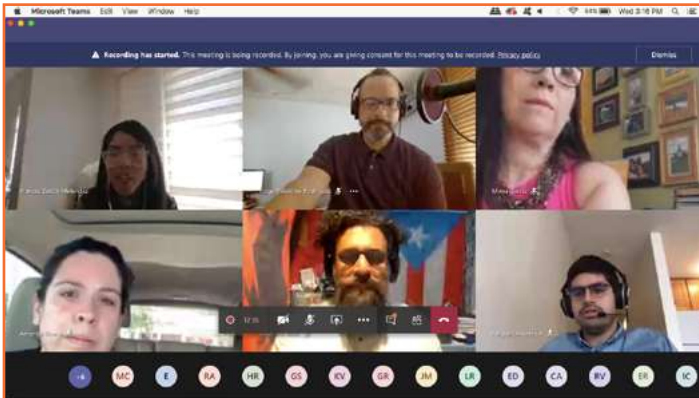
Events

Aprendiendo donde sea - March, 2020

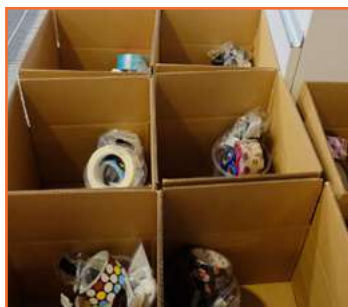
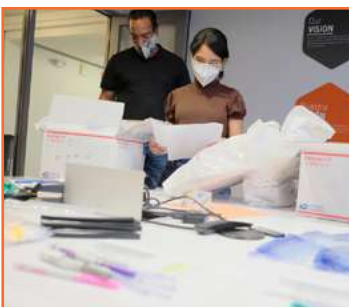
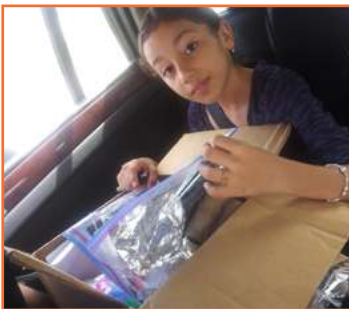




Resuélvelo Boricua 2020 - July, 2020



Boxed Kit Experience - July, 2020





RECUPERACIÓN AGRÍCOLA

Background & Purpose

Starting in October 2018, **Recuperación Agrícola** was a micro-grant program focused on assisting underserved farmers in response to the unparalleled impact of Hurricanes Irma and María over the already weakened agricultural sector. The Program was successfully performed to address common concerns and interests of both partners, the **American Red Cross** and the **PR Science, Technology & Research Trust (PRSTRT)**, to respond and contribute to the island's food security by providing farming resources and direct assistance to affected farmers in a joined effort to reestablish and increase agricultural production on a resilient and sustainable basis, while increasing entrepreneurial and economic development opportunities.

After carrying out **fifteen (15) months** of direct work and engagement with the farmer community we feel confident that program goals have not only been achieved but exceeded. Besides providing **525 small farmers** with essential resources and knowledge to rebuild and recover their farming operation, **Recuperación Agrícola** was able to provide them with something even more significant: confidence, praise and hope.

Recuperación Agrícola's target goals were established to attain **strong and bearable results** to the long-way benefit of the local agricultural sector.

Below we summarize some **highlights** and **milestones** of **Recuperación Agrícola** performance:

Goals

Support
Small
Farmers

Increase
Productivity
& Capacity

Data
Generation

Technology
Integration



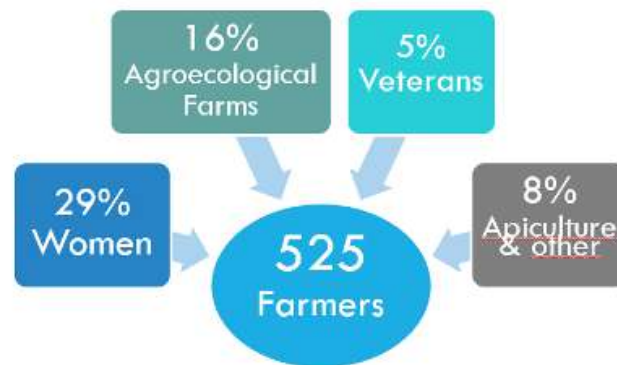
Our Impact at a Glance

**525
SUPPORTED
FARMERS**

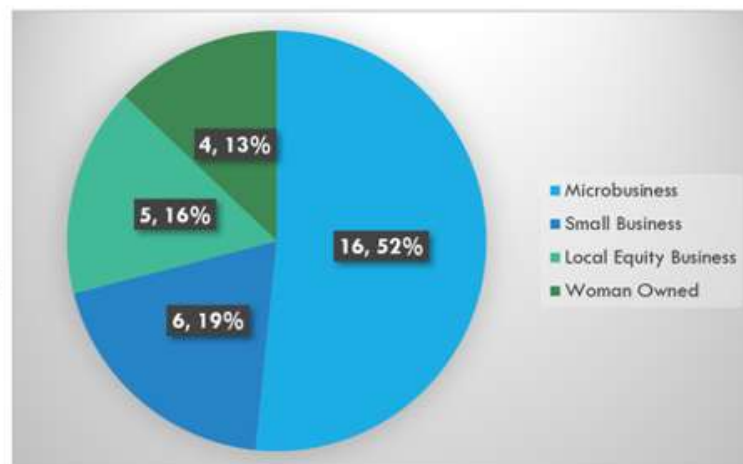


TARGET GROUPS

- Small farms (less than 20 productive acres)
- Underserved
- Preferred groups: **Women, Veterans and Agroecological farms**



**+20 LOCAL
SUPPLIERS &
CONTRACTORS**

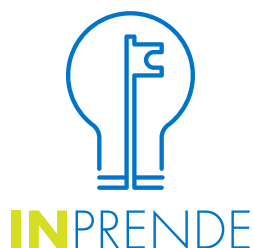




Capacity Building



Partners



Measurable Outputs



- 75%** of farmers confirmed the program assistance has been very significant to their recovery
- 23%** of farmers confirmed the assistance was significant
- 88%** of micro-grants receipts were collected
- 97%** reported to have recovered productive land and/or beehives
- 68%** reported an increase in farm production
- 61%** reported an increase in revenue
- 64%** reported job generation or retention
- 26** local suppliers were supported through program sales
- 6** Volunteering events

Contact



Bárbara Rivera
Program Director
Web: <http://recuperacionagricola.com/>



Promoting farmers products during Covid-19

Looking to connect farmers products with consumers we launched a social media campaign where we posted over xx farms during a xx period.





Testimonials

“Para mí ha sido un alivio, motivador y esperanzador. Ha cubierto justo la necesidad que he tenido para recuperar mi proyecto, el personal es súper amable, sensible y responsable. Y los procesos para adquirir los servicios y equipo han sido transparente y sencillo de acceder. Pienso que ha sido el mejor proyecto a ayuda a la agricultura desde que llevo operando mi proyecto.”

– Decenia Vega, Semila, Barceloneta, PR

“Recuperación Agrícola ha sido lo mejor que ha sucedido para la agricultura de Puerto Rico y han demostrado que sí se puede trabajar a favor del agricultor y por el beneficio de la alimentación del pueblo. Han logrado conseguir fondos y usarlos debidamente a través de becas, donaciones, herramientas, talleres, etc. Sumamente agradecido con su labor de excelencia.”

– Sebastián Sotomayor, Rancho Orgánico Feliz

“Espectacular, un recurso inesperado con mucha empatía con los agricultores. Talleres precisos para el desarrollo de la agroecología en mi isla. Simplemente GRACIAS”

– Donna Durán, Cayey, PR

“Nuestra situación después del huracán Maria fue particularmente compleja puesto que nos acabábamos de mudar a la nueva finca, recién comenzadas estructuras que perdimos, lo que atrasó planes de trabajo en la finca por tener que comenzar otra vez, construcciones de vivienda y necesidades básicas. Recuperación Agrícola nos ha provisto con herramientas y facilidades de almacén, así como de una cisterna que nos ayuda a almacenar agua de lluvia ya que nuestro pozo está colapsado y aún hay que restaurarlo. De la misma forma la micro subvención recibida nos ayudó con la compra de materiales alivianando la carga económica y una inversión increíble de semillas que nos auguran un año 2020 provechoso.”

– Norysell Massanet, Cabo Rojo, PR

“Gracias al programa hemos podido levantar de nuevo la Finca Ilán LLC. Todas las ayudas han sido inmensamente favorables para nuestro resurgir. También hemos aprendido nuevas técnicas y prácticas que nos ayudan a tener mejor rendimiento y optimización de procesos y a su vez proteger al medio ambiente más eficientemente. Con la maquinaria que nos proveyeron y los incentivos en herramientas e insumos, la finca ha dado un progreso tremendo. Cabe mencionar que con las ayudas del programa Recuperación Agrícola se les hace la vida más fácil a nuestros amigos veteranos voluntarios que vienen a usar el espacio y las tareas como terapia. ¡Están muy agradecidos y en su salud se nota!”

– Jorge Rivera, San Germán, PR

“Gracias a Recuperación Agrícola nos sentimos apoyados durante el proceso de recuperación luego del huracán. Fue un impulso no solo económico sino también emocional, saber que alguien se preocupó porque el espacio resurgiera y nos acompañara en todo el trayecto hasta el sol de hoy. ¡Sumamente agradecida!”

– Crystal Díaz, El Pretexto, Cayey, PR



Event

2019-08 Agroturismo ecológico





2019-08 Cierre Mujer Agro Innova





2019-11 Finca Pajuil





RESPONSE INNOVATION LAB

The Response Innovation Lab (RIL) creates an enabling environment for local innovations to meet the needs of vulnerable populations. RIL helps develop a dynamic ecosystem that maximizes the innovation potential within each response and achieves better outcomes for crisis-affected communities. The aim is to remove the barriers to aid delivery to communities, camps, households, and individuals.

The Response Innovation Labs offer three functions that support identifying challenges in humanitarian settings, sourcing solutions, and supporting their development and rollout. The labs utilize these functions within the framework of the local context to support the humanitarian ecosystems achieving sustainable and long-lasting outcomes. Through 1) Convene actors in response to analyzing challenges, 2) Match local and global innovations to the challenges, and 3) Support bringing the innovations to market.

All humanitarian contexts are unique, and the PR RIL is no different. The Puerto Rico RIL functioned in a context where humanitarian resources were well established, and innovations were supported by many organizations in the relief and entrepreneurial ecosystem. As a result, the lab in Puerto Rico, located in San Juan, focused more on addressing gaps in humanitarian coordination and capacity, rather than supporting innovators directly.



2019-2020 Achievements

Creating America's Clearing House



The Puerto Rico RIL worked with the NASA Disaster Program to transfer all their databases, satellite imagery, and information to the RIL. Part of the agreement was to provide specialized training, which began with a three-day event and included a panel from the Aero-Space industry who addressed the application and usage in their cluster. Future work will consist of developing algorithmic data cubes created by NASA scientists to allow for an easy query of the databases and the linking of imagery with data for first responders. Currently, access to the servers from NASA and the PRSTRT are linked, and the entrance is open to the public. The next training is scheduled on Remote Sensing and Geographic Information Systems and will happen before the coming hurricane season.

Energizing the next generation around resilience and recovery



The Puerto Rico RIL hosted a contest for 6-12th grade students from all public and private schools on the Island. The contest was a call for local students to develop concepts and prototypes of technology, systems that better a response. An orientation was provided to the teachers and university Professors on the RIL methodology, to support the development of the student-led solutions. Currently, a request to have the methodology translated and available before the start of the next school year is being considered.

Cooperative Development and Investment Fund



The biggest concern from the 14+ months of electricity disruption post-Hurricane Maria is the effects on multiple municipalities and thousands of island residents, making life support services unavailable. While this is being addressed through the installations of photo-voltaic and other alternative energy options, customers and industry purveyors have been hampered by the lack of universal financing contracts and a single APR. Banking and other financial intermediaries have been slow in offering financing options. The Puerto Rico RIL had instituted several cluster meetings and participated with Clinton Global Initiative to develop 1) consensus on workforce development, 2) creating a universal contract, 3) a standard APR. Fidecoop was the first institution to adopt the recommendations and institute a loan program with a pool of \$42 million for commercial loans. The autonomous Savings & Loan Cooperatives are considering the same for their institutions.

Cooperativa Seguros Múltiples



The Puerto Rico RIL conducted convenings with Parallel 18 start-ups and insurance industry leaders to seek an expedient and unencumbered insurance coverage solution without affecting the base-rate requirements. That would be allowed by local regulations. Parametric insurance was the best option for a new product and was adopted by the Multiple Insurance Cooperative to be developed by a commercial line. This new product is expected to be marketed before the next hurricane season.

Strengthening community resilience through the creation of simple WASH technology



Oxfam America conducted a field research project that shed light on the specific WASH-related challenges post-Hurricane Maria for community members from a gender perspective. Issues such as maintaining home hygiene, hauling water, laundry by hand, and showering were taking a toll on community members. Domestic tasks fell disproportionately on the shoulders of women. A team from Oxfam America, the University of Puerto Rico at Mayaguez, and Puerto Rico RIL carried out a pilot project based on the Oxfam study recommendations. The team has developed and executed a series of interactive workshops designed to strengthen community-level resilience by creating simple technology through Do it Yourself (DIY) projects from common available materials.



Rising Seas Institute: Caribbean (RSIC)



The Rising Seas Institute Caribbean is a PRST programs. Puerto Rico RIL led the convene sessions with a diverse group of technical professionals, including the Trade Association for Builders and Constructors, Collegiate of Engineers, and Land Surveyors, Planners Association, and the Economist Association. The deliberations led to the preparation and understanding of the impacts of Climate Change felt in Puerto Rico in the encroachment and reduction of sea and coastal zones. Hurricane Maria precipitated beach erosion, and the loss of many structures built impacting around 350,000 inhabitants in Puerto Rico. RIL hosted a convene event to bring together participants from different sectors - academicians, planners, building and construction trade professionals - to discuss common challenges in this space and alternatives for how to mitigate through innovations and technology. John Englander, CEO of the Jacques Cousteau Society and a leading expert at the Sea Level Rising Institute, was a keynote speaker. The event, network, and any subsequent referrals resulted in the formation of the Rising Seas Institute: Caribbean and will be presented for funding to NIST and EDA.

The Footprint Project: Energy Resiliency for the ONGs in response



Puerto Rico RIL has supported the Footprint Project (FP) through contacts and identification of solar assets to deploy in response and recovery efforts. The prototype shown above was put together at the facilities of the PRST. Within 4 hours after the major, 6.4 magnitude earthquake struck off the southern coast of the Island, FP mobilized five mobile solar assets, ranging in size from portable solar kits to solar trailers. The FP's volunteer team was one of the first to respond to the earthquakes in Puerto Rico. Within 12 hours, FP identified two other large solar trailers on Island through its network of clean energy partners. FP dispatched these units

in support to first responders and affected communities, providing clean, resilient power for critical device recharging, insulin storage, communications equipment, lighting, and remote command. With 50 more portable power units, FP activated one of the largest Solar Energy Rapid Response Taskforce (SERRT) efforts, to offer a unique example of how sustainable solutions can be rapidly delivered to front-line first responders, disaster displaced residents, and affected communities.

NGO and VOAD Coordination



The number of national and international non-governmental organizations (NGOs) provided relief and recovery support after Maria. The initial count of the NGOs willing to be counted and who participated in coordination meetings reached 300 representatives at the height of the Hurricane Maria response. This presence was short-lived for many as they dispensed their funds or relief items and left without engaging in local capacity building for sustainable programs. The initial number was reduced by

January 7, 2020 to 97, and after the COVID restrictions, even further. Post-COVID, the presence is of less than a dozen of INGOS still present in Puerto Rico. The local Voluntary Organizations Active in Disaster (VOAD) is the recognized coordinating group by the Puerto Rico Emergency Management Bureau (PREMB) that works out of State EOC. Puerto Rico RIL and the staff from the Public Health Trust (PRPHT) conducted Convene meetings to merge the needs and promote the coordination of activities and deployments between them. There is much work to be done in reaching an alignment of purpose and service priorities. This will remain a challenge in the next response. The constant leadership changes of the PREMB leadership has impeded to conduct any Convene meetings with these two response groups.

Emergency Responses: Seismic Event, January 2020

Puerto Rico was faced with responding to seismic events that started on January 6, 2020 and led to the Presidential Declaration of 18 municipalities for disaster assistance due to the severity of the damages. Over 1,200 municipalities were destroyed or suffered significant damage. The number of public buildings, totaling 200+ were destroyed, including public schools and critical lifeline facilities. Puerto Rico RIL supported the network of NGOs with technical information, access to databases, facilitation of bulk procurement, and use of the PRST



facility in Ponce for co-working spaces. Specialized resources managed by the RIL agreements with NASA and other scientific bodies were brought to the table to support the response activities of the Puerto Rico Emergency Management Bureau (PREMB). The seismic events continue to date, with many families still homeless. Several proposals are still pending negotiation. The Red Nose Foundation awarded a \$100,000 fund for interventions to continue activities in this region. OXFAM assigned these funds in concert with PRSTRT. The current shut down and curfew of COVID-19, means field activities were delayed. Puerto Rico RIL has also been instrumental in negotiating the reassignment of \$40,000 from NATURE's TRUST which was assigned by NASA for luminism assessment (light pollution) and dedicated the fund and update of a risk, hazard, and vulnerability assessment in seismic affected zones that are using the SALVA TERRA methodology sponsored by World Bank.

COVID-19

The pandemic led the Governor of Puerto Rico to close all external activities and created a lockdown plan for all residents. On February 29, Puerto Rico Governor Hon. Wanda Vázquez Garced established a task force to understand how the virus could affect the Island, and subsequently layout mitigation plans. The Executive Order closed all businesses to start addressing the risks of an epidemic early on, including the imposed curfews on all residents, a shut down on travel, and suspension of all contact and activities, making work-from-home a new norm. The paradigm shift forced new technologies, such as video teleconferencing, to replace classroom instruction and regular meetings.

Both these events demonstrated the need for improvements in the response practices, modernization of supply chains, coordination of actions among diverse responders, access to communication means, fairness in the distribution of aid, and energy resiliency among the most noticeable challenges. The work of Puerto Rico RIL continued uninterrupted as the staff telecommuted. The SCU was very instrumental in keeping the focus with the weekly calls, and the support provided for each project worked.

Impact Metrics

The programs ran and sponsored by RIL were as diverse as:

1. Disaster Risk Reduction Convening and Support for Young Female innovators
2. 2cosystem Mapping of Fab Labs, Maker Spaces, and Contract Manufacturing
3. Behavioral Health Referral Database Mapping – with FEMA and Americares
4. Sea Level Rise Convening
5. NASA Disaster Program, Creating “The America’s Clearing House”

The brokerage work of the RIL impacted populations as follow:

- 200+ adult mental health providers
- 90+ child mental health providers
- 180+ elderly facilities
- 120+ different organizations
- 600 + adults’ participants in RIL activities
- Nine sites at an average of 350 displaced homeowners living in tents
- Over 2,000 recharges of cells, iPads, laptops
- Over 500 solar lanterns distributed

RIL was able to generate many strategic conversations and launch several important initiatives. In partnership with the Trust, RIL’s Lab Director played a leading role in:

1. The development of concepts for a Caribbean Rising Seas Institute and a Modular Manufacturing facility
2. Making available NASA’s Disaster Program data set for users in Puerto Rico
3. Hosting webinars for federal grantees impacted by COVID-19 attended by hundreds of participants
4. Testing response data aggregation tools
5. The Footprint Project

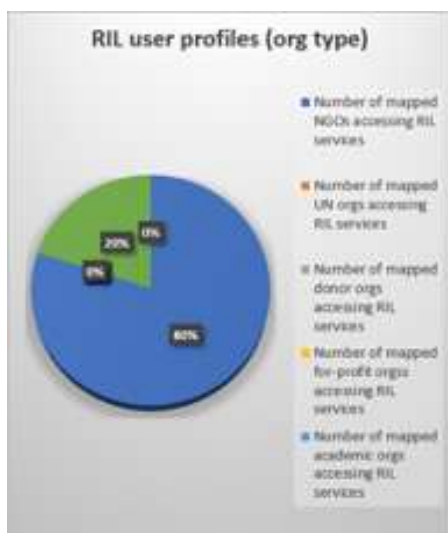
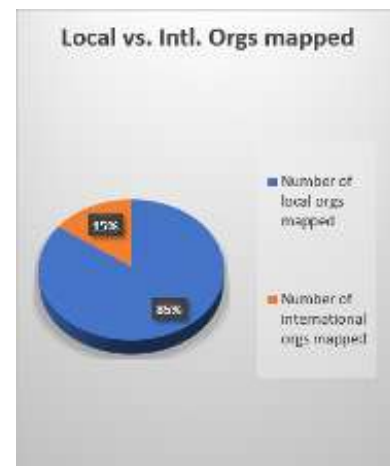
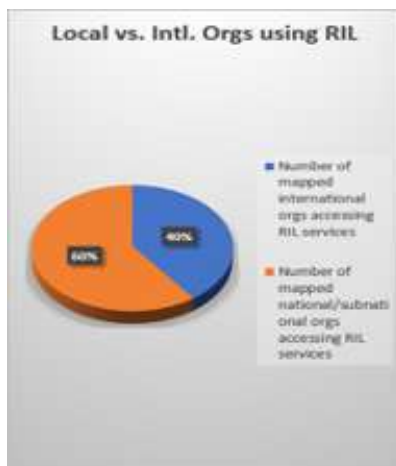
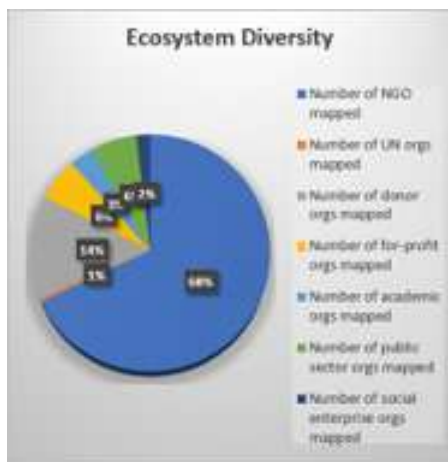


All the initiatives and capacities undertaken by the Puerto Rico Response Innovation Lab have been absorbed by and will continue to live on through the PR Science Trust's programming in the following months and years. The network of collaborative partners has been strengthened, and opportunities for RIL services to support innovation and the ecosystem will continue to be considered and developed. The phases the Convene, Matchmaking, or Prototyping were developed during the different sessions. The RIL methodology was implemented with success in significant accomplishments, as noted in this report. The list of the activities in the chart below shows the different activities where the methodology was used successfully starting on January 20, 2020, through July 17, 2020.

Activities Undertaken by PR RIL

Meetup "The Challenges of Sea Level Rising in Puerto Rico"	4-Jun-19
"The Challenges of Sea Level Rising in Puerto Rico"	4-Jun-19
NASA Disaster Tools & Products (Universities/Environmental Related Agencies)	6-Aug-19
NASA Disaster Tools & Products (Private Sector/Emergency Responders)	7-Aug-19
Solar Financing	8-Oct-19
The Challenges of Sea Level Rising in Puerto Rico	1-Nov-19
Master your Disaster in your City	13-Nov-19
Master your Disaster in your Business	14-Nov-19
Identification of solar trailers	13-Dec-19
Sat-Com services – Canóvanas	19-Dec-19
MOU Material Characterization Center (MCC)	19-Dec-19
NetHope – ICT Cluster	20-Jan-20
Launch Footprint Project Earthquake Response	28-Jan-20
Convene Earthquake Coalition	30-Jan-20
Housing and Community Development Symposia	5-Feb-20
Reducing Risk Conference – Costa Rica	11-Feb-20
NGO Cluster	17-Feb-20
National Rural Electric Cooperative Association (NREC) Convention	28-Feb-20
Convene League of Cities	24-Apr-20
Merci Corp Resilient Centers	24-Apr-20
Meet Up Modular Manufacturing Facility (MMF)	27-Apr-20
Matchmake Hispanic Federation Emergency Food Delivery	30-Apr-20
Virtual Island Summit	7-May-20
Clean Energy – Webinar	15-May-20
Bechtel Sea Level Rise Funding	21-May-20
GMU Resilient Curriculum	21-May-20
Aeolic Program Evaluation	29-May-20
Rocky Mountain Institute & Resilient Power Puerto Rico Matchmaking	15-Jun-20
Resuélvelo Boricua	17-Jun-20

The info graphics below show the reach of the coordination activities for the relief cluster in Puerto Rico.



Future Plans

The Puerto Rico RIL has full-filled its initial mandate and closeout all Hurricane Maria activities. Working with the local host entity - The Puerto Rico Science Trust (PRST) - the same need and output of the RIL wouldn't be needed, especially as other activities within the PRST are ramping to fill this gap. As of June 2020, the PR RIL has sunset, and this is a RIL success! A principle of the RIL is not to exist and be around forever, but rather to fill a gap in the response ecosystem and build the local capacity to respond through innovative approaches, services or products. The PR RIL is the first RIL lab to transition to a local host. The RIL and PRST maintain its partnership and be attentive to new activities that advance the local humanitarian innovation.

Contact



Gilberto Guevara

Program Director

Web: <https://prscicetrust.org/ril/>



Events

2019-08 NASA visit Dr. Green





2019-10 Clinton Global visits the PRSTRT





Subvenciones Federales de SBIR/STTR

SBIR/STTR 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 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.

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.



SBIR/STTR is a Gated Process with Three Phases



Phase I. The objective of Phase I is to establish the technical merit, the feasibility of a commercially unproven innovative technology, the commercial potential of the proposed R/R&D efforts and to determine the quality of performance of the small business awardee organization before providing further Federal support in Phase II. SBIR Phase I awards size varies by agencies with a range from \$100,000 to \$265,000 of equity-free funds for proposed work to last between 6 and 12 months.

Phase II. The objective of Phase II is to continue the R/R&D efforts initiated in Phase I. Funding is based on the results achieved in Phase I and the scientific and technical merit and commercial potential of the project proposed in Phase II. Only Phase I awardees are eligible for a Phase II award. SBIR Phase II awards size varies by agencies with a range of \$600,000 to > \$1,000,000.

Phase III. The objective of Phase III, where appropriate, is for the small business to pursue commercialization objectives resulting from the Phase I and Phase II R&D activities. The SBIR program does not fund Phase III. In some Federal agencies, Phase III may involve follow-on non-SBIR funded R&D or production contracts for products, processes, or services intended for use by the U.S. Government.

Trust's SBIR Program

Mission

Develop a virtuous cycle of programs and people built around the innovation, funding, and commercialization of novel technologies in Puerto Rico. Such a system involves developing a foundation of services and networks that support innovators to get their technologies funded, commercialized while generating jobs and tax revenues in Puerto Rico. This beneficial system requires: 1) Generating higher awareness of research funding agencies (e.g. SBIR/STTR grants and contracts) in researchers, entrepreneurs, and small business communities. 2) Educating these groups on the development and submission of competitive proposals on the way to introducing successful solutions to the market. 3) Facilitating the submission of proposals to these agencies to increase the number of competitive submissions per year. 4) Increasing the number of awards to Puerto Rican innovators. 5) To have Puerto Rico become the state with the highest awards per capita in the nation.

Vision

Create a Puerto Rico that successfully supports, through the SBIR Program equity-free funding, scientists, researchers, entrepreneurs, and small businesses with innovative technology-based concepts take them to the market place. These new products will contribute to the economy while reducing the loss of intellectual talent to opportunities outside the Commonwealth. A native virtuous cycle will maintain this new economic engine mostly by itself and with more grant writing focus.



SBIR Coordinating Activities

The Trust under Colmena66's leadership coordinates SBIR activities in Puerto Rico. The team in these coordination efforts is composed of nine (9) organizations that have complementary missions. These organizations are listed in Table 1.

Colmena66	PRIDCO	Trust
Guayacán	SBA	UPR
P18	SBTDC	Vitec

Table 1

This SBIR Coordinating Group meets bi-weekly to share experiences, discuss new ideas and procedures in addition to the next set of activities. All members have the same goal of increasing the number of SBIR grantees. They all recognize the importance of these efforts' success to the Puerto Rico economy now and in the future. Colmena66 conducted a series of four (4) SBIR webinars for which a total of 237 people/organizations registered.

Trust Engagement

The PRSTRT strengthened its SBIR efforts in 20014, with full engagement starting in 2015 to improve the support of science, engineering, research, innovations, and entrepreneurs. One of the goals is to increase the number of winning proposals which brings more commercialization funds and as a result creates jobs and helps the Puerto Rico economy. With limited private funds sources to support product concepts that have technology risks, the federal government has taken on this void to assume the risks of new technologies and new management teams. Once an SBIR funded company completes prototype development in Phase II it is considered ready to offer the concept to the market with a good possibility of finding private investments from previously hesitant institutions.

Before the Trust involvement, there were 26 grants/contracts awarded from 1987 to 2010 for a total of \$4,205,645 brought to the Island. No awards were made in 2013.

After the Trust took the lead in the SBIR/STTR activities in Puerto Rico we have won 19 awards for a total of \$5,987,574 which surpasses the previous 28 years period. A breakdown of the total number of Puerto Rico awards since the start of the SBIR program and funding by an agency is shown in the table below.

Puerto Rico SBIR awards

This table shows the number of proposals granted to companies in Puerto Rico through the existence of the SBIR program.

Agency	Awards	Funds
NSF	23	\$6,479,765
NASA	3	\$241,469
DoD	1	\$49,874
NIH	13	\$2,993,082
DOC	3	\$308,480
USDA	2	\$125,000 5
Total	45	\$10,197,670

Table 2 Over the SBIR existence



The following tables show results from the pre-Trust leadership and post-Trust leadership results.

Before Trust Leadership		Funds	Contribution to Puerto Rico Economy (\$)
NSF	11	\$2,355,873	\$2,355,873.00
NASA	2	\$116,535	\$116,535
DoD	1	\$49,874	\$49,874
NIH	8	\$1,349,883	\$1,349,883
DOC	3	\$308,480	\$308,480
USDA	1	\$25,000	
Total	26	\$4,205,645	\$4,205,645

Table 3 Awards Before Trust Leadership

The following table shows SBIR results after the Trust starting leading the effort.

Agencies	Total	Total SBIR Funds	Total Matching Funds	Contribution to Puerto Rico's Economy
NSF	12	\$4,123,892	\$1,200,000	\$5,323,892
NASA	1	\$124,934	\$0	\$124,934
DoD	0	\$0	\$0	\$0
NIH	5	\$1,643,199	\$500,000	\$2,143,199
DOC	0	\$0	\$0	\$0
USDA	1	\$100,000	\$100,000	\$200,000
Total	19	\$5,992,025	\$1,800,000	\$7,792,025

Table 4 Totals by Phase Since Trust Started Leading SBIR Efforts

Phase	Total	Total SBIR Funds	Total Matching Funds	Contribution to Puerto Rico Economy
Phase I	16	\$3,742,914	\$1,500,000*	\$5,032,421
Phase II	3	\$2,249,111	\$500,000**	\$2,955,153
	19	\$5,992,025	\$2,000,000	\$7,987,574

Table 5 Awards by Phase Trust leadership

■ *One agreement was not completed

■ ** Awards won in FY20 – Funds no disbursed yet



These numbers show that in the ~5 years the Trust has been leading efforts in Puerto Rico it has achieved 46% (Awards after 2014 over total awards through the existence of the SBIR Program) of the successes of the previous 28 years, 84% when compared with the pre-Trust leadership awards. They also show a ratio of Trust lead funds awarded to non-Trust lead funds of 142%*.

*Two awards granted a year before the program have been counted because they received matching funds under the current Trust leadership.

SBIR Performance in FY20

FY20						
PR-based SBIR/STTR Awardees						
	Company	Agency	Date	Matching* Funds*	Award	Phase
1	PRATIAN LLC	USDA	7/1/2019	\$100,000	\$100,000	Phase I
2	Exploration Institute	NASA	8/19/2019	\$100,000	\$124,934	Phase I
3	Impactivo LLC	NSF	5/1/2020	\$200,000	\$750,000	Phase II
4	LiveGeneDNA	NIH	1/1/2020	\$100,000	\$206,042	Phase II
5	Social Solutions	NOOA	7/11/2020	\$100,000	\$225,000	Phase I
6	re:3D, Inc	NSF	4/16/2020	\$200,000	\$749,111	Phase II
				\$800,000	\$2,155,087	
	Into the Puerto Rico Economy			\$2,955,087		

*Matching funds for Impactivo, LLC. and re:3D will be reimbursed in FY21 but they are counted since the awards were granted in FY20.

FY20 Number of Awards by Agency

Agency	NSF	NOOA	NASA	NIH	USDA	TOTAL
Awards	2	1	1	1	1	6

FY20 Activities

SBIR activities lead by the Trust are active and have been successful in supporting several companies in their quest for SBIR equity-free funding.

The following table shows the number of entrepreneurs/companies that contacted the Trust's SBIR Program for support.

In total 47 entrepreneurs/companies have contacted the SBIR Program Director for support. Of those 47 "clients" 4 were interested in Phase I applications support while four (4) needed support from the Program Director for Phase II proposals/awards.

Phase I	43	47
Phase II	4	
Active	23	47
Dormant	24	



Of the 43 “clients” interested in Phase I support for 23 remain active at some level while 24 have gone dormant. Many of those that have gone dormant have product concepts that while having the potential to be successful in the market their levels of innovation do not rise to that needed to compete successfully for SBIR funds. Those that have potential will be contacted periodically to get updates on their technologies and product concepts.

Women	7	14.9%
Men	36	76.6%
Women/Men	4	8.5%
	47	100.0%

The gender breakdown of the companies’ leaderships the Trust is the following on.

Priority has been given by the SBIR Coordinating Group to increase the number of women participating in leadership roles.

Challenges and Solutions

- Increase the number of submissions of competitive proposals in the middle of the COVID pandemic. Since many research labs are not operating at full capacity and offices are closed research and development have slowed down considerably.
 - Solution: Start communications with Grants Program grantees to enlist them to the SBIR program
 - Solution: Start communications with those teams whose proposals were declined in Grants Program grantees to enlist them to the SBIR program
 - Collaborate with Colmena66 to identify established small businesses and offer support in the search of funds for IR&D.
- Increase the number of submissions of competitive proposals to agencies besides.
 - NIH
 - NASA
 - USDA
 - NOAA
 - DoD
 - DOC
- Increase the number of successful submissions to NIH, USDA, and DoD.
 - Solution: Follow up on with researchers, innovators, and Program Directors.
- Increase the number of Phase II awards. The mortality rate of Phase II application is too high primarily due to the Phase I grantees not coming to the Trust for support submitting Phase II documents just 1-2 days before the deadline and in poor form.
 - Solution: We have started to address the causes of these failures by being proactive and monitor their Phase I award activities.

Contact



Juan E. Figueroa

Entrepreneurship Advisor and Associated Researcher

Web: <https://prsciencetrust.org/sbir/>



Events

SBIR Kickoff - September, 2019





SBIR Media Tour - November, 2019





PRCCI

Puerto Rico Consortium
for Clinical Investigation

Established in April 2016, PRCCI is a 501 c3, not-for-profit cooperative of top academic and private research sites. We enhance clinical research speed and quality by driving performance and efficiencies across our sites, leveraging strategic partnerships, and establishing world-class capabilities.

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 and researchers

Vision

To promote and enhance clinical research and development for the benefit of patients, the Puerto Rican economy and global scientific innovation.

Achievements

The Puerto Rico Consortium for Clinical Investigation (PRCCI) successfully completed its fourth year of operations on June 30th, 2020. During this year the consortium grew to 27 members/clinical research sites in Puerto Rico with more than 73 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 17 clinical trial agreements on oncology, infectious diseases, pulmonology, cardiovascular, and dermatology.

During FY 2019-20, PRCCI focused on expanding the Consortium membership and developing new business 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 opportunities. As a result, new initiatives emerged towards a stronger educational component and the exploration of other research opportunities via extramural grants to complement our business model.



Clinical Research Coordinator Training Program

PRCCI is proud to inform that Puerto Rico now benefits by having a larger pool of trained Clinical Research Coordinators (CRC). Twenty-Six CRC 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 course was offered by five highly experienced clinical research resources previously taught to deliver the program. This is the first CRC training sponsored by the Puerto Rico Consortium for Clinical Investigation (PRCCI), in partnership with Barnett International, a leader in clinical research training.

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.

Course successfully ended on June 19, 2020

- All 26 participants completed the Virtual course
- Included 10 modules, one module per week
- 23/26 passed final test on their first attempt
- 30% achieved 100 on final test
- Course obtained a very high Satisfaction level, as shown in evaluations from participants



Who should attend:

- Aspiring Clinical Research Coordinators.
- Clinical Research Coordinators with 0-2 years of experience.
- College students and New Graduates.
- Healthcare professionals.
- Training also appropriate for site related functions.
- Others: Upon evaluation by PRCCI training organizers.

Requirements:

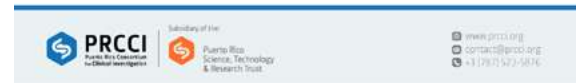
- Able to communicate in English and Spanish.
- Computer literate.
- Submission of resume.

Get 30% Off Registration Fee:

Non-PRCCI Members = \$489.00
PRCCI Members = \$385.00

- Payment: Money Order or check payment to Puerto Rico Consortium for Clinical Investigation. Mailing address: PO Box 363475, San Juan, Puerto Rico, 00936-3475.
- Payment due by: April 18, 2020.
- For further information, submission of resume and registration please contact: ana.lucca@prcci.org, 787-630-8359

Content developed by:
BARNETT INTERNATIONAL
Leaders in Clinical Research Training



Aligned both with our social responsibility and our clinical research efforts, during the end of this FY we launched “Lo Llevamos en la Sangre” to foster a culture of blood donation, alongside raise awareness about its necessity. This was viable due to partnerships and collaborations organized under the PRCCI institutional umbrella and PR Science, Technology, and Research Trust’s support.



VISITA lollevamosenlasangre.org





VISITA lolleamosenlasangre.org



VISITA lolleamosenlasangre.org



Phase I Achievements – June 14 – July 28, 2020

Media Coverage/Earned Media:

- 22 news pieces (90% interviews), including Radio, TV and Newspaper print & digital dailies and regional papers plus 1 editorial by a top daily newspaper.

Social Responsibility Media Campaign:

- As of today, with the help of a modest investment, the initiative has reached an estimate of 3.1 million people through one newspaper, one TV channel and one social media outlet.

Engagement:

- Collaborations: trade, professional, patient and academic organizations have joined the initiative to share the message, including Asociación de Médicos, PR Hospitals Association, PR Pharmaceutical Association, Servicios Mutuos, Liberty and PR Science, Technology, and Research Trust.

Estimated impact: 155,000, spillover.

- Social media and landing page traffic: 579 interactions, 7,000 users and 180 online registrations to donate blood.
- As per mid-July, blood banks have given us positive feedback about our organization's initiative to increment blood supply.

HIPAA Compliance and Security Officer

Jarmay Torres, our Research Quality Lead has been appointed HIPAA Compliance and Security Officer for the PRSTRT. She has been working on the PRSTRT HIPAA compliance implementation at the organizational level, training implementation and training records, SOP customization and version tracking, business associate agreement review and tracking, HIPAA security follow up with Security Officer and IT department. We are honored and needs of the different committed to implement this important project for the PRSTRT.



Covid - 19 Initiatives

Mayo Clinic

- We continue our discussions for the implementation of Convalescent Plasma protocols in Puerto Rico. The protocol selected is the Mayo Clinic IND from FDA. Several hospitals and pneumologists in Puerto Rico were contacted and showed interest in this protocol. This effort is on-going.

Hospital Auxilio Mutuo / Dr. Fernando Cabanillas

- PRCCI continued supporting Dr. F. Cabanillas IIT study. Thirteen patients have been enrolled in this study. We are supporting patient recruitment strategies.
- PRCCI is supporting the project facilitating meetings and assigning a Clinical Research Data manager to gather and analyze the data. Thirteen patients have been enrolled in this study. We are supporting patient recruitment strategies.

University of Puerto Rico Medical Science Campus / Medical Center Blood Bank

- PRCCI facilitated a collaboration between Dr. Carlos Sariol and Dr. Consuelo Climent to analyze samples and obtain fast results of neutralizing antibodies in the serum of Covid-19 positive patients to become potential donors for critically ill patients. Dr Sariol's assay was approved by FDA.

Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

- PRCCI is partnered with Dr. Frances Santiago-Schwarz from June 22, August 7, 2020 in the following initiative:
- Title: Connecting the Research Dots for Therapy and Containment of COVID-19
- Description: This highly interactive activity, through the review of research literature, independent learning, and expert guidance, is meant to foster critical thinking that will lead to scientifically based discussions and recommendations for treating and preventing COVID-19.

Yale - New Covid -19 Study

- We are exploring a new Covid-19 outpatient study with YCCI. In addition, we are waiting for response from Yale regarding an NIH grant application and potential participation of two PRCCI sites in this grant focused on a vaccine for dengue research and other potential projects.

PIA – Supporting the Blood donation campaign

- Participation in updates provided by PIA and their initiatives. PIA is partnering with PRCCI supporting the blood donation campaign at manufacturing facilities.

PRCCI Sites and study opportunities - multiple Covid-19 potential projects

- We continue monitoring our investigational sites closely. We are engaged in identifying Covid-19 study leads and others.

Social Media - on-going (Journalism intern)

- Maintain a strategic presence in social media with a focus on clinical investigation news three times a week.

PRSTRT Collaborations

- Telemedicine, Research Grants, HIPAA Compliance, develop SOP for contact tracing of Covid-19 with PRPHT.



Key Performance Indicators (KPI's)

Performance Indicators by Functional Area	Target
A. Business Development	
Study Opportunities Pursued	35
New Study Contracts Executed	7
New Sites Contracted	6
B. Operations	
Number of Active Studies	8
Patient Enrollment Per Site (% versus expectations)	44.0% (industry average 35%)
C. Quality & Training	
Number of Quality Validated Sites	80%
Number of New Sites Visited by YCCI within 12 weeks of joining	90%
Number of Sites Visited by PRCCI during the year	12
Number of Training Events	10

2020 Objectives

As we enter the fourth year of operations there are 5 major strategic objectives:

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.

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 (2) new PRCCI members. PRCCI has also 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 of tools on best practices. We have established new quality services customized for our site members needs resulting in increased efficiencies reducing onboarding timelines.

Research Grants

PRCCI established a new Research Grants program in alignment with PRCCI's strategic objectives. We are in the process of identifying areas of opportunity and resources needed for the successful implementation of the program. Our new research grants consultant will introduce PRCCI to new major funding organizations to help us obtain high potential grants.



Business development through quality and diversity

The Business Development team facilitated the exposure of PRCCI sites to our strategic alliance partner, Parexel, and several other pharmaceuticals and medical devices companies. As a CRO, Parexel is now better informed about the capabilities of the PRCCI network, which has already resulted in several clinical study opportunities of interest to our member sites. Attending various national conventions, PRCCI members had the opportunity to meet and liaise with key stakeholders in this industry. Marketing strategies were revamped during FY 2019-20 including the active and structured use of social media (LinkedIn, Facebook, Twitter, and Instagram), an updated and redesigned webpage (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 Sanofi, Novartis, Milestone Pharmaceuticals, Lundbeck, Nexxon MedSystems, SilkPro USA, IQVIA, Pharm-Olam, Syneos Health, among others.

Three new clinical studies were contracted and implemented with one of our newest member sites. Another new member site (Puerto Rico Medical Research Center) was selected for three new breast cancer studies sponsored by Sanofi.

To further influence the clinical research ecosystem, PRCCI initiated 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 BlueCloud Technologies, an innovative platform for the management of clinical research personnel credentials and access to training modules with the objective 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. The team supported the upgrade of the PRCCI's Clinical Trials Management System (CTMS) from a basic Portal version to a full Site version for one of our member sites, which will provide enhanced capabilities and tools for the execution of clinical trials. Along with the Quality team, new investigators and clinical trial units completed their onboarding process. An operational effort was dedicated to evaluating and selecting 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 quite stimulating and promising. We will see 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 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 business partnerships with various key companies and organizations 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 in the island. We will continue engaging with Medical Schools that are part of the consortium and develop plan to expose students to the clinical investigation field.

Contact



Amarilys Silva-Boschetti, Pharm.D.

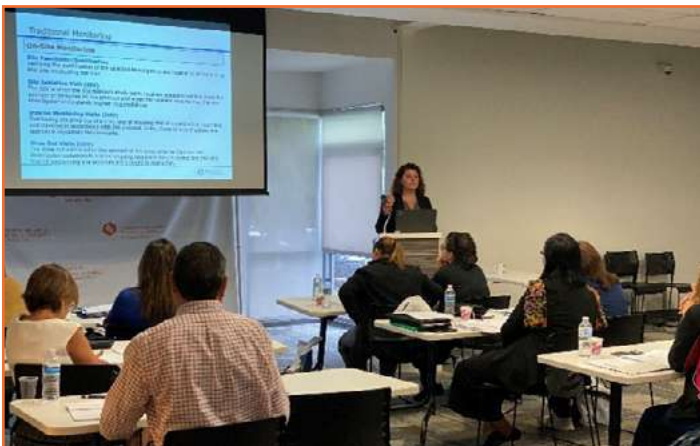
Executive Director

Web: <https://www.prcci.org/>

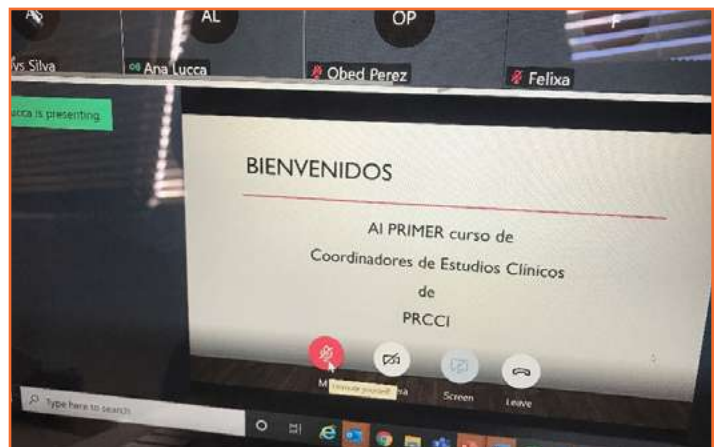


Events

Yale Center for Clinical Investigation Training and Education Series – October 21-23, 2019



Clinical Research Coordinator Virtual Training Program – April 25 – June 26, 2020 during the Covid-19 pandemic





Nannete Cocero (Pfizer) visits the PRSTRT



PUBLIC HEALTH



Puerto Rico
Public Health Trust



Unidad de Control de
Vectores de Puerto Rico



Puerto Rico
Science, Technology
& Research Trust



Puerto Rico
Public Health Trust



Executive Summary:

The P.R. Science, Technology and Research Trust, was designated as a Public Health Institute by decree of law 107 of 2017. As a result, during National Public Health Week, April 2, 2019, the newly formed Puerto Rico Public Health Trust (PRPHT) was launched in collaboration with government agencies, communities, local and international health institutions and academia.

The goal of the PRPHT is to provide strategies, leadership, and innovative developments for Puerto Rico's population public health initiatives. Our mission is to promote and improve public health initiatives based on evidence and to provide avenues to improve the economy in Puerto Rico.

On April 2, 2020, PRPHT celebrated its first anniversary and despite the short history, it has stood out for its rapid response in public health situations in our communities. Since the beginning of the year 2020, Puerto Rico has faced many challenges including the Southern earthquakes, disaster management and the COVID-19 pandemic. To this end, the PRPHT has played a fundamental role in the management of the COVID-19 in Puerto Rico. The creation and evolution of its programs and its exponential growth in the past year have earned it the lead in discussions about measures to be taken in the face of the economy and the opening of the country. The organization has stood out for doing things quickly.

Since the beginning of the pandemic in the Island on March 2020, the PRPHT began to identify the opportunities they had to contribute to one of the greatest challenges in our history. The organization has played a leading role in the research, management and development of scientific data in the prevention of COVID-19. Specifically in important tasks such as the development of the Consortium of Reference Laboratories to facilitate molecular testing on the Island, the promotion of new technologies to optimize the number of tests with the Pooling Methodology, the collaboration with Ponce Health Science University (PHSU) for the Syndromic Surveillance System of public health monitoring, and recently the development of the Contact Tracking System in Municipalities. In addition, it has worked closely with the Department of Health to propose evidence-based measures such as: the positivity index, municipal pandemic monitoring, percentage of testing, the tool for testing in the last 14 days, and the Risk Index Models for decision-making in the management of the novel virus in Puerto Rico.

As part of the evolution of the PRPHT, several programs have been created within this organization, including the Puerto Rico Hurricane Hub, Community Engagement Program, Health Promoter Program (funded by the Medtronic Foundation), Telemedicine and Telehealth Program, Operations and Marketing & Communications Program. The entity has become a reference point for public health decision-making in Puerto Rico because of the credibility it has developed after the hard work it has done in handling reliable information and data about COVID-19. The organization, which is in full evolution, has 16 employees and is assisted by several consultants, academics, scientists, epidemiologists and public health experts to align the strategies of our programs and services, considering current situations and preventing future challenges in order to offer solutions to the communities of Puerto Rico.

Mission:

Serve as a trusted ally working with private and public partners to identify and execute community-led, evidence-based solutions.

Vision:

Achieve sustainable health equity in Puerto Rican communities and improve their quality of life through innovation, collaboration and community engagement

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, Recovery and Response
- Chronic Disease: diabetes, obesity, etc.
- Opioid Epidemic
- Climate Change
- Health Equity
- Mental Health



Programs

Community Engagement Program

The Community Engagement Core (CEC) supports the mission and vision of the Puerto Rico Public Health Trust as a cornerstone of any public health intervention. It is essential to know and understand communities to impact health outcomes effectively. Understanding the socio-cultural and political contexts of a community is key to creating locally acceptable and more effective interventions. The CEC genuinely engages communities to build long term relationships based upon a collective vision to move the community towards positive change through empowerment effectively. Through this process, critical health interests and needs will be addressed to improve economic and health-related outcomes. The CEC works collaboratively with and through groups, businesses, faith-based organizations affiliated with geographic proximity, a particular interest, or similar situations to address issues affecting the people's well-being.

Activities/ Projects of the program:

Earthquakes

The seismic activity in the southwest of the Island began on December 28, 2019, and continues to January 7, 2020, with a 6.4 Richter scale earthquake and several aftermaths. The earthquakes in Puerto Rico have left thousands of Puerto Ricans sleeping outside the southern part of the Island. The psychological effects are more evident as the days passed, representing a serious public health concern. The PRPHT ask for permission to use the book developed by Pixelate and was printed in a big book. This book helps young children understand the earthquakes as a natural process and talk about their feelings and worries that they may have experienced after an earthquake. Also, PRPHT, in collaboration with Puerto Rico Vector Control Unit (PRVCU) and STEM, programs of the Puerto Rico Science, Technology, and Research Trust, developed an activity book for the kids to be entertained and learn about earthquakes, prevention, and science while they get distracted. The PRPHT, in collaboration with PRVCU, delivered approximately 1,486 activity books with crayons in the South of Puerto Rico. Also, the PRPHT establish partnerships with Misión Payaso, Junta Innovadora Comunitaria Villa del Carmen Inc., and El Trotamundos to read the big book *El día en que todo se movió*. The book was read to more than 530 kids in the South area of Puerto Rico.

On January 21, 2020, PRPHT, in collaboration with El Trotamundos and PRVCU, we celebrated the International Hug Day in a refugee camp in Gúanica. In the activity, we had the support of VOCES with vaccination at the shelter, activity for kids, and people were taught to make their mosquito nets. Las Tres Mosquiteras, a community-based organization, trained the PRVCU and PRPHT community engagement team to educate people in the pop-up camps and official shelters to develop mosquito nets and more than 150 mosquito nets were created.

The CEC team was worried about the mental health of the groups that were volunteering or working in the South of Puerto Rico through a partnership with Americares. We offered two workshops, one in San Juan and the other in Ponce. The CEC supports the Department of Health, Project Hope, CICAP, and other non-governmental organizations (NGOs) in a survey to learn if people in the South of Puerto Rico were having access to their primary doctor. Also, we gathered information about schools, mental health, and others. This data was presented to representatives of ASSMCA, Department of Education, PREMA, and other government agencies.

Reverdece Tú También

In February, the CEC launched the 'Reverdece Tú También' program in the Mercado Artesanal de Barrio Obrero. The 'Reverdece Tú También' Campaign is an initiative created after Hurricane María to bring a message of recovery to the impacted communities that need encouragement and support. The goals of the campaign are: 1. Create a movement of mental health and resilience. 2. Strengthen the knowledge and actions of our communities to be healthy and stay healthy to increase the local capacity to react in the face of adversity. The launch of the program was supported by collaborators like:

- a. PRVCU with an educational booth, virtual reality for kids and information about the AGO traps in the G8 communities that are part of the surveillance program
- b. VOCES put 72 flu shots
- c. Americares gave the participants a mental health talk
- d. A teacher read the book "El día en que todo se movió" for the kids.



As part of the PRPHT vision to achieve health equity in the communities on the Island through collaboration and community engagement, we support the socio-economic development of the Caño Martín Peña with their program 'El Bici Caño'. We rented 20 bicycles to support this ecotourism program and allowed some of the community members that can't pay the tour.

COVID-19

In collaboration with health educators of the PRPHT, we created the activity book "Achú" to teach kids about the coronavirus and influenza in a simple and fun way. We deliver 1,000 copies of the book "Achú" to ten communities around the Island. The activity book was released at the beginning of the pandemic on March 2020 and has been printed by more than five municipalities to give to the children of their communities.

On September 2020 Public Health Professionals, took on the task of creating the second edition of the Achú2 Activity Book, considering the new prevention measures that have been recommended to avoid the spread of COVID-19. The book is aimed at elementary school children and aims to educate and update information on the management of the disease, emphasizing the importance of proper mask use, hand washing and physical distancing.

As our compromise with the kids all weeks in the PRPHT Facebook page, we post an activity with public health messages. Some of the activities have been in collaboration with PRVCU, Organización Pro Ambiente Sustentable (OPAS), and VOCES. We also launched the digital button 'Diviértete Saludable' aimed for children of all ages while promoting the participation of all family members. This initiative includes 100 activities developed by a group of public health workers from the PRPHT. It covers physical activity, healthy challenges, mental agility, and family integration. (<http://diviertete.paralasaludpublica.org>).

The CEC has created educational materials to spread public health messages to the communities around the Island, and the informative content is sent through WhatsApp to community groups of community Facebook Page. In collaboration with Dr. Marcos López PRPHT Research Program Manager, we are offering talks on COVID-19 prevention to the communities through virtual platforms.

We support the socio-economic development of communities in Utuado with their project 'La Cajita Saludable de COSSAO'; this project was created at a historical juncture where, because of the COVID-19, there is hunger and food insecurity. We have seen that the cheapest and most accessible food for people is canned or unhealthy food. As part of our commitment to the public health of Puerto Rico, a country that leads the statistics of diabetes, hypertension, and obesity, we want to bring a healthy option to those who cannot afford it. We bring healthy food to those in need while supporting community empowerment. We have delivered 100 "Cajitas Saludables" to Canóvanas, Guánica, Peñuelas, and Yauco. Since May 2020, we have been collaborating with Drouyn Inc. to deliver 10,024 boxes with fruit and vegetables in more than 20 communities in six municipalities, supporting families that need it as a response of COVID-19.

The CEC wrote the proposal to the Buckeye company in Yabucoa to provide COVID-19 protection equipment, educational materials, and activity books for the communities of Yabucoa; and the proposal was awarded. We also delivered more than 1,500 masks to vulnerable populations.

Project ECHO

In March 2020, the Community Engagement Manager took the project ECHO training in New México. In April, in collaboration with Hurricane Hub, we launched our first project ECHO with the theme of mental health addressed for first responders and community leaders. In May, we had our second project ECHO for community leaders, community-based organizations, non-profits, and faith-based organizations. We have received fantastic feedback, and we have more than 100 persons connected per section.

Community mapping

The PRPHT recognized that community leaders have been the first line of response during hurricanes, earthquakes, and pandemics. That is why we developed a community profile mapping tool which provides the community leaders a technological platform to map the socially vulnerable populations that require special attention in a disaster. The goal is that during an emergency, all vulnerable persons can be reached. By knowing the vulnerabilities in the communities, the community leaders and responders can anticipate needs and provide information to the right people at the right time before, during, and after disasters.



Collaborations of the program:

We collaborate with the RCMI-Center for Collaborative Research in Health Disparities, where we are doing live Facebook talks on different public health issues and disparities. Also, we established a collaboration with Impacto Juventud to work in a community in Peñuelas.

Students:

During the summer, we had six master's in public health students that worked in the implementation of two projects in the communities of Naguabo: 1. Creating a community garden with community leaders and children of the community. 2. The implementation of community mapping.

The dashboard of the CEC efforts: <https://bit.ly/2WnZ7p1>

Telehealth, Telemedicine and Telecare Program

The Puerto Rico Science, Technology and Research Trust (PRSTRT) received a grant from 2019 USDA Telemedicine and Distance Learning. The grant provided the opportunity to purchase 12 equipment and devices to improve access to specialty care through any of the telemedicine modalities. In February 2020, the PRSTRT recruited a program manager with vast experience in the healthcare system and project development, Wendy Matos-Negrón, PhD, MPHE. Since then:

1. Grants

- a. USDA 2019 notification of \$500,000.00 grant award was received. Procurement process was initiated and adjudication process still pending. Twelve facilities will benefit from the telemedicine system project.
- b. Direct Relief Puerto Rico Community Grant of \$100,000.00 was received. We recruited a program manager and a program coordinator to complete readiness assessment, resources education and training and network development.
- c. USDA 2020 Telemedicine and Distance Learning grant was submitted for the amount of 1 million dollars. We are still pending for notification from USDA.
- d. STEM: Submitted participation in the CDBG grant writing. A curriculum for telemedicine presenters was developed and submitted. Notice of grant award from CDBG still pending.
- e. Department of Health: Grant submitted

2. Communications

- a. Two interviews were performed by WIPR "Tú Salud". Topics were Telemedicine, and Mental Health and COVID.
- b. Two radio interviews about the Telemedicine initiative for Channels 2, 6 and 4.
- c. Interviews resulted in publication of several articles from local and national newspapers.

3. Education and Training

- a. A Master Conference sponsored by the PRSTRT was performed in Puerto Rico. Over 100 people attended.
- b. A Master Conference sponsored by the Ministerio de Salud de la República Dominicana (Santo Domingo) was performed via Zoom. Over 100 people attended. (international)
- c. An interview by the Aspen Institute in Colorado was performed. There was a discussion about the experience with telemedicine in war (Lebanon) and disasters (Puerto Rico). Scalability issue was discussed.

4. MOUs and Collaborative Efforts

- a. Consolidation of an Alliance with more than 10 organizations: AARP, VOCES, Project HOPE, University of Puerto Rico (UPR), Independent Practice Association (IPAs), Asociación de Servicios de Medicina Primaria de Puerto Rico (ASMPPR) that group the 'Centros 330', and Colegio de Médicos de Puerto Rico.



5. Legal Recognition for the PRSTRT

- The legislature and the governor agreed upon assigning the PRSTRT the lead role to manage the telemedicine initiatives in Puerto Rico. Law was approved in June 2020.

6. Blogs and Newsletters for the PRSTRT

- Telemedicine 1, 2, 3
- Emotional Health

7. Other Activities

- Visits to community health centers (Jayuya and Arroyo)

Research Program (RP)

The Research Program (RP) area of the Puerto Rico Public Health Trust (PRPHT) has the vision to achieve sustainable health equity in Puerto Rican communities and improve their health quality of life through innovation, collaboration, and community engagement by promoting and establishing research and development programs in public health in the Island. RP aims to work with private and public partners to develop research projects geared to identify and execute community-led, evidence-based solutions. The RP area is one of the novel programs of the PRPHT. Having priorities to improve public health capacity, systems, and outcomes by fostering innovation, leveraging resources, and building partnerships to enhance the public's health. The RP area was born in April 2020, impacting the COVID-19 pandemic directly in Puerto Rico.

Achievements of the program:

1. The Pandemic COVID-19 Testing

The RP area works by helping to mitigate the effects of the COVID-19 pandemic in Puerto Rico providing support and expertise in the field of clinical laboratory sciences. One of the main areas of the impact has been helping coordinate and manage the inception of the COVID-19 Testing Group (CTG) which is composed of key scientists and 13 expert partners. The main impact of the CTG was to help the clinical reference laboratories in the validation and implementation of RT-PCR diagnostic testing on the Island.

In the beginning of the pandemic, by March 18, 2020, the capabilities of the Puerto Rico Department of Health for performing COVID-19 molecular testing were ~50 tests/day. Thanks to the CTG and certainly the reference laboratories, we have achieved the following essential milestones in testing capabilities, increasing testing from 50 tests/day to more than 365,000 tests by August 17, 2020, as shown in **Figure 1**. A significant milestone occurred on May 27, 2020, when we helped to achieve 100,000 total tests in the Island with a positivity rate of only 0.7 % at the time[1].

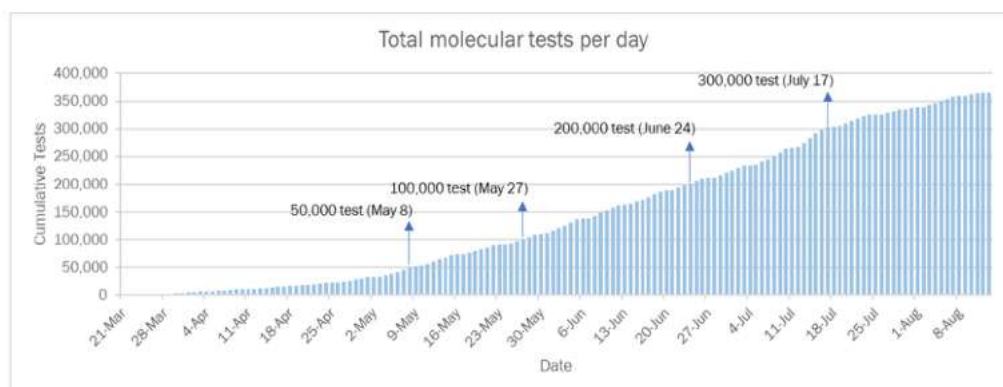


Figure 1- Cumulative molecular tests per day



As shown in **Figure 2**, access to testing, along with the lockdown stipulations, helped Puerto Rico achieve almost a COVID-19-free status with percent of positives lower than 1% for weeks from May 08 until June 22.

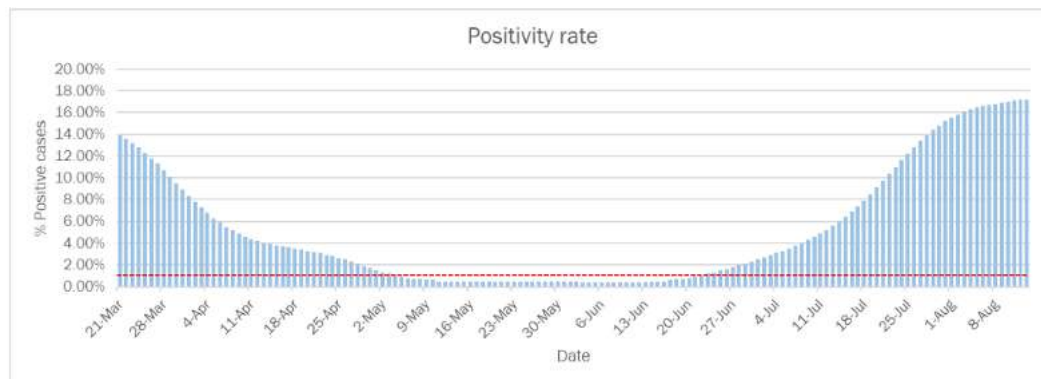


Figure 2 - Percent of positives per date. From May 8th, until June 22nd, Puerto Rico positive rates were lower than 1.0%, almost achieving a COVID-19-free status and certainly flattening the curve.

Despite our efforts, the re-opening executive orders were not congruent with a scientific approach. As shown in **Figure 3**, the epidemiological curve shows that after June 14th, as a result of re-opening strategies and no educational campaign from the government to prepare the citizens of the Island, we began detecting dozens and now hundreds of COVID-19 cases per day, a situation never experienced for almost three months. Most cases are the result of families guarding down and participating in parties with no protection and also from asymptomatic people coming from hot spots in the USA and getting together with families. Moreover, noncompliance with the use of face masks has been concerning. Our positives rate is currently more than 15%. Active cases are estimated to be 5,417 active cases.

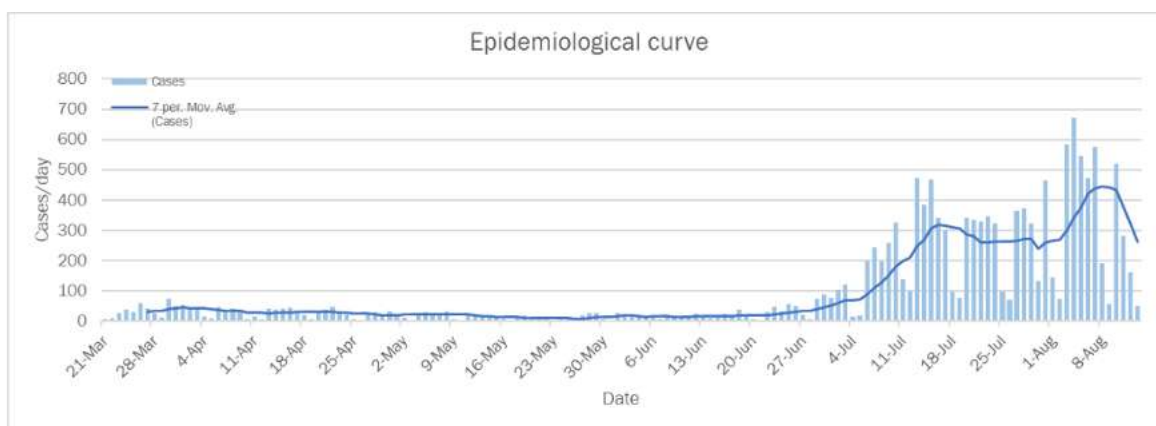


Figure 3 - Epidemiological curve of COVID-19 cases in Puerto Rico

2. Strategies to Increase Testing: Sample Pooling

The RP area contributed to both the CTG and Puerto Rico to increase molecular testing as the pooling strategy. Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) is the scientifically accepted gold standard for the detection and diagnosis of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes the COVID-19 disease. RT-PCR allows the detection of the virus with high specificity in asymptomatic patients or symptomatic patients without a strong immunological response. However, due in part to a worldwide shortage of testing products and reagents, Puerto Rico is almost last among US states and jurisdictions in its per capita testing rate and has a high percentage of outstanding test results due to its practice of sending samples outside of Puerto Rico for testing. We propose to increase local testing with Puerto Rico's limited reagent resources by optimizing RT-PCR parameters for group testing of pooled specimens. The pooling strategy was presented to the CTG group by April 19, 2020. The implementation of this protocol could result in increasing the local testing capability for SARS-CoV-2 five-fold despite limited reagent resources. **Figure 4** shows an overview of the pooling strategy presented. Currently other laboratories are trying to implement the pooling strategy like Core Plus Laboratories. However, as the positives rate to the date is over 10%, the application of the approach should be used with precautions.



3. COVID-19 Educational Presentation

From April to date, the RP area has given more than ten oral presentations, including keynote speaking opportunities in the University of Puerto Rico Recinto de Río Piedras, Puerto Rico Public Health Trust, among others. Also, appearances in the press, both written, internet, radio, and TV have allowed us to educate the public about differences in molecular vs. serological testing and the trends in COVID-19 cases. All these opportunities were mostly made possible by our Communications Director, Elizabeth Vale.

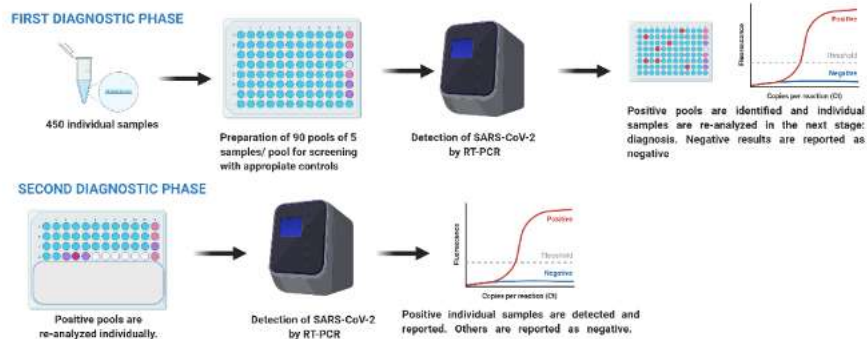


Figure 4 -Diagnostic sample pooling strategy – In the first diagnostic phase, 450 individual samples are pooled in to ninety, five-sample pools and analyzed by RT-PCR. Negative pool results are reported as negative in the individual samples. Positive pools are re-analyzed as individual samples by RT-PCR in the second diagnostic phase. In this phase, positive individual samples are reported as positive and negatives as such. At the end, using approximately (96 tests from the first diagnostic phase and 48 tests maximum from the second phase, assuming that seven pools were positive) 144 tests were used and analyzed in a shift. Normally, analyzing 450 samples will require the use of 480 tests and about three days of work.

4. University of Puerto Rico - Master's in Public Health Interns

Our MPH interns finished their appointment on July 23, 2020. Laura Cabrera and Maria V. Rios presented their project about vitamin D, blood type, and asymptomatic infections in Puerto Rico. Nerylis Ruiz and Nathalie Lugo presented their project about the many outbreaks and the role of contact tracing that have occurred since reopening. Victor Cruz presented his project, establishing the effects of the executive orders and re-opening in the surge of cases COVID-19. All the students received high scores and graduated from their MPH.

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, we 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 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

The principal Investigator is Robinson Rodriguez-Perez, Ph.D from the University of Puerto Rico at Mayaguez. The main goal of FACT is to facilitate the task of contact tracing by epidemiologists and public health officials with a family-based initiative focused on community public health. The main objective of the FACT approach is to enable each home to privately record the hour and location in which members of that family visit and also the time and name of people that visit the household.



2. Integration of Telemedicine in Public Health Activities To Promote COVID-19 Pre-Diagnostic In Puerto Rico

The principal Investigator is Melissa Marzan-Rodríguez, M.P.H, Dr. PH, from Ponce Health Sciences University. Considering the multiple challenges to provide prevention efforts in the context of social and physical distancing measures, comprehensive approaches can provide an alternative for promoting and preventing COVID-19. The main goal of this project is to support an integrative telephone-based platform to provide medical, psychological, and public health services to the communities of Puerto Rico through a call center platform.

3. Intermittent Social Distancing to Control The COVID-19 Pandemic in Puerto Rico: Role Of Outdoor Pollen And Mold Seasons

The principal investigator is Benjamin Bolaños Rosero, Ph.D., from University of Puerto Rico, Medical Sciences Campus. We propose to determine if the outdoor allergens seasons will lead to higher or lower COVID-19 cases, or exacerbated health effects. The working hypothesis is that seasonal outdoor aeroallergens may trigger an inflammatory response in the lungs that may increase the susceptibility to respiratory viral infections. This study seeks to evaluate the association between the seasons of outdoor pollen and fungal spores and the cases diagnosed with COVID-19 diseases.

4. Food Access and Security, HealthCare and Glycemic Control Among Adults with Diabetes During The COVID-19 Pandemic

The principal investigator is Josiemer Mattei, Ph.D., from FDI Clinical Research of Puerto Rico. Puerto Ricans with type 2 diabetes (T2D) and low diet quality, a common problem in Puerto Rico, may have poorer glycemic control (i.e., high hemoglobin A1c (HbA1c)) than those with healthy diet quality. Furthermore, the COVID-19 pandemic may exacerbate food insecurity (FI), defined as the limited availability of nutritionally adequate and safe foods or an uncertain ability to acquire acceptable foods in socially acceptable ways. To ensure proper T2D management during COVID-19 and future emergencies, we must identify the experience of individuals with T2D in PR in accessing healthcare services. The overall goal of this project is to identify FI, access to foods and healthcare services, and glycemic control during the COVID-19 pandemic, examine any potential changes in these factors before and during the pandemic, and deeply understand these experiences in individuals with T2D in PR.

Research Grant Application

During the COVID-19 pandemic, we contributed our combination of education and expertise in collaborations to submit grants to the National Institutes of Health. A total of four grants were submitted and are awaiting review. The following is a summary of the projects submitted:

1. SARS-CoV-2 correlates of protection in a Latino-origin population

On July 23, I submitted a grant proposal 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. SARS-CoV-2 Serological Sciences (U01 Clinical Trial Optional), RFA-CA-20-039. <https://grants.nih.gov/grants/guide/pa-files/PA-20-089.html>

2. COVID-19 testing and prevention in correctional settings

Limited Competition for Emergency Competitive Revisions for Community-Engaged Research on COVID-19 Testing among Underserved and/or Vulnerable Populations. Collaboration with Dr. Emily Wang from Yale University and Dr. Lauren Brinkley-Rubinstein from the University of North Carolina Medical School as a co-PI. We worked directly with jails and prisons and provided them with COVID-19 tests to collect data and then model how various interventions affect transmission. <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-20-121.html>

3. Community-Engaged Research on COVID-19 Testing in the US Territories.

Limited Competition for Emergency Competitive Revisions for Community-Engaged Research on COVID-19 Testing among Underserved and/or Vulnerable Populations. Along with Gabriela Algarín and Martin Montoya, we will be supporting collaboration with Dr. Marcella



Núñez-Smith from Yale University as a co-PI of our component. We will work directly with the Eastern Caribbean Health Outcomes Research Network (ECHORN), supporting several chronic disease research projects and enhancing health outcomes research and leadership capacity in the region; the flagship ECHORN Cohort Study recruited and is following a community-dwelling adult cohort to examine new chronic disease risk and protective factors. Our role will impact a community in Loiza and provide them with COVID-19 tests and be able to collect data and model how various interventions affect transmission. <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-20-121.html>

4. Country Wide Accelerator for Testing and Analytics in Populations Underserved to Lessen disparities.

Emergency Awards: RADx-UP Coordination and Data Collection Center (CDCC) (U24 Clinical Trial Optional) (RFA-OD-20-013). With Eric Velasquez, et al., from Yale University, and components from Columbia University, Morehouse Medical School and the PRSTRT, we will be submitting a grant to this RFA. The CDCC will serve as a national resource, working with NIH scientific staff and consortium members to coordinate and facilitate research activities. The CDCC will also help as a spoke in the more significant NIH initiatives by providing de-identified individual data to an NIH-based data center. The RADx-UP CDCC will provide overarching support and guidance in the following four domains: (1) Administrative Operations and Logistics, (2) COVID-19 Testing Technology, (3) Community and Health System Engagement and (4) Data Collection, Integration, and Sharing. The CDCC will facilitate RADx-UP collaborative research by providing organizational and analytical infrastructure and expertise, supporting data integration and analysis, and coordinating across RADx-UP projects and the NIH-supported RADx initiatives that are developing and validating new COVID-19 testing technologies. My role in the PRSTRT is the PI of the component. Other key personnel in the grant are Dr. Martin Montoya, Dr. Carmen Velez, and Dr. Gretchen Diaz from CienciaPR.org. This grant is for approximately \$ 5 million / year.

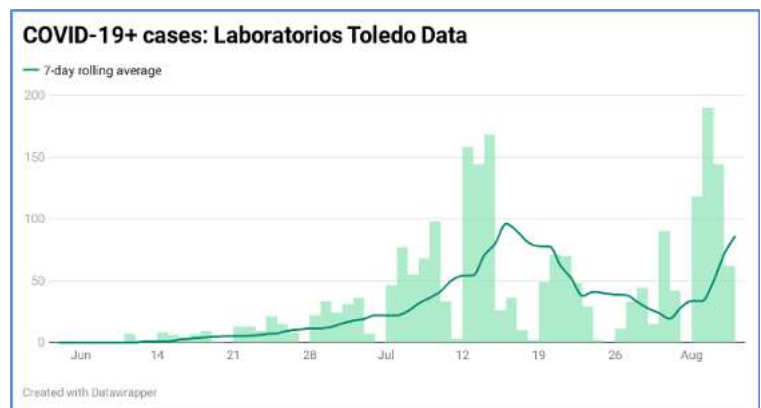
Special Project

1. Puerto Rico Public Health Trust / PRSTRT Biorepository

The Puerto Rico Science, Technology, and Research Trust (PRSTRT) are in the process of establishing a Research Institute. As part of this project, we already found an internally-funded special project of a biorepository: PRPHT/PRSTRT Biorepository. Patients are going to be recruited to collect, store, and track high-quality biospecimens collected for long term studies. Sample handling will include processing, aliquoting, and shipping human biospecimens. This project will be performed in collaboration with Drs. Carlos Sariol and Martin Montoya.

2. COVID-19 Data Processing and Analysis Project

In June 2020, we hired eight public health workers and established agreements with the clinical laboratories (Laboratorios Toledo, Laboratorios Borinquen, and InnoDiagnostics from PHSU) to obtain the data from COVID-19 patients. All positive patients from these labs are already in our Survey 123 Database. Negative cases are being deputed in a CSV file for uploading. We have processed more than 50,000 cases.



3. Research Institute PRSTRT

Along with Andreica Maldonado (Grants Program) and David Gulley (Intellectual Property), we started planning the creation of the PRSTRT Research Institute. The project will incorporate the Biorepository and the implementation of the Symplectic platform and flagship product: Elements. Elements empower organizations to collect, analyze, showcase & report on all of their scholarly activities making Elements a comprehensive and authoritative scholarly information software solution.



4. The Puerto Rico Diagnostic Testing Commission (PRODTEC)

Puerto Rico has been affected by the COVID-19 pandemic. By April 11, 2020, official COVID-19 related deaths were 44 and confirmed positive cases were increasing exponentially. With thousands of tests results in backlog, by that date, 897 positive cases had been reported by the Department of Health (DoH). A stay-at-home order implemented since March 16 has probably reduced the number of infections per day, but COVID-19 still presents a high risk to Puerto Rico given a healthcare system weakened by several natural disasters and a prolonged fiscal crisis, and a population where over 27% of the 3.2 million people are 60 years old or older, among other risk factors. Epidemiological assessments, projections, and mitigation strategies for Puerto Rico are currently hampered by the low number of tests performed in the jurisdiction. Puerto Rico is the jurisdiction in the US, with the least number of diagnostics tests performed per capita.

Currently, the testing capacity of the PR State Public Health Laboratory is about 100 tests per day. Most patient samples are being sent to offshore laboratories like Quest Diagnostics and LabCorp in the USA with turn-around-times of more than seven days. There are six private high-complexity CLIA-certified diagnostic laboratories in Puerto Rico with high-throughput equipment for COVID-19 diagnostic testing. Put together, these laboratories can perform several thousand tests daily. One major roadblock is that most of these labs rely mainly on Roche Diagnostics COBAS 6800 equipment and test kits. Roche Diagnostics claims the HHS is controlling the test kits. Since Puerto Rico has one of the lowest rates of positive cases per capita (26/100,000), the materials are sent to other states and territories with higher infection rates. The company is currently only providing one kit per day to the whole jurisdiction, despite calls for more tests. Thus, there is a great need to implement other diagnostic testing platforms that could augment the number of tests that can be performed locally to mitigate the risk of having diagnostic pipelines being shut down because of a lack of reagents.

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.

Recently we had a meeting with the PRDOH Secretary, Dr. Lorenzo González, and he approved the initiative. This project has been possible by the collaboration between Dr. Jose Rodríguez Orengo (PRPHT), Marcos López (PRPHT), Daniel Colón-Ramos (Yale University), and Eduardo O'Neill (CDC). Dr. González requested us to move forward with the initiative and in less than 48 hours, Puerto Rico, was listed as one of the states or territories to authorize laboratories to develop and perform a test for COVID-19 under the policy outlined in Section IV.B of the Policy for Coronavirus 2019 Tests.

We are working with Dr. Martin Montoya and Bryan Rivera to create a website, logo, and upload all the information. This initiative has the aim to help Puerto Rico overcome the emergency that we are facing with COVID-19 by accelerating the availability of COVID-19 diagnostics, which will ultimately help to save lives.

Publications in Progress

We are currently working on the preparation of various manuscripts to describe and publish our initiatives in peer-reviewed journals.

1. A paper analyzing the reasons why Puerto Rico lost its opportunity to become COVID-19 free: American Journal of Public Health
2. COVID-19 outbreak reports with Fabiola Cruz and Eva Gordian: Morbidity and Mortality Weekly Report (MMWR) (1-3 reports)
3. A report showing the effects of the primary elections and COVID-19 cases with Eva Gordian and Fabiola Cruz: Morbidity and Mortality Weekly Report (MMWR)



Future Trends

The COVID-19 pandemic requires full engagement from the RP of the PRPHT. We are going to continue helping Puerto Rico overcome the pandemic with science and medicine and looking for grant opportunities to bring external funding from NIH to the PRPHT and other sources. We will try to publish as much as possible about the COVID-19 cases and outbreaks which will help us get expected funding from NIH. Also, we are preparing to help overcome the influenza peak that occurs by the end of December in Puerto Rico. There are new projects in progress, including the Biorepository.

Acknowledgements

Our results were achieved in only four months. None of the results would be possible without the ongoing support from all the areas of the PRPHT like our Director Dr. Jose Rodriguez Orengo, Operations, Dr. Martin Montoya, Bryan Rivera, Community Engagement with Gabriela Algarín Zayas and Dr. Carmen Velez, Communications with Elizabeth Vale, Telemedicine with Dr. Wendy Matos, Hurricane Hub with Leslie Mas, Resources with Sarah Miller, and all the other colleagues from the PRPHT. We are incredibly grateful to Dr. Daniel Colón Ramos, Giovanna Guerrero, and Monica Feliu from CienciaPR.org. Also, Daniel, in his capacity of trustee and professor of Yale University, has been a critical ally for the depiction of all the projects described. Eddie O'Neill from the CDC has also been vital for the development of all the projects with the PRDOH. From the Puerto Rico Science, Technology and Research Trust to Andreica Maldonado from the Grants Program, Cesar Piovanetti from IT, Gilberto Marquez, CFO, and Jorge Molina, Associate Legal Counsel. Finally, to Eng. Lucy Crespo Valentin and Dr. Jose Rodriguez Orengo for their unlimited and trustful support and engagement.

Puerto Rico Hurricane Response Hub Technical Assistance Center (PR-HRHTAC)



Hurricane Hub
Technical Assistance Center

The Puerto Rico Hurricane Hub Response Technical Assistance (PR-HRHTAC), is part of a network of five centers that offer personalized training to first responders sponsored by Centers of Disease Control and Prevention (CDC) through the National Network of Public Health Institutes (NNPHI). The purpose of the training is to improve environmental and occupational health recovery efforts in areas affected by hurricanes of 2017.

Some of the services are training individuals and organizations related to disaster in Community Assessment for Public Health, Emergency Response, Recovery needed in public, environmental and occupational health, facilitating connections with organizations and resources, tracking deaths, injuries and illnesses after a disaster and shelter management, among others.

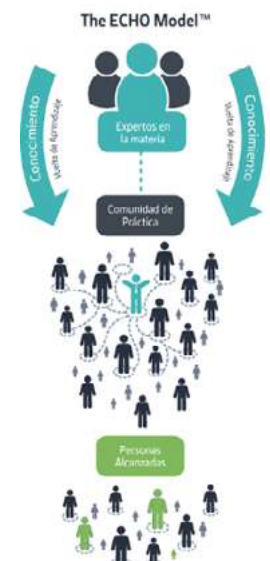


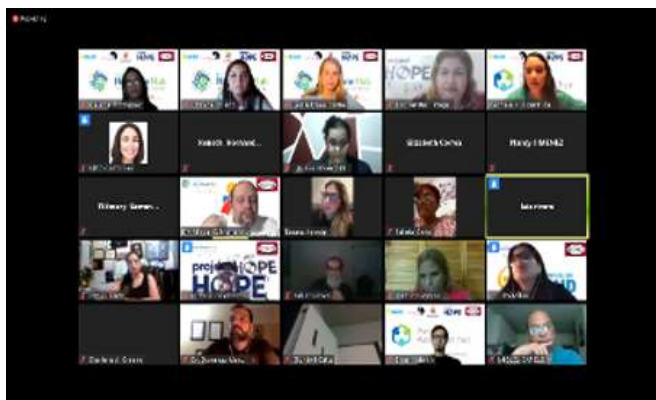
Achievements of the program:

1. Proyecto ECHO (Extension for Community Healthcare Outcomes)

Project ECHO is a movement to demonopolize the knowledge and expand the local capacity to provide better care practices for the disadvantaged. It uses Zoom software technology and aims to share best practices to reduce disparities, apply case-based learning, overcome complexity, and evaluate and monitor results. PR-HRHTAC has conducted 3 ECHO projects:

- a. The first edition of Project ECHO took place in May 2020 with the theme of **Mental Health and Resilience**. In the past years and months Puerto Rico has been affected by Hurricanes Irma and Maria, earthquakes and now the spread of the global COVID-19 pandemic. In the face of much disaster activity in such a short time, first responders have been extremely active with no opportunity to recover from managing one disaster to start working on another. A challenge for this workforce is to perform their work effectively, while simultaneously caring for the security of their family members during the occurrence of these emergent events. The first edition consisted of 5 sessions with 4 experts in the field of mental health. It exposed the fragility of the mental health of the island's first responders and





provided them with a space for relief, support and solutions in their sessions. With an average of 119 participants in each of the sessions.

- b. The second edition of Project ECHO was in June with the theme of **Working together for a resilient community**. The objective was to connect with other community leaders and make visible incredible projects being done in other communities that we can adapt to our own and create stronger alliances. Aimed at community leaders, faith-based organizations and community-based organizations. There were 6 sessions with an average of 88 participants in each session.
- c. The third edition of Project ECHO started in July 2020 with the theme **Hurricane Preparedness** during the COVID-19 pandemic. Aimed at first responders, health and public health personnel and all those who work in direct service in disasters and emergencies.

2. Technical Assistance Request

We created a library of external resources to facilitate the response of TA requests.

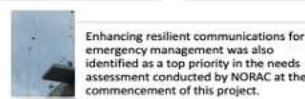
- Public Health Emergencies
- Disaster related morbidity and mortality surveillance
- COVID-19
- Mental Health
- Community Assessment for public health emergency response (CASPER)
- Disaster epidemiology
- Environmental health
- Occupational health

3. Kp4 Radio for Puerto Rico Emergency Management Agency - KP4 Radio locations:

Ceiba	Humacao	San Juan	Vega Baja	Arecibo	Aguadilla	Mayaguez
Ponce	Guayama	Caguas	Vieques	Culebra	PRSTRT-San Juan	PRSTRT-Ponce

4. Virtual learning academy

Puerto Rico Hurricane Response Hub Technical Assistance Center (PRHRHTAC) has developed online courses for the purpose of training first responders, environmental health workforce, occupational health, public health, community leaders, citizens and volunteers who work in emergency response.





Courses available:

- Occupational Hazards in Hurricane Response
- Individual, Community & Municipal Emergency Plans
- Psychological Recovery Skills
- Ethics in Disaster Response Management

Courses under development:

- Death Certification with emphasis on Disaster-related Deaths
- Epidemiology of disasters



Course catalog link:

<https://academia.prsciencetrust.org/home>

5. Resources developed

Hurricane Preparedness Guide in the time of COVID-19



Link to download:

<https://prsciencetrust.org/wp-content/uploads/hurricanehub/PRPHT-Guia-de-preparacion-de-huracanes-2020.pdf>

6. Webinar and conference

Conference related to CASPER with Dr. Diego Zavala, Shelter Management during COVID-19 with Dr. Miguel Cruz and the Water Management Talk with Dr. Pablo Méndez.





Contact



Leslie Maas Cortes, MHS
Director
Web: <https://prsciencetrust.org/prhhtac/>

Operations Management

Operations Report:

The PRPHT Operations group supported all the grants & programs with administrative needs such as purchasing, invoicing, SOPs, professional services contracts extension for several members, agreements with municipalities, etc.

- Supported the submission of a grant to CDC for the opportunity to become a Collaborative partner for future CDC grants to prevent the spread of a future infectious disease and or Pandemics like COVID-19.
- We established an effective Operations Dashboard for monitoring achievements, workflow, required team assistance, etc.
- Supported the online training events like the Charlas Magistrales on COVID, Brown Bag Lunch Series, Hurricane Hub webinars, among other educational and/or online training.

Achievements of the program:

- We provided 25 scholarships with UPR-Medical Sciences Campus to take the course and award professional certification Data Science. This course covered the basics aspects of data sciences, data preparations, data analysis, modeling data and visualization.
- The PRPHT lead the contact tracing efforts that started in Villalba and which it spans into 17 Municipalities. We continue to work with other municipalities that are considering joining our contact tracing efforts.
- We established a contract with Outcome Project, this company provides straightforward solutions that transform complex data into easily accessible, up-to-date metrics analyzed by experts. Also, Dr. José Bartolomei, Outcome Project CEO and Epidemiologist is supporting and strengthening our COVID contact tracing efforts.
- We established a consortium of COVID-Testing Workgroup and these Clinical Laboratories did over 300,000 molecular tests and passed over 3,000 per day. The numbers per day are fluctuating due to a lack of reagents.
- We completed a new contract with Abartys Health and we also signed a Business Associate Agreement with Abartys to share



HIPAA patient information as we continue to collect information from COVID testing laboratories around the Island.

- We trained and implemented HIPAA for all PRPHT staff, becoming HIPAA Compliance program.
- 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).
- We established a strong communication and collaboration with the Puerto Rico Department of Health creating and strengthening the COVID-19 pandemic response.

Puerto Rico Public Health Interns Program

The Puerto Rico Public Health Trust allows students the opportunity to have a real practice and gain experiences that provide new knowledge about Public Health and other disciplines. This program contributes both in the work and personal environment and allows the student to demonstrate their capabilities in their field of study through the integration and application of their skills and abilities. At the end of this internship, students must have the ability to contribute what they have learned in their place of study and in their work area.

First Internship Experience 2020:

In June 2020, Puerto Rico Public Health began its internship program with the students of the Master of Public Health with a specialty in Environmental Health from the University of Puerto Rico in the Medical Sciences Campus. The 18 students had the opportunity to investigate the various programs and projects carried out by the Trust and then speak with the Director of the Program about the opportunity of working with them. The distribution of the students were in the following programs: Hurricane Hub, Research Program, Community Liaison, Grant Opportunities and Communications. Participants had the opportunity to work a virtual or face-to-face summer internship with the following strategies: Weekly meetings with the director of their programs and constant communication through technological means, such as WhatsApp, Microsoft Teams and email to ensure the success of the projects. All MPH inmates finished their work on July 23, 2020, after giving a final presentation of all their work.

The programs available for internship were:

■ Communications

In the Communications program, the students Alexandra Y. Rivera De León and María E. Martínez Hernández had the opportunity to work with Elizabeth Vale, Communications Manager of the Puerto Rico Public Health Trust. The general objective of the program was to create digital material and strategies to provide different audiences in Puerto Rico educational information on various topics relevant to Public Health. The projects worked on during the process were:

- a. Review of the PRPHT Website page
- b. Blogs:
 - Recommendations for the use of water in the face of rationing during the COVID-19 Pandemic. <https://prsciencetrust.org/recomendaciones-uso-del-agua-2/>
 - Sahara dust: Between the harmful effects of health and the benefits to the environment <https://prsciencetrust.org/es/polvo-del-sahara/>
 - Recommendations to prevent the increase in Covid-19 contacts in Puerto Rico. Wearing a mask is in!
- c. Mental Health Guide for Religious Church Leaders and Faith-Based Organizations
- d. Participation in the Podcast: Repaso Noticioso with Enrique Vargas, that was titled: "Covid-19 y Sequía". <https://www.jyestudio.com/repasonoticioso/2020/07/24/rn-covid-19-y-sequia/>
- e. Writing content for social media
- f. Creation of a calendar of events for the blogs and post on the PRPHT Social platforms



■ Hurricane Hub

In the Puerto Rico Hurricane Response Hub Technical Assistance Center (PR-HRHTAC) program, the students Nerylis Ruiz Fontán and Diangel Beltrán Afanador had the opportunity to work with Leslie Maas, Director of Hurricane Hub of the Puerto Rico Public Health Trust. The general objective was to develop and create relevant educational content on prevention, preparedness and protection aimed at the population and first responders, service providers and local officials during the hurricane season in the midst of the COVID-19 pandemic. The projects worked on in the boarding school were:

- a. Fact Sheets: Businesses and Agencies Prepared for the Hurricane Season and COVID-19 Pandemic
 - Protection measures for Employers and Employees During the Hurricane Season and COVID-19
 - Protective Measures for Employees During the Hurricane Season and COVID-19
 - Protective Measures for Consumers and the General Public During the Hurricane Season and COVID-19
 - 5 Tips for managing water in crisis events
- b. Posts for Facebook (6 posts)
- c. Blogs:
 - During a pandemic and natural disasters: Prepare your emergency backpack and supply kit. <https://prsciencetrust.org/ante-la-pandemia-y-desastres-naturales-prepara-tu-mochila-de-emergencia-y-kit-de-suministros/>
 - Elements in a Disaster Prevention Plan before an emergency

■ Research Program

In the Research Program, the students had the opportunity to work with Dr. Marcos Lopez, Director/Manager of the Research Program. The five students were divided to work on three different topics. The students Laura T. Cabrera Rivera and María V. Ríos Sánchez presented their project on vitamin D, blood type and asymptomatic infections in Puerto Rico. Nerylis Ruiz Fontán and Nathalie Y. Lugo Maldonado presented their project on the many outbreaks and the role of contact tracing that have occurred since the reopening. Victor Cruz presented his project, establishing the effects of the executive decrees and the reopening on the increase of COVID-19 cases.

- a. **Project title:** *Vitamin D/Blood Type A, Asymptomatic Cases and COVID-19 in Puerto Rico.*
The objectives of the project were: determine if there is an association between blood type and COVID-19, determine if there is an association between vitamin D and COVID-19, and estimate the prevalence of asymptomatic cases in Puerto Rico. Among the results, it was found in several studies that blood type A has a higher risk of acquiring COVID-19 and that vitamin D deficiency plays an important role in the risk of having complications when having COVID-19. In addition, it is estimated that in Puerto Rico and other countries there is a high percentage of asymptomatic cases.
- b. **Project Title:** *Description of COVID-19 Outbreaks and the Contact Tracing Process.*
The objective of this project was to describe the possible outbreak of SARS-CoV-2 due to the reopening and termination of the quarantine in Puerto Rico using data and statistics. It was found that due to the dramatic increase in cases of COVID-19 the contact tracing process becomes rigorous. In addition, due to the high demand for PCR test reagents, it makes it difficult for countries like Puerto Rico to purchase them because other countries have already made advance purchases. Likewise, travelers coming to Puerto Rico do not respect preventive measures, thus exposing other citizens. Therefore, we must instigate social distancing, isolation of those who had contact with a positive case or came from other countries, correct use of masks and hand washing.
- c. **Project title:** *Two islands. Comparison of response to COVID-19 between New Zealand and Puerto Rico.*
The objectives of the project were: identify the measures of Puerto Rico and New Zealand against COVID-19, compare the measures of New Zealand with those taken in Puerto Rico, to evaluate the effectiveness of the measures and to identify external variables that could influence the number of cases of COVID-19 in both countries. Among the results, New Zealand took drastic and restrictive measures that slowed down and eventually eradicated covid-19 in their country. In addition, it was found that Puerto Rico began to take restrictive measures like New Zealand but relaxed its policy along the way. The executive order (OE-2020-044) had a great influence on the number of cases of COVID-19 in Puerto Rico.



■ Community Engagement

In the Community Engagement program, the students had the opportunity to work with Gabriela Algarin Zayas, Community Engagement Manager. The seven students were divided to work on three different topics. The students Lemuel A. Rosa Andrades, Fabiola Cordero Valentín and Carmelo Rivera Valentín worked with a community census in the Community Estancias de Húcares in Naguabo to identify the risks and resources available in case of a disaster. The students Martín A. Otero Fernández, Maite Morales Medina and Camila V. Elias Arroyo developed a community garden to promote food security and self-management in the communities of Dagua and Estancias de Húcares in Naguabo. The student Jonathan Castillo Polanco worked...

a. Project Title: *Use of a Geographic Information System to develop a socio-demographic profile of the Estancias de Húcares community in Naguabo to identify risks and available resources in the event of a disaster*

The general objective was to assess and identify vulnerabilities and needs within the community of Estancias de Húcares in Naguabo, Puerto Rico through a Community Census. A vulnerability assessment was conducted within the Estancias de Húcares community to identify risks and available resources in the event of a disaster. This information was collected through a Community Census using the Survey 123 tool. This Census allowed us to know with certainty the concerns, strengths and weaknesses existing within the community. Obtaining this data helped to develop a socio-demographic profile. As part of the results of this project it was possible to establish the needs of the community of Naguabo in order to avoid duplication of efforts and provide the necessary efforts to diminish vulnerabilities. The results obtained during this experience could be used to carry out educational and self-management campaigns based on the concerns and interests of the community.

b. Project Title: *Development of a community garden to promote food security and self-management in the communities of Dagua and Estancias de Húcares in the municipality of Naguabo*

The general objective was to establish community gardens as a strategy to promote food security and self-management in two communities in the municipality of Naguabo. This in order to raise awareness, through environmental health education, about the importance of food security for public health, to educate about planting, harvesting, post-harvesting and maintenance of a garden, and to promote recycling and reuse of materials. The results were the creation of educational material on food security, public health, environmental health, community gardening, recycling and the reuse of materials for planting. In addition, a community garden and an educational guide on how to make the garden were created. Similarly, boxes with soil and seedlings/ seeds were given out in order to motivate the community to participate in all the activities.

■ Resource Development Team

In this program, the students Melanie Díaz Bonet, Stephanie Rivera Rodríguez and Carolina Luciano Ramos had the opportunity to work with Sarah Miller, Public Health Advisor of the Puerto Rico Public Health Trust (PRPHT). The objectives of the project were: develop a tracking and warning system of opportunities, complete Grants Management 101, identify grants related to the PRPHT needs and grant writing. Through this project it was possible to collect data, statistics, and useful information about the opioid crisis in Puerto Rico for the November 2020 grant opportunity. Also, an evaluation and knowledge survey on the proposal and grant process was created for PRPHT members and work was done with the internal structure of the team.

ASHTO

Association of State and Territorial Health Officials (ASTHO)

The Association of State and Territorial Health Officials (ASTHO) and the Puerto Rico Public Health Trust (PRPHT), a program of the Puerto Rico Science, Technology and Research Trust, have created an alliance through the project Capacity Building for Jurisdictional Hurricane Recovery-Puerto Rico Staffing Capacity Enhancements (Project). Through the Project, the PRPHT hired 107 specialized technical and professional resources to provide critical services for the Puerto Rico Department of Health and one employee in the U.S. Virgin Islands. These resources support and enhance several programs such as Environmental Health Services for Impacted Communities, Data Collection and IT Infrastructure, Community Risk Mitigation, Disaster-related Death Registry, and Count Accuracy, Healthcare Infection Control



Surveillance, Vector-Borne Diseases, and Jurisdictional Disaster Reconstitution. The contract end date was July 20, 2020 and the PRPHT fully complied with the Project's due dates and deliverables. After July 20, 2020, a limited extension of the Project continues. Specifically, a group of 32 resources is still providing their technical and professional support at the Puerto Rico Department of Health.

The Puerto Rico Community Health Promoter Capacity Building Program (CHPCBP): Improving community health by strengthening resilience to disasters (funded by Medtronic Foundation)

Background

Hurricane María crossed Puerto Rico in September 2017 leaving a trail of damage recorded as the worst natural disaster in the history of Puerto Rico and other Caribbean islands. This hurricane revealed many fragilities disaster preparedness and the health sector were no exception. Most of the hurricane-related mortality and morbidity impacted the elderly, and those with chronic diseases as revealed by a rapid need's assessment conducted by the PRPHT at the request of Medtronic Foundation. Completed in May 2018, these assessments further showed that Federally Qualified Health Centers (FQHCs), known as 330 Clinics, were highly resilient. Many continued to operate during and immediately after the Hurricane and were well prepared to address their patients. The challenge was to connect medically fragile health care services and extend resiliency. The result was the creation of a cadre of community health promoters in these communities to identify the elderly, and individuals with chronic diseases and connect to health care services that would enhance their health and preparedness in the face of disasters.

Our mission: Develop a well-integrated and sustainable community health promoters' program in six municipalities in Puerto Rico. Our long-term goal is to extend this program to all municipalities in Puerto Rico.

Our vision: A resilient and healthy Puerto Rico.

The Program

The Community Health Promoter Capacity Building Program (CHPCBP), leverages existing relationships, training resources and best practices, to strengthen the capacity of Community Health Promoters (CHPs) in six Municipalities to improve health and resiliency of the elderly and persons with chronic diseases, and the medically-fragile by connecting them to optimal health care and community services. The focus will be on health, mental health, disaster preparedness and resiliency strategies for populations classified as underserved, medically fragile and or with needs for chronic care management. Funded by the Medtronic Foundation it has targeted six municipalities: Cataño, Loíza, Juncos, Humacao, Ponce and Villalba. Total funding for this project is \$1.45 million over four years.

The CHPCBP main objectives are to:

- Improve health outcomes among underserved, medically fragile with chronic care management needs population in six municipalities in Puerto Rico.
- Strengthen emergency preparedness and response for underserved, medically fragile with chronic care management needs population in six municipalities in Puerto Rico.
- Build on methodologies for community health needs assessment and GIS mapping to identify, address and monitor progress for community health activities.
- Establish an evidence-based and culturally appropriate training and certification program for CHPs in Puerto Rico and develop a case for sustainability of CHPs for payers and health systems.
- Develop and implement technology tools to help both support the CHPs in carrying out evidenced based high-quality work and integrating the CHPs to clinical practice.

To accomplish these objectives, we will be partnering with FQHCs, community-based organizations, and local government agencies to fund the deployment of a total of 20 CHPs within the six targeted municipalities. Each CHP will be trained by the CHPCBP in collaboration with local partners and assigned to specific communities within the municipality. A key role of the CHPs will be to identify persons in the



community with unmet health care needs and coordinate their access to care and other community services needed. Another key role of CHPs will be to identify vulnerabilities in resiliency that can be addressed well before disasters strike. There will be a detailed monitoring of participants in the program that will allow to track their progress toward optimal health care. We will evaluate the health impact of the promoters in order to provide additional evidence to support the sustainability and integration of the promoters as members of the health care team.

Achievements of The Program

- The program officially launched on September 3, 2019.
- The team developed a logic model for the program implementation and evaluation.
- Staff for the program at the PRPHT are actively working in the development of the program.
- Local partners have been identified in the six municipalities and include FQHCs, community-based organizations, and local government agencies.
- We are in the closing phase of the agreement with MedCentro, the local FQHC that serves Ponce and Villalba and we expect to complete the agreements within all six municipalities by January 2021. We have ensured that local government agencies and community-based organizations are on-board committed to the program in the municipalities of Loíza, Humacao, and Ponce. Interactions within the remaining municipalities are on-going.
- Completed pre-program assessment data collection for potential partners identified in the six municipalities.

Earthquake and COVID response

While preparedness for disasters is a major component of the program, the emergence of earthquakes in the southwestern area of Puerto Rico as well as COVID-19 were unexpected events. These events have a tremendous impact in the planning and execution of the program. The earthquakes resulted in the destruction of many homes and buildings that were resilient during Hurricane Maria. Unlike Hurricane Maria, people did not elect to go to government shelters, so they developed encampments near their homes and in some cases pitched tents in their front yard. This pointed out the need for a different model to help people impacted by the earthquakes.

Our team mobilized right away following the earthquakes in collaborated with Puerto Rico Department of Health conducted a rapid needs assessment in the impacted areas and resulted in a series of activities that include:

- Fundraising efforts for immediate needs of mosquito prevention and mitigation.
- Mosquito Control with the community camps offering education, mosquito repellent spray and mosquito netting.
- Distributed water filters to people in impacted communities in the Ponce area.
- The Team participated in Mental Health First Aid Training, offered by the RISE Network.

The COVID-19 pandemic has covered the world and Puerto Rico is no exception. The need for social distancing, face mask, and the lockdown has drastically changed the available approaches to healthcare within communities. Thankfully, access to internet and wireless communication has made possible the implementation of telehealth. The program is currently integrating the telehealth program as a key tool for promoters to connect individuals with unmet health needs for health care services. As a result of the COVID-19, here are some of the key actions we have taken to reach the people in the targeted communities:

- Expanded program to include telehealth as a resource for community engagement.
 - We secured assistance from Telemedicine/Telehealth expert Dr. Wendy Matos who manages the Telehealth and Telemedicine Initiative in the PRSTRT
- Reallocate funds to purchase personal protective equipment (PPE) and Telemedicine equipment for our partners and staff.
- Ensured that CHPs have proper electronic equipment and internet services to be able to accomplish their goals.
- Reviewed our Training and Education materials:
 - Include Emergency preparedness on earthquakes and pandemic safety conditions
 - Focus on Tele-Health technology
 - Remote health monitoring technology and interventions



- Training on COVID-19, particularly on remote and personal contact with program participants
- Developing educational strategies for hurricane season emergency preparedness taking into consideration precautions for COVID-19. Educational information about COVID-19 and Health Workers: https://www.cdc.gov/video/socialmedia/COVID-19-for-Community-Health-Workers_Edited.mp4
- Principal Investigator, Carmen. M. Vélez Vega collaborated in “Women and Violence during COVID-19: A Public Health Perspective”. Invited by MATRIA, INC. Non-Profit Community Based Organization for Women’s Health and Economic Development. <https://www.facebook.com/events/270969424020782/>
- We collaborate constantly with the PRPHT Community Engagement Team to:
 - Create and disseminate COVID-19 educational materials for children and adults from a variety of communities, schools, businesses and healthcare organizations. ACHOO <https://prsciencetrust.org/wp-content/uploads/prpht/achoo-eng.pdf>
 - Providing food boxes produced by community-based organization COSSAO, Inc.
 - Collaborating in the development of ACHOO! part 2.

Medtronic Foundation and Corporation Collaborations

- We hosted 14 employees from the Medtronic Corporation selected as Medtronic Foundation Global Innovation Fellows (GIF). The GIF team arrived in Puerto Rico on November 4, 2019, until November 22, 2019. They completed a project that evaluated the state of Emergency Shelters for medically fragile patients and made recommendations for our program. The report developed was presented to the Department of Health of Puerto Rico.
- We hosted a visit from Paurvi Bhatt, CEO of Medtronic Foundation & Vice President of Philanthropy for Medtronic Foundation. She visited the Loiza Community Health Center to get first-hand experience about the role of FQHCs as partners in the CHP program. Another outcome of Dr. Bhatt’s visit was establishment of contact with Mr. Felix Negrón, Vice President for Medtronic Puerto Rico Operations. We met with him in March 2020 to understand how our program can engage Medtronic Corporation staff who are interested in volunteer opportunities. Also, we learned that MedCentro, Villalba, our collaborators, are offering psychological services to Medtronic’s manufacturing plant employees to address the high stress levels resulting from the on-going earthquakes onset.
- We are active participants in the Medtronic Foundation Global Health Learning Community. This group comprises programs throughout the world. Dr. Carmen M. Vélez presented our project to this group and consistently presented our ideas for consideration by other projects.
- Currently planning a skilled based volunteers initiative with the Medtronic Foundation team, where Medtronic Corporation Puerto Rico employees will volunteer for 8 weeks in order to assist us at building a digital resource catalogue, mapping health and social services landscape in the 6 municipalities this program targets.

Partnerships established in the Municipalities

- Potential non-governmental organization (NGO) partner in Loíza, Taller Salud, has been engaged. This organization has a decade long experience with diverse models of community health promotion for community health. Waiting on organization’s assessment data.
- Potential NGO partner in Humacao, PECES, Inc., has been engaged. Waiting on organization’s assessment data.
- Convened with Villalba’s mayor, Hon. Luis Javier Hernández Ortiz. He recognized Medtronic’s value and appreciated its continuous support to the municipality. He offered us his support and extended us direct contact with the municipal community outreach office Director. We’ll engage program municipalities assisted by PRPHT during COVID-19 emergency.

Impact Metrics

- Projected hired full-time CHPs: 15
- Projected hired full-time CHPs Field Coordinator: 5
- Total full-time CHP’s: 20
- Caseload per CHP: 65
- Caseload per CHP Field Coordinator: 50
- Total participants: 1,225



Future Plans

This program focuses on building a model where Community Health Promoters are integrated into clinical care models, and equipped to assist patients, caregivers and participants alike to identify what barriers are limiting the betterment of health. We will understand, through this work, what types of socio-economic conditions are increasing the vulnerability of these patients. We will also ensure that these patients will have plans to endure and successfully navigate emergency situations like the ones being experienced in Puerto Rico.

Because of the challenges presented by earthquakes and most recently COVID-19, we have been reviewing our programmatic strategy and scope of work. One of the strategies we are currently planning, with Medtronic Foundation, is to ensure Promoters efficiency and community resilience to complete a digital catalogue where health and social resources alike are mapped so that CHPs can refer them to the appropriate resource within their community. Also, with the leadership of our programs Regional Field Coordinators, we aim to understand regional and municipal resources, including governmental structures, to establish collaborative agreements within our program and program collaborators. This way we ensure a resilient network of services for patients, caregivers and participants alike. We aim to ensure people's belonging/connection to the community, to ensure resiliency and increase health. During this period, we expect to complete agreements with all the FQHCs engaged in order to achieve our goal of completing implementation at 6 municipalities by January 2021.

Acknowledgements

None of the results would be possible without our team and partners: Principal Investigators: Dr. José F. Cordero, MD, MPH; and Dra. Carmen. M. Vélez Vega, PhD, MSW, Sara Miller, Public Health Advisor. Francheska M. Fernández Acosta, Esq., MPH: Program Manager, Héctor R. Torres Zayas, MPHE: Training and Education Coordinator, Amailie Santos Rivera, MPHE: Health Educator, Georliz Paola Vega, MPHE: South Region Field Coordinator, María del Mar López, MPHE: North-East Region Field Coordinator, Cesar Piovanetti IT (& team), Zaira Rosario (Data), Ishwara Ayala (Data), Impactivo, LLC. (María Levis and team), Natacha Guilloty (Subject Matter Expert: Nutrition, Dr. Aurinés Torres (Subject Matter Expert: Community Health Promoters), Leslie Mass and Hurricane Hub, Gabriela Algarín and Community Engagement Core at PRPHT, Dr. Wendy Matos (Tele-Medicine Program), Dr. Martín Montoya (and team). Thank you to our collaborators: Med Centro, Inc. (Ponce and Villalba), COSMMA, Inc. (Humacao), Neo Med, Inc. (Juncos), Concilio Salud Integral de Loíza, Health Pro Med, Inc. (Cataño), Taller Salud (Loíza), P.E.C.E.S. (Humacao).

Communications & Marketing Program

The objective of the Communications and Marketing area is to provide a framework for the Puerto Rico Public Health Trust (PRPHT) to increase recognition of the program by providing evidence-based information to educate about public health issues that affect communities in Puerto Rico. The strategies implemented are outlined to reach the right people through the appropriate mechanisms to achieve the organization's mission and vision.

Objectives

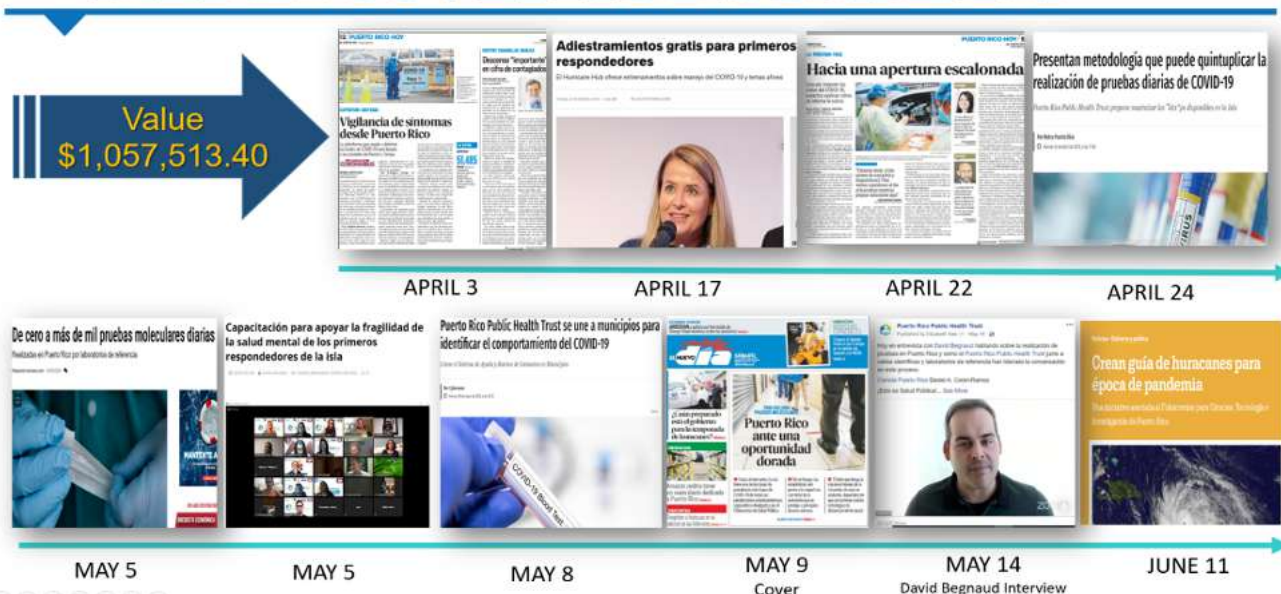
- Create awareness, exposition and recognition of the PRPHT Organization and Programs
- Increase, improve & maintain social media platforms
- Support program relationship with government, municipalities, community based-organizations, private sector, academia and policymakers
- Promote the importance of the public health in Puerto Rico communities
- Establish an educational and prevention initiative to improve quality of life
- Maximize the participation of our advisors to increase our reach, credibility and prestige

Media Exposition

During the past year the Puerto Rico Public Health Trust has had dizzying media exposure. It was strengthened after the COVID-19 pandemic due to the contribution of the Puerto Rico Public Health Trust in this public health crisis. Media coverage includes local and international interviews in radio, print, television, social media, podcasts, publications, among others. The reach is estimated at more than



MEDIA COVERAGE SUMMARY



19,957,343 million people, a number that continues to increase.

Webinars & Conferences

The Puerto Rico Public Health Trust was able to quickly implement the use of technology in the face of the emergency that Puerto Rico is experiencing due to the COVID-19. Conferences such as the Brown Bag Lunch Series and the Magisterial Conference have been fundamental during this period to inform and educate people on health, vaccination, public health, mental health and COVID-19 issues, among others. This process has allowed us to increase our audience, contacts and establish ourselves as a reference point for people to obtain reliable evidence-based information. In addition, we have established collaborations with other entities and organizations to offer our platforms for conducting webinars with simultaneous transmission to Facebook live and our YouTube channel.

First Anniversary of the PRPHT in April 2, 2020

The launch of the Puerto Rico Public Health Trust (PRPHT), was held considering the commemoration of World Public Health Week. The first year's celebration coincided with the COVID-19 pandemic and we aligned our strategies to showcase the work done during this period. This included the creation of several blogs on topics outlined by the American Public Health Association (APHA) and the holding of a press conference to discuss the incidences of COVID-19 in Puerto Rico. It should be noted that the PRPHT has since gained prominence due to the credibility conferred by the outstanding work realized with COVID-19.

Public Health Week Blogs Promotion

Blogs Development

As part of the initiatives of our program we have developed an educational and informative Blogs Segments that include topics of interest in various areas of public health. Many of the authors have been the directors of our programs, public health professionals, SME's and students who were part of the first Internship Program of the Puerto Rico Public Health Trust. This strategy allowed us to reach an additional audience and was for the great interest of the media and organizations to the point that many of the stories earned radio interviews and participation in prestigious events such as the Clinton Foundation.



Some of these blogs are:

- **“Lo que Callamos en Puerto Rico”** written by Gabriela Algarín Zayas & Arnaldo Cruz; Community Engagement Manager and Outreach Representative respectively <https://prsciencetrust.org/loquecallamos>
- **“En Ocasión del Mes del orgullo LGBTIQ+”** written by Carmen M. Velez Vega PhD. Director of the Community Engagement Component of the Collaborative Center for Research on Health Disparities at the Medical Sciences Campus & Director of the Community Health Promoters Program, Puerto Rico Public Health Trust . <https://mailchi.mp/prpht/en-ocasion-del-mes-de-orgullo-lgbtqi>
- **Polvo del Sahara:** “Entre los efectos nocivos de la Salud y los beneficios al Medio Ambiente” written by Alexandra Y. Rivera de León- Environmental Health Master Student, Medical Sciences Campus- UPR- PRPHT Internship Program. <https://mailchi.mp/prpht/el-polvo-del-sahara>

Social Media

The Puerto Rico Public Health Trust’s social platforms have increased considerably since its inception. We started with the social network Facebook and currently have the Instagram, Twitter, LinkedIn platforms and opened a YouTube channel.

SOCIAL MEDIA ORGANICALLY- December 2019- July 2020

Social Media Platform	Facebook	Instagram Opened December 2019	Twitter Opened December 2019	LinkedIn Opened December 2019
Followers	388	0	0	0
Actual Followers	3,329	417	1,643	59
Increase	89% ▲	100% ▲	100% ▲	100% ▲

WEBSITE INTERACTION FROM JAN 1 TO MAR 20, 2020

Page	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit	Page Value
PRPHT	6304 ▲	2305	54.19	1876	1.62%	32.54%	0.00



Social Media Campaigns Examples

- PRPHT Grants
- Protegente está en Tus Manos
- All About COVID-19
- Share Your Sunset #SaludyCuarentena
- Trilogy of Health
- VIH Test Day
- San Juan Night
- No Tobacco National Day

Relevant Post Examples



Educational Material Examples





Initiatives

- Meeting with partners and strategic alliances: Outcome Project, VOCES, Medtronic Foundation and Migrant
- January 23, 2020- South Area Hug Day- After Earthquakes
- Visit COSSAO in Utuado and implement Self-Management Community and economic development projects such as the “Cajita Saludable”, which is made up of fruits and vegetables from local farmers. (May 21st, 2020).



Media Coverage Summary





Achievements

KEY ACTIVITIES & ACCOMPLISHMENTS

Key Activities	Accomplishment
Open Social Media Platforms and Increase Followers Efforts in the South (After Earthquake) Newsletter	Instagram, LinkedIn, Twitter Hug Day with influencer Saudy Rivera (Dando Candela) October, November & December, January & February, July & August
Media Coverage -Digital Media, News and TV (January- July 2020)	Grants, Reverdece tú También, Activity Book Achú, Telemedicine & Telehealth Initiative Press Conference COVID-19 In Puerto Rico (April 2, 2020) 1st Anniversary/Public Health Blogs Week
Website Development Special Interview	New feeds and Coronavirus and Blog Section Everything about COVID-19 with Infectiology Dr. Jorge Santana-Bagur 1.1K views in Facebook
Brown Bag Lunch Series	Monthly SME's Presentation in Public Health Topics Special Edition: All you need to know about COVID-19 with Brenda Rivera Garcia Americares 6.7K views in Facebook
Facebook Live Development Magistral Conference Started Facebook Live Streaming Open PRPHT You Tube Channel	Grants announcement, Colmena 66, BBLS, Series of conferences by renowned guests on science Over 7.6K views in general events 84 subscribers until July 2020
Increase PRPHT & PRHRH Exposition and Recognition	Press Release, Press Conference, Collaborations
Media Relations Development Media Interviews Support	Develop Media Contacts and relationship Interviews with Renowned journalists such as Jay Fonseca, David Begnaud and Benjamín Torres Gotay regarding COVID-19 testing
Blogs	Blogs Development and Publishing

Future Plans

We will continue to align our information and content to the specific audience and identify communication opportunities such as live digital transmissions, podcasts and collaborations with media, public and private companies, faith-based organizations, community leaders, first responders, Non-Governmental Organization (NGO's), Academia and the communities of Puerto Rico.

Contact



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Caribbean Strong:
Building Resilience
with Equity



Puerto Rico
Science, Technology
& Research Trust

Brain Trust for Tropical Disease Research and Prevention

Serial Hurricanes Special Issue of the Journal of Disaster Medicine and Public Health Preparedness

The Caribbean Strong Summit held in February and March of 2019 was a product of the Brain Trust for Tropical Disease Research and Prevention (BRTDRP) and the Society for Disaster, Medicine and Public Health (SDMPH) whose mission is to advance and promote excellence in education, training and research in disaster medicine and public health based on sound educational principles, scientific evidence and best practices, clinical and public health, for all possible entities of the health system response.

The recommendations and discussions from a local panel comprised of local leaders of the most critical public and private sectors of Puerto Rico including telecommunications, banking, fuel and logistics, food distribution, electric power and water were compiled and published on April 2020, as a Special Journal Issue produced by Cambridge University Press. Scientists, local, national and regional leaders from the Caribbean presented the greatest challenges experienced during and post hurricanes Irma and Maria and their plans for averting future catastrophe when faced with another hurricane or similar event.

The Journal of Disaster Medicine and Public Health Preparedness is an Official Publication of the Society for Disaster Medicine and Public Health, Inc. Twenty-eight peer-reviewed journal articles prepared from presentations and posters presented as part of the Caribbean Strong Summit were included in this special issue. Categories articles submitted were: Cover Article, Editorial, Letter to the Editor, Commentary, Policy Analysis, Brief Reports, Original Research, Concepts in Disaster Medicine, Systematic Review, and Reports from the Field. CEO, Lucy Crespo, Dr. Jose Cordero, and Leslie Maas Cortés and Melanie Rodriquez from our team at the Brain Trust contributed directly to three pieces in this issue. Other invited public health preparedness scientists and disaster medicine professional contributed the additional articles to the special issue. Together, these evidence-based and experience-based scientific articles provide a set of lessons learned from the serial hurricanes and ways to improved preparedness and mitigation of future disasters impacting the Caribbean.

The Special issue of this journals is available at <http://www.cambridge.org/>. Full text for this journal may be found at <http://cambridge.org/dmp>.

Proyecto Agua Limpia

Proyecto Agua Limpia (PAL) has been one of the most far-reaching and impactful community-based projects at the Science Trust. It was developed following Hurricane Maria to help rural families prevent contracting leptospirosis and other water borne diseases common in Puerto Rico, like e.Coli. There have been a total of four funded phases of Proyecto Agua Limpia (PAL) was created by The Puerto Rico Science, Technology and Research Trust through its Brain Trust for Tropical Disease Research Prevention program and in collaboration with the Puerto Rico Primary Care Association Network, Corporación de Servicios Medicos CSM IPA-19, H2O Worldwide, KOHLER, Puerto Ricans In Action and Unidos por Puerto Rico.

Proyecto Agua Limpia Phase 4 was possible thanks to a grant from the American Red Cross in its efforts for enhancing community recovery after disasters. In phase IV of Proyecto Agua Limpia (PAL) continued to deliver household water filtration systems to Puerto Rico's rural communities with support of the American Red Cross until October of 2019. With the support of the Red Cross a total of 14,400 filters were delivered to homes, nursing homes, clinics and other care



**Cruz Roja
Americana**





facilities throughout all of Puerto Rico. This phase focused on communities with community owned water aqueducts or communities with frequent water delivery shortages because they are at higher risk for consumption of contaminated drinking water.

In total, PAL delivered more than 47,157 home use water filters and impacted approximately 131,122 citizens of Puerto Rico's most rural and remote areas. Replacement filter cartridges for these filtration systems are available online at <https://prsciencetrust.org/proyectoagualimpia/>

From the sale of these filter cartridges, some proceeds go back into PAL for future filter distribution efforts.

The Brain Trust for Tropical Research and Prevention continues to participate as a key member of the Water Coalition created by the Environmental Protection Agency following Hurricanes Irma and Maria. This group meets regularly to discuss how to continue to meet the needs of the 242 Community-owned drinking water systems of Puerto Rico.





Events

PAL CRA Entrega de filtros - September, 2019





In the community after the Earthquake - January, 2020





Reverdece tu también Launch - February, 2020





Unidad de Control de Vectores de Puerto Rico

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.



Executive Summary

In order to build capacity in Puerto Rico for controlling the *Aedes aegypti* mosquito, PRVCU developed an integrated program based on mosquito surveillance, community engagement and evaluation of non-traditional vector control practices. During its initial years, focus was given to recruit over 60 full-time staff; establish laboratory capacity to process 2,000 mosquito surveillance traps; develop and implement innovative data collection and management tools that were recognized globally and served as a model for other jurisdictions; and create awareness about arboviral diseases reaching thousands of adults and children by distributing repellents/flyers and visiting hundreds of schools. All this allowed PRVCU to build recognition among the general public and key stakeholders.

Building upon the success of the previous years, in 2019, under the direction of a new executive director, PRVCU expanded its laboratory capacity by including a molecular laboratory for entomological surveillance and opening a second facility in the southern region of Puerto Rico. The molecular laboratory has the capacity to process 5,000 pools/week by implementing a superpooling technique and the rt-PCR Triplex method to detect dengue, Zika and chikungunya in mosquito pools. When a positive superpool is found, the pools that comprise that particular superpool are then tested individually. In the case of dengue, the individual pool testing uses the DEN1-4 assay so that the serotype can also be determined.

As part of an integrated approach and to build capacity in vector management, collaborations have been established with municipalities, non-profit organizations and government agencies. One of the most important collaborations is the one with the Puerto Rico Department of Education (PRDE) to train hundreds of health and science teachers to provide lectures about *Ae. aegypti* biology and control. A truck rodeo was also celebrated this year to service and calibrate municipality equipment and demonstrate the use of more effective equipment and products. To expand on this type efforts, a vector management association was created to bring together groups interested in the field and provide up to date information and training on vector control practices.

Media efforts have resulted in two cover page stories and over 100 media appearances that have established PRVCU as a trustworthy leader in vector control in Puerto Rico. Outreach and educational activities have reached over 130,000 people and 42,000 students all around the island. Moreover, PRVCU became a first responder during the recent earthquakes that hit the southern region of Puerto Rico, distributing 16,000 repellents in one month and offering emotional support to the families sleeping in shelters or outdoors for fear to be inside vulnerable structures.

Most importantly, PRVCU has created awareness about the insecticide resistance of the local *Ae. aegypti* strain and the need to explore alternative vector control technologies. On this direction, Wide Area Larvicide Spray (WALS) was expanded to additional communities resulting in a decrease in the number of areas with more than 3 mosquitoes per trap per week, potentially reducing the risk of disease transmission. Male mosquitoes with *Wolbachia* is another important technology that is expected to be evaluated in the coming months. Significant efforts to obtain the necessary permits and community and stakeholders support were carried out this year. Government officials and key public and private organizations have expressed support for this project and the permits have been obtained.

Future efforts will be targeted to expand the reach of the vector management association, successfully complete the implementation of a *Wolbachia* trial in Puerto Rico, establish strong collaborations with municipalities to develop effective plans for vector management and outbreak mitigation, and develop a program in applied research and development for new vector management technology.

Achievements

Strong capacity building and development of a role as emergency first responders

Professional development

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 80 trainings in diverse topics including vector control technologies,



communication strategies and new laboratory procedures. In fact, our field staff was certified by the Clarke company as equipment calibration technicians to support municipalities in the calibration of vector control equipment which is a process required annually. The PRVCU is one of only two units in the Caribbean with staff holding this certification (the other is in the Cayman Islands).

In September 2019, PRVCU Supervisors participated in the 49th Society for Vector Ecology (SOVE) conference in Puerto Rico. Our supervisors presented three posters (Figure 2) and one oral presentation during the conference. Another important accomplishment were the travel awards received from the Southwestern Center of Excellence in Vector Borne Diseases for four of our staff to attend the Dodd Short Courses in Florida during Spring, 2020.



Figure 2: José C. Sánchez Prats (left) and Julieanne Miranda (right) at the 49th SOVE Conference in Puerto Rico.

Earthquakes Response



Starting on December 28, 2019, and progressing into 2020, the southwestern part of the island of Puerto Rico was hit by an earthquake swarm, including 11 earthquakes that registered magnitude 5 or greater. The most intense was on January 7, 2020. Following this event, many people had to abandon their homes to sleep on shelters due to structural damages or because they were too afraid to sleep inside their houses. Therefore, people in this region were more exposed than usual to mosquito bites during a time when dengue was actively circulating on the island. In order to prevent the spread of diseases, **PRVCU supported the affected communities by providing more than 16,000 mosquito repellents and over 165 mosquito nets and conducting vector control activities** (Figure 3). Distribution of the materials was conducted in collaboration with several entities, including other programs of the PRSTRT, and the Puerto Rico Department of Health (PRDH) which was provided with 500 repellents. CDC Foundation also provided repellents that were distributed thru these efforts. Educational talks and the mosquito story reading were provided to adult and children in the refugee camps, reaching over 200 adults and 540 students.



COVID-19 Response

Since March 13, 2020, the PRVCU has been working remotely due to the COVID-19 curfew established by the Government of Puerto Rico. Laboratory and field activities have been limited to mosquito surveillance and following strict safety measures including social distancing, mandatory facemasks use and more frequent and in-depth cleaning and disinfection procedures. Community engagement efforts have been conducted mostly using digital resources. PRVCU adapted educational offerings to videos, virtual talks and other digital support materials. The community and education team developed three (3) videos for elementary and high school levels, and a story reading about the mosquito *Ae. aegypti*. This was provided to the PRDE for integration into their virtual lectures. In addition, during June and July 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 available in the PRVCU Facebook. The aim of these workshops was that children learned and practiced prevention measures about public health problems and learn more about technology. A contest was conducted on Facebook which required that children provided evidence of their participation in the eight workshops. A committee selected four (4) children that won gift cards sponsored by PRSTRT.

In collaboration with the Puerto Rico Public Health Trust (PRPHT), PRVCU developed a flyer about COVID-19 and Dengue and distributed 800 mosquito repellents and mosquito nets to a community with high risk of dengue transmission due to positive mosquito pools in that area.

Main Achievements in Vector Surveillance

Expanded Laboratory Capacity and Molecular Laboratory

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 the Unit as a service center for municipality programs to establish stronger relationships that can lead to effective vector control.

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 real time rt-PCR assay (MAPA), this protocol was developed by the CDC-Dengue Branch as a multi-target molecular assay intended for the qualitative detection and differentiation of RNA from dengue, chikungunya and Zika viruses in mosquito samples through real time reverse transcriptase polymerase chain reaction (rRT-PCR). The results are reported weekly and the CDC Dengue Branch receives weekly reports and has access to the PRVCU real-time data base of mosquito and virus surveillance.

The Mosquito Arbovirus Surveillance System (MASS) started in the municipalities of San Juan, Carolina and Caguas. The MASS project collects *Ae. aegypti* females from AGOs deployed in the PRVCU AGO Surveillance System. Mosquito pools are prepared with 5-20 *Ae. aegypti* female per tube/trap. Up to date more than 7,500 mosquito pools containing over 106,000 mosquitoes have been tested with only 5 resulting in positive identification of the dengue virus. Although this number might appear to be insignificant, the probability of identifying the virus in the natural environment is low. Therefore, this finding indicated a potentially high presence of the virus in the community at that time and allowed PRVCU to alert the communities early, before the development of an outbreak.

With the large number of traps that the PRVCU has, a 10:1 super-pool protocol has been validated and implemented. This will enable the PRVCU to test all mosquito pools at a much lower cost than would otherwise be the case. However, the labor cost of preparing each individual pool remains a limiting factor.

Extended mosquito surveillance to additional municipalities and use of additional tools

Building a data set of mosquito numbers over time and space will increase the knowledge of where and when control efforts may be targeted or launched. This program is key to evaluate the impact of control activities being implemented as well as identifying risk areas. The data gathered up to date will also serve to determine the seasonality of mosquito populations which will be key to develop effective vector control evaluations and strategies for PR.



On a weekly basis 1,721 Autocidal Gravid Ovitrap (AGO) are processed within two regions (Metro: 1,087 and Ponce: 634). Traps were deployed and captured chambers are collected weekly in San Juan (4 zones, 121 AGOs), Carolina (6 zones, 124 AGOs), Bayamón (8 zones & 1 cemetery, 562 AGOs), Dorado (2 zones, 19 AGOs), Ponce (14 zones, 634 AGOs) and Caguas (12 zones, 240 AGOs). Since January 2018 to June 2020, 1,563,155 *Aedes aegypti* females have been captured from our surveillance traps, see Table 1. In addition to AGOs, BG Sentinel, MAST and CDC light traps have been incorporated in our surveillance program as needed.

Table 1. AGO captured chambers processed since 2018 and by 2019-2020 trimesters.

Description	Jan-Mar 2019	Apr-Jun 2019	Jul-Sept 2019	Oct-Dec 2019	Jan-Mar 2020	Apr-Jun 2020	Total to date
AGO captured chamber processed	17,472	18,055	21,037	22,034	21,391	19,810	166,715
Total <i>Ae. aegypti</i> female captured	112,551	195,352	233,600	208,070	164,317	168,206	1,563,155

Data collected since 2018 demonstrates that *Ae. aegypti* is present in Puerto Rico all year round with a population high enough to sustain disease transmission (>3 females/trap/week Sharp et al. 2019). Higher numbers are observed during the summer months while a lower population is recorded for the months of January to March (Figure 4). However, **when comparing the data from 2019 and 2020 for this period, a 30% increased on *Ae. aegypti* mosquito population was observed** from the captured mosquitoes in Puerto Rico. The captured average of *Ae. aegypti* females for Jan-Mar 2019 was 5.8 mosquitoes per trap/week while in 2020 that increased to 7.4 mosquitoes per trap/week. This increase is presumed to be related with heavy rains at the beginning of 2020.

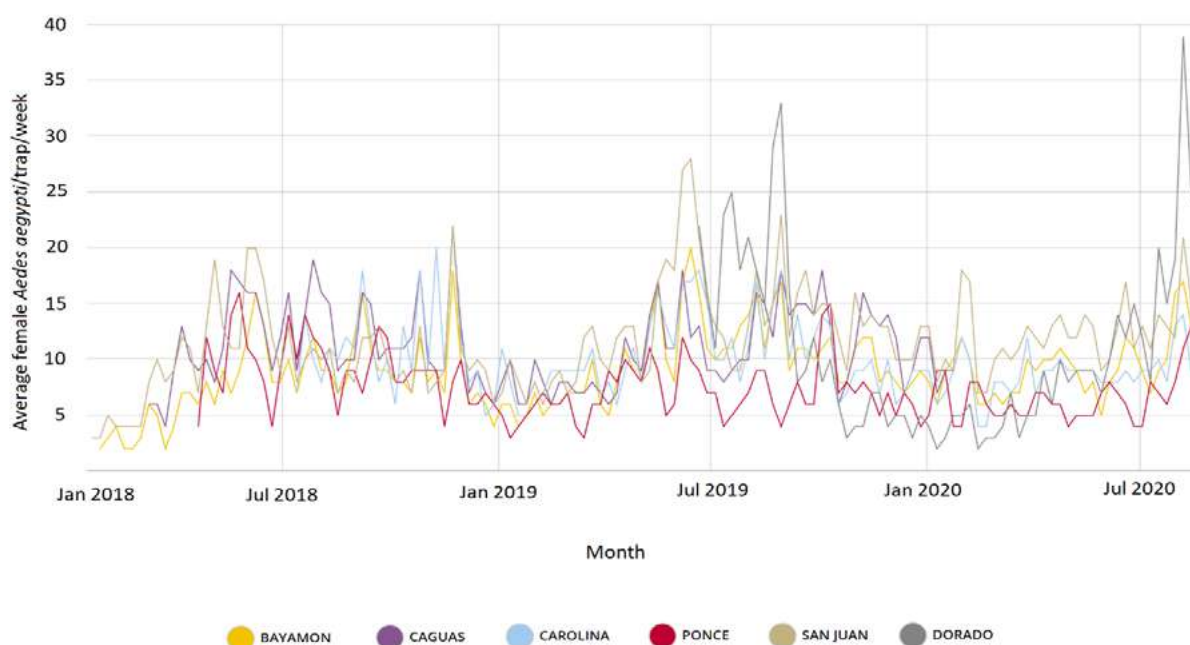


Figure 4. Average *Ae. aegypti* female captured per trap per week by AGOs for the municipalities under surveillance. Graph shows the mosquito population dynamics for over two years and shows higher populations during the summer months and lower populations for the winter months.



Continued monitoring of insecticide resistance in *Ae. aegypti* and other mosquito species

PRVCU established laboratory capacity to conduct insecticide resistance assays (IRA) on an annual basis for several products approved for use in Puerto Rico. Given the previous reports about insecticide resistance in Puerto Rico and the importance to determine the effectiveness of vector control tools, it is key to continue with this type of efforts to implement the best practices possible.

CDC Bottle Assays

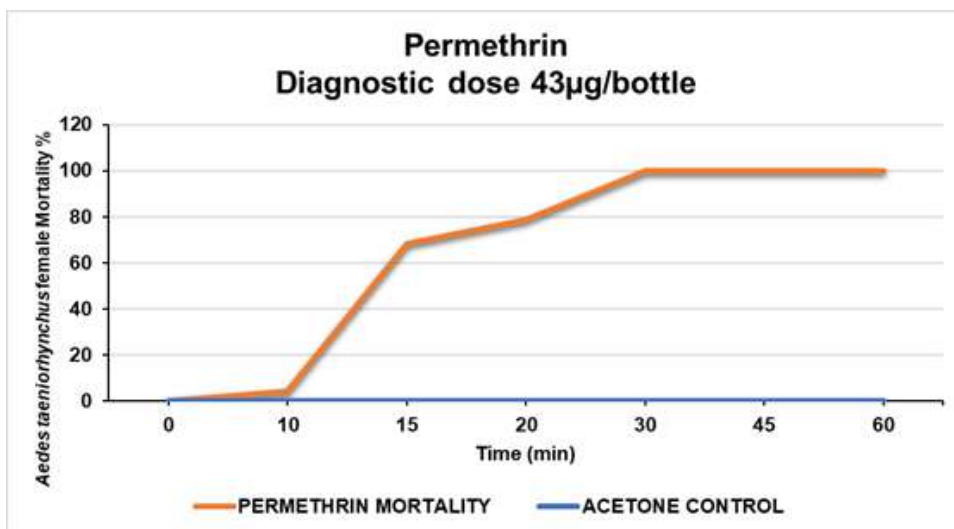
For 2018-2019, the PRVCU Laboratory team conducted IRA for seven active ingredients against *Ae. aegypti* for the municipalities of San Juan, Carolina and Bayamón. During this year, additional testing was completed for the municipality of Ponce. Results for the Ponce samples were like those observed in other areas tested previously, except for chlorpyrifos; mosquitoes from La Playa exhibited partial resistance to that chemical (Table 2).

Table 2. Insecticide Resistance results for Bairoa-Caguas, Reparto Metropolitano-San Juan, G8-San Juan, Castellana Gardens-Carolina, Irlanda-Bayamón, and Ponce (El Tuque and La Playa). For each community, the first column shows the mortalities for the wild local population, the second column ("Negative Control") shows the mortality with the wild population tested against acetone, and the third column ("Susceptible Control") shows the mortality of the susceptible laboratory strain tested against each insecticide. The green cells indicate insecticide susceptibility and the yellow cells indicate insecticide partial resistance.

Technical grade pesticide	Diagnostic dose (µg/ml)	Diagnostic Time (minutes)	Bairoa			Reparto Metropolitano				G8		Castellana Gardens				Irlanda		El Tuque, Ponce				La Playa, Ponce			
			Bairoa Mortality %	Negative Control Mortality %	Susceptible Control Mortality %	Rep Met Mortality %	Negative Control Mortality %	Susceptible Control Mortality %	G8 Mortality %	Negative Control Mortality %	Susceptible Control Mortality %	Cast. Gardens Mortality %	Negative Control Mortality %	Susceptible Control Mortality %	Irlanda Mortality %	Negative Control Mortality %	Susceptible Control Mortality %	El Tuque Mortality %	Negative Control Mortality %	Susceptible Control Mortality %	La Playa Mortality %	Negative Control Mortality %	Susceptible Control Mortality %		
Permethrin	43	20	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100		
Deltamethrin	0.75	30	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100		
Etofenprox	20	15	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100		
Phenothrin	30	20	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100		
Lambda-cyhalothrin	10	20	0	0	100	0	0	100	0	0	100	8	0	100	8	0	100	21	0	100	0	0	100		
Malathion	400	20	98	0	100	22	0	100	21	0	100	76	0	100	91	0	100	0	0	100	31	0	100		
Chlorpyrifos	200	45	70	0	100	26	0	100	70	0	100	79	0	100	55	0	100	61	0	100	97	0	100		

On September 2019, the University of Puerto Rico- Ponce Campus, requested advice to control an unusually high population of mosquitoes. PRVCU deployed traps (BG and CDC light traps) in the University campus and found high incidence of *Aedes taeniorhynchus*. In addition, PRVCU conducted IRA on *Ae. taeniorhynchus* mosquitoes finding that this mosquito is susceptible to permethrin (Figure 5). It was recommended to the local authorities and University to conduct spray missions using permethrin or related products.

Figure 5. Percent mortality rate for female *Ae. taeniorhynchus* when exposed to permethrin. IRA was conducted on female mosquitoes caught using CDC light traps.



Improved current online dashboards for public data sharing

Initial phases of the PRVCU electronic platform were focused on developing tools for trap management and data collection. For the last year, in addition to improving internal tools, one of the main objectives has been to develop tools to share data effectively with stakeholders and the public. The tools developed include public interfaces for visualization of the surveillance data collected by PRVCU in the main five municipalities where surveillance is conducted. A separate interface for the Communities Organized for the Prevention of Arbovirus (COPA) project (described below) has also been created and the data has been integrated in the Kidenga App developed at the University of Arizona.

Mosquítalo is a downloadable mobile application developed in-house to promote activities about breeding sites reduction to prevent arboviral diseases as dengue, Zika, and chikungunya. The people can use the application to keep a record of the breeding sites eliminated from their houses, schools, and communities and inform the quantity and type of the breeding site. Also, people can share their results on social media, text messages, and other platforms. Mosquítalo is available free in the Apple Store and Google Play (Figure 6).

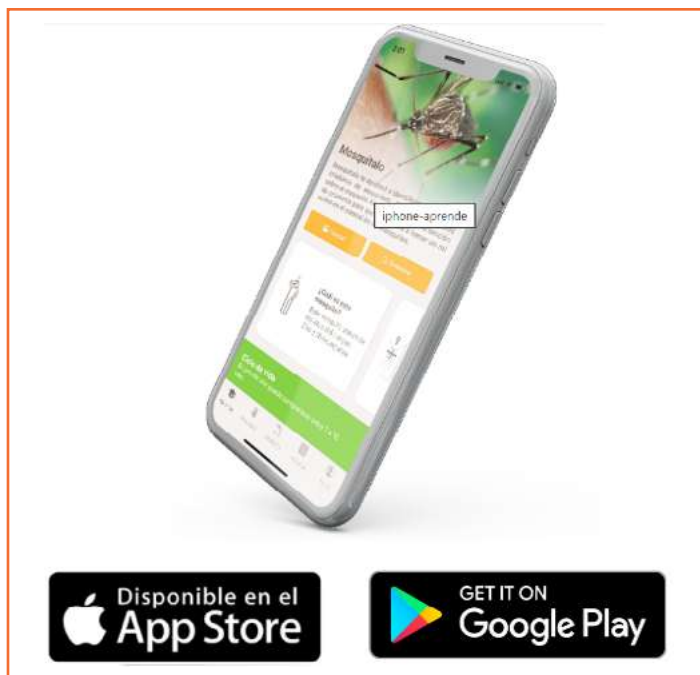


Figure 6: Image of the Mosquítalo App that will help users learn how to eliminate breeding sites and share their results.

The app was promoted to use during the World Mosquito Day 2019. In 10 days, the app had 274 participants, 26 inspections in 7 municipalities. **A total of 648 breeding sites were reported in the app as removed during the World Mosquito Day 2019.**

Developed local and regional collaborations to conduct research on vector management

Deployed War-fighter Program

In collaboration with CDC Dengue Branch, a proposal was submitted 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 for a three-year project with a funding of \$900,000.** PRVCU directors are co-PIs on this project, and our role is to conduct mosquito surveillance, provide data collection tools and deploy AGOs for mosquito control in the study areas.

United States Virgin Island (USVI) collaboration project

The PRVCU established a collaborative project with the 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. On a weekly basis the USVI Vector Control Program ships mosquito samples to the PRVCU laboratory. To date **the laboratory have been able to process 3,375 mosquito samples from the islands of St. Croix and St. Thomas.** The majority of those mosquitoes are *Ae. aegypti*.



Main Achievements in Community Mobilization

Developed tools to evaluate community engagement activities

Understanding the effect of community engagement and communications on vector control is an area that has not been extensively evaluated. Given the strong PRVCU community engagement program, it was considered important to evaluate the effect of the activities on the public's knowledge and practices related to the *Ae. aegypti* biology and control measures. Tools such as knowledge, attitudes and practices (KAP) surveys, pre/post-tests, face-to-face interviews, and key informant interviews were developed and implemented to evaluate several activities.

Evaluation of media campaign “Páralos en Seco”

In May 2018, PRVCU launched a media campaign titled “Páralos en Seco” to increase knowledge among the Puerto Rican population regarding measures to reduce mosquito breeding sites. In May 2019, a year later, this campaign was evaluated. A total of 389 respondents participated in these face-to-face interviews. Most respondents stated they had not seen, read, or heard media propaganda about the PRVCU and did not recognize its logo. From those who reported recognizing the logo (24%), more than half did not have a clear recollection of its contents. Moreover, most respondents reported not having seen, read, or heard the phrase “Páralos en Seco”. The same was observed with the phrase “Vacía, cepilla, tapa, bota”. From the respondents who reported practicing any of the activities mentioned in this phrase, the draining activity was identified as the most frequently performed.

Although the results were from an evaluation conducted a year after the campaign was launched, PRVCU postponed launching the campaign to evaluate possible changes. However, given the increase in the number of cases during early 2020 and the time limitation to develop a new campaign, the same campaign was launched again in March 2020 using more targeted outlets (see details below). In April 2020, a month after the campaign was launched, a second evaluation was conducted. Due to the COVID-19 epidemic, an online evaluation was developed using social media pages, text messages, and other media outlets for distribution.

The survey had a participation of 331 respondents representing 58 municipalities. Most were residents of San Juan (18.7%) followed by Ponce (14.8%), and the majority were females (65.3%). When asked about the PRVCU logo, **227 (68.6%) of the respondents answered to have seen the logo**. Most of them have seen the logo in Facebook (52.9%), flyers (47.6%) and TV (34.4%)

When asked about the campaign, **47.1% of the respondents answered that have seen, read or heard the phrase “Páralos en Seco”** and, once again, the most common outlet was Facebook (44.9%, n=156). The phrase was mostly associated with the expected topics: mosquitos (75.6%), elimination of breeding sites (70.5%), dengue (54.5%). Interestingly, **more people (61%) remembered to have heard the phrase “Vacía, cepilla, tapa y bota”** but in this case, the most common outlet was TV (44.1%), followed by Facebook (43.6%). Most of the participants admit they conduct some of the activities promoted by this phrase, most commonly draining containers (70.3%) with accumulated water. However, only 32.7% indicated that they brush their containers after draining them.

As expected, more participants were able to recognize the PRVCU logo and campaign phrases after a month of starting the campaign and while still running. This suggest that in order to be effective, a campaign needs to run frequently allowing people to remember the concepts. Nevertheless, the campaign was modified to incorporate lessons learned during both evaluations and was relaunched in June 2020. Additional evaluations will be conducted to determine the impact of such changes.

Evaluation of community outreach activities in Ponce

An evaluation of the past outreach efforts (February to June 2019) in Ponce was conducted in September 2019 using telephone numbers provided during community activities. A total of 349 adults participated in these phone interviews. The most important results were the following: **96% knew about the *Ae. aegypti* mosquito; 59% knew about the PRVCU; 76.3% knew that male mosquitoes do not bite; 99% recognized that the flower pots can be a breeding site; 86.9% knew about “Vacía, cepilla, tapa y bota”; 93.1% recognized the importance of using mosquito repellent, and 33% knew about COPA Project.**

Using this tool, PRVCU was able to determine which key messages were known by the public and which ones needed to be reinforced. For example, only 33% of the people knew about the COPA project, and so the Ponce team increased the time invested to talk about COPA and reduced the time to discuss other topics well known by the public.

Implemented a strong K-12 Education Program incorporating evaluation tools

The Education Program continues the 1-hr class around the Island and up to date, **has reached 42,079 teachers and students in 68 municipalities of the Island with the Mosquito Class**. Pre and post tests conducted during these lectures indicate there is an average increase in knowledge among the students of 42.4% increase, ranging from 23.8% (4th grade) to 55% (12th grade). As mentioned above, after the pandemic, the PRVCU has move its educational activities to online platforms. **Using digital platforms, they have reached over 5,000 students and teachers in the last three months (April-June 2020).**

Signed a collaboration agreement with the Puerto Rico Department of Education

PRVCU and Casa Grande Interactive designed an online curriculum for grades 3rd, 7th, and 10th. The online platform named the Mosquito School was launched on the PRVCU's website (<https://bit.ly/2VT3F7b>) in August 2019, to provide access to teachers. The platform was piloted during the 2019 spring semester in five schools, private and public: three in Ponce, one in Caguas, and one in Bayamón. Based on the results of the pilot, an Intervention Manual was developed to standardize the lessons and provide guidelines to the PRVCU educators and schoolteachers on the best approaches to implement the mosquito lessons.

Following the successful evaluation and revisions of the Mosquito School platform, **a Memorandum of Understanding (MOU) with PRDE was signed in September 2019 to train Health and Science teachers** to implement the online lectures in their classrooms. Up to date PRVCU has trained over 100 teachers.



Figure 7. PRSTRT CEO, Lucy Crespo, and PRDE Secretary Dr. Eligio Hernández, after signing MOU on September 13, 2019.

Reached thousands of people to create awareness about *Ae. aegypti*

Proactive Outreach Program

The PRVCU Community Mobilization Program has continued integrating a proactive program to better reach the communities. One of the highlights of this year include visits to the island municipalities of Vieques and Culebra. Transportation and outreach in these municipalities have limitations, but PRVCU was able to reach these communities and educate about vector control. Another important accomplishment was the integration of more interactive activities such as male mosquito cages to demonstrate that male mosquitoes don't bite, virtual reality activities, interactive games, participation in carnivals, loudspeakers, development of the mosquito character Vectorina, among others (Figure 8). Regular outreach activities together with emergency responses have had a significant impact in Puerto Rico, reaching over 130,000 people and distributing thousands of repellents, educational materials and larvicides in 75 of the 78 municipalities. As mentioned above, since March 2020 most of the outreach activities have been conducted using online platforms to comply with the COVID-19 guidelines. See Table 3 for a summary of outreach activities to date.



Figure 8. Community engagement activities have evolved to include interactive games (left), using live mosquito cages to demonstrate male mosquitoes don't bite (center), and participation in folkloric community activities like carnivals (left).

Activity/Material	Total to date since September 2017	
	Number of activities/materials	Number of Municipalities
Educational booths	563	54
Educational talks	317	41
Community visits	252	22
Informational visit	328	13
Workshop or training	4	4
Distribution of repellents	101,821	76
Distribution of larvicides	5,062	40
Distribution of educational material	146,585	75
Distribution of activity books	19,677	55
Mosquito nets	912	13

Table 3: Summary of outreach activities to date.

*Ponce Team delivered also the COPA flyer that is provided by CDC and PHSU, this document is not reported in this table.

Strong presence in traditional and digital media outlets

Public relations and traditional media efforts

In March 2020, PRVCU was once again in the front page (Figure 9) of a local newsletter alerting about the increased number of dengue cases in Puerto Rico (first time was in 2019 with an article about insecticide resistance). Dr. Grayson Brown and Dr. Marianyoly Ortiz provided information about the entovirological surveillance conducted in the PRVCU laboratory that resulted in four positive pools of mosquitoes for dengue virus in the San Juan region and the increasing number of disease cases reported by PRDH and CDC. The need for the implementation of alternative control methods was also discussed.



El Vocero also published Dr. Brown's opinion editorial (Op-Ed) about the importance of prevention under the topic: Puerto Rico is at the threshold of epidemics. PRVCU conducted a total of five additional interviews after a Press Release distribution the same day of the cover story publication. Journalist Rubén Sanchez from WKAQ, Loíza Radio Station, El Nuevo Día, EFE Agency and Telemundo interviewed PRVCU spokespersons.

Governor Wanda Vázquez and the former Interim Secretary of Health, Dr. Concepción Quiñones de Longo, were approached about the cover story published that morning during a COVID-19 Press Conference held at La Fortaleza. The *Ahi Esta la Verdad* TV program also broadcasted a special segment about PRVCU that same day, coordinated between BCW Communications Agency, El Vocero and WAPA TV producers. **All these efforts earned PRVCU thousands of dollars in publicity value, representing a return of investment (ROI) of \$ 98,150 for this month alone.**



Figure 9. Front page article published in El Vocero newspaper about a possible dengue outbreak.

Another important effort during this period include a media workshop about the project Male Mosquitoes with *Wolbachia*. After this workshop, more than 10 articles were published about the project. See Table 4 for a summary of media appearances and other important results. **All the public relations efforts for this year have resulted in a ROI of \$215,010 for the program.**

Relaunch of the “Páralos en Seco” campaign

After the excellent coverage in press about the risk on a dengue outbreak and the recognition of PRVCU by important stakeholders, PRVCU decided to activate the “Páralos en Seco” campaign developed in 2018 as a support strategy. News media outlets (print) have shifted to their social media platforms and digital video outlets, including their streaming services, to keep audiences informed about the COVID-19 epidemic. Television views has also increased, particularly around news broadcasts. Based on this analysis, the campaign was launched strategically to maximize resources and use media with the highest reach at these difficult times.

The campaign was set to run from March 26th to April 17th, 2020 only on TV and digital outlets such as Telemundo channel 2, Telemundo.com, Wapa TV channel 4, wapa.tv, Elnuevodia.com, PrimeraHora.com and YouTube. Digital campaigns are measured in Click-Through Rate (CTR). CTR is the ratio of users who click on a specific link to the number of total users who view a page, email, or advertisement. It is commonly used to measure the success of an online advertising campaign. A healthy and effective CTR fluctuates from .20% to .25%. At a general level, the campaign had a CTR of 0.30% in El Nuevo Día and Primera Hora ads. Of the creative ads, the 320x100 is the best performer with 52% impressions shared and a 0.32% CTR. Impression shared (IS) is the percentage of impressions that an ad receives compared to the total number of impressions that the ads could earn.

YouTube platform obtained a CTR of 0.26%. The towns with the greatest numbers of clicks have been San Juan and Bayamón. The Advertising campaign in YouTube is paid only when 50% of the Ad or more have been seen by the audience. **The number of views for the “Páralos en Seco” 30 ss ad, at the time of this report, was 649,551 since its launch in March 2020.**

In June 2020, the campaign was slightly modified based on previous evaluations and relaunched.



Table 4. Summary of the mass media communication efforts conducted during the 2019-2020 period and the associated value saved each trimester due to public relation efforts. This information was provided by the PRVCU public relations agency, BCW.

Media Outlet/ Index	Number of Appearances/Results				
	Jul-Sep 2019	Oct-Dec 2019	Jan-Mar 2020	Apr-Jun 2020	Total
Radio	4	5	3	8	20
Television	1	2	3	4	10
Newspaper	4	0	27	14	45
Digital	9	1	32	5	47
Opinion Column	0	1	1	0	2
Total Appearances	18	9	66	31	124
Non-paid publicity Ad Value	\$ 44,870	\$ 11,640	\$ 117,690	\$ 55,210	\$ 215,010
Impressions	5,253,000	1,420,000	102,151,567	876,873,443	985,698,010

* Impressions, also known as ad views, are an estimate of the number of times an ad might be seen. This number is significantly higher for Apr-Jun 2020 since a paid campaign was running during this period.

Digital Content and Social Media

The main social media page used by PRVCU is **Facebook, with a total of 14,548 likes (5,371 more than last year) and an average monthly reach of 195,662**. New strategies to increase engagement and provide more relevant information include new hashtags, short interview videos, and mosquito facts. For example, the hashtag #MosquitosporelMundo consists of publishing news from around the world about the *Ae. aegypti* mosquito. It is an opportunity to introduce new control methods that are being used across the globe and making relevant the issue of diseases transmitted by the mosquito. This hashtag is the one that has the most organic engagement with people and the most shared. A share is a strong social endorsement because it will be in the newsfeed of the friend of the persons who shared.

On August 2019, PRVCU opened a YouTube account to share the educational videos that have been developed. In addition, a PRVCU Twitter account was opened and has helped to connect with vector control units in the USA and official Puerto Rico government accounts like PRDH and PRDE. Digital newsletters are developed every month and the website is frequently updated too.

Text Messages

During PRVCU outreach activities, participants reported a preference for text messages to receive information about mosquito control. Using a text messaging platform, PRVCU sends two messages per month with key messages aligned with other communication efforts. To date, 11 text messages have been sent to more than 800 contacts obtained during community activities in Ponce and the south region. These messages redirected people to the PRVCU website and/or social media pages. The project will be extended to other contacts from the metro area.

Developed partnerships and conducted joined activities of significant interest

Collaboration with Ecoexploratorio: Puerto Rico Science Museum

PRVCU and the EcoExploratorio Puerto Rico Science Museum started a collaboration on April 2019, to provide informal education about the biology and control of the mosquito *Ae. aegypti*. PRVCU trained all 18 staff members of the EcoExploratorio about the mosquito *Ae. aegypti*.

In July 2019, the EcoExploratorio started their tour ExpoPlaneta Digital in the major malls in Ponce, Mayaguez, Guayama, and Aguadilla, reaching around 5,280 individuals of all ages (Figure 10). This tour includes a mobile exhibition with three booths and a short movie clip about *Ae. aegypti*. The malls estimated an indirect impact of 67,000 individuals (based on how many people visited the mall during the day of the exhibition).



Figure 10. Social Media promo for the Expo Planeta Digital tour and EcoExploratorio's staff in one of their mosquito booths during the tour.

An exhibition in their Oceánica Exhibit in Plaza Las Américas shopping center was developed and the inauguration was scheduled for March 2020 but was postponed due to the COVID-19. Given the current restrictions, in-person activities scheduled as part of this collaboration were replaced by virtual activities. **The Ecoexploratorio provided a week of webinars on their Facebook page called Virtual Science: Mosquito Edition from June 29 to July 3, 2020, with a reach of 37,801 views.** The results of this initiative are in Table 5. All the webinars were broadcasted via ZOOM and Facebook Live, and then uploaded on their YouTube channel.

Date	Topic	Zoom (Registered)	Facebook Live views	YouTube views	Total reach	Links
June 29	El animal más mortal del mundo	77	7,700	11	7,788	https://bit.ly/3b4Tdzf https://bit.ly/3gCr0ko
June 30	Biología, ecología y métodos de control del mosquito <i>Ae. aegypti</i>	184	7,700	51	7,935	https://bit.ly/31ArxPu https://bit.ly/32yQURc
July 1	Trampas y repelentes de mosquitos	242	9,100	12	9,354	https://bit.ly/31COC4k https://bit.ly/3b3PfH0
July 2	Uso de mosquitos macho con <i>Wolbachia</i> en Ponce, Puerto Rico	234	10,400	21	10,655	https://bit.ly/3hD3Llv https://bit.ly/3gGte2a
July 3	Especies de mosquitos y otros vectores	158	1,700	11	1,869	https://bit.ly/2EqW7m9 https://bit.ly/32BMJE6



Puerto Rico Primary Care Association and the World Mosquito Day 2019

As part of their MOU with PRVCU, the Puerto Rico Primary Care Association supported and participated in the World Mosquito Day 2019 events (August 20, 2019). On July 2nd, 2019, the governor signed a proclamation to commemorate August as the *Ae. aegypti* Mosquito Awareness Month. During August, PRVCU provided training to other organizations in how to participate in the Mosquito Day.

The World Mosquito Day seeks to increase citizen participation in activities related to the reduction of breeding sites. In 19 municipalities throughout the Island, people participated in breeding site reduction and outreach. **The activities impacted 1,995 individuals, and 1,153 breeding sites were removed.** The most common breeding sites found were water meters (14%), buckets (18%), bottles (19%), and pots (29%). Participants carry out inspections in various settings such as schools (36%), communities (31%), and houses (33%). PRVCU was able to engage partners from different sectors during this event: 12 Centers 330, nine Social organizations, two Municipalities, and two private entities.

Zika Project Advisory Board, Medical Science Campus, University of Puerto Rico

PRVCU was invited to be part of an Advisory Board of Zika Project in the Graduate School of Public Health of Medical Science Campus, University of Puerto Rico. PRVCU is represented in the Board by Julieanne Miranda-Bermúdez, Community Mobilization Program Supervisor. This Board is part of a partnership between Leadership Education in Neurodevelopmental Disabilities (LEND) program from Indiana University and University of Puerto Rico. The project started in Puerto Rico to develop professionals in the neurodevelopment area of children whose mothers were exposed to Zika. To disseminate the results of this partnership and to learn what other entities are doing, a conference was conducted on October 2019 where PRVCU presented its vector control and community efforts.

Collaboration with Community Facebook pages

In order to maximize the impact of social media efforts, PRVCU identified key groups such as organizations, schools, community leaders, and restaurants to share certain messages. Collaborations with community Facebook pages were established where PRVCU provides social media management training and materials, and the page managers share PRVCU posts with their audiences. This way, the message reaches more people. The strategy started within the Municipality of Ponce and community leaders and has recently being expanded to other municipalities and other types of organizations. Currently, **PRVCU has agreements with 48 organizations and is reaching over 274,183 followers.**

Collaboration with restaurants

PRVCU started a pilot project in Ponce in November 2019 with 13 restaurants (more than 6,500 guests) that have outdoor areas where consumers are exposed to mosquito bites (Figure 11). As part of this collaboration, PRVCU provides repellents to the restaurant administration and they allow PRVCU to leave table tents with key messages about disease prevention and control methods. After the positive feedback from the restaurants, PRVCU extended this project to other restaurants in Ponce and the metro region. Currently, **PRVCU has collaborations with 46 restaurants in five municipalities.**

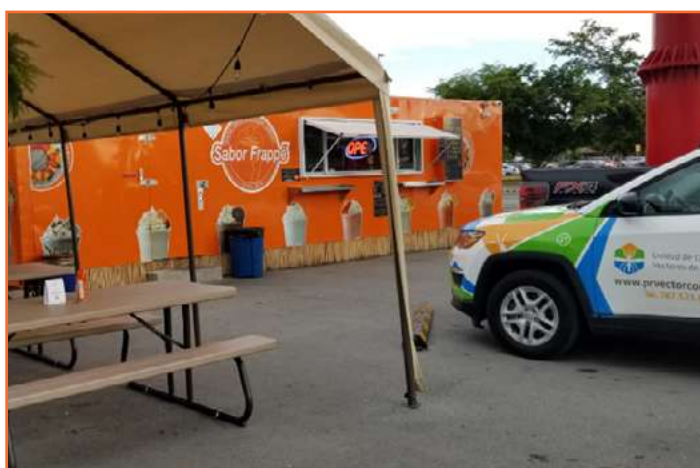


Figure 11. Picture of one outdoor restaurant with table tents and repellents provided by PRVCU.

Main Achievements in Vector Control

Initiated the evaluation of alternate vector control methods

Evaluation and Implementation of Wide Area Larvicide Spray (WALS)

The WALS approach has been tested in several U. S. jurisdictions with varied success. Given the reported insecticide resistance in Puerto Rico, optimizing this tool for use locally could enable greater coverage of area at a lower cost than existing boots-on-the-ground approaches. The technique consists of applying larvicide (VectoBac WDG) diluted into water at label rate (Figure 12).



Figure 12. Field technicians mixing VectoBac WDG in Mixing Rig at the Dorado emergency management facilities under the supervision of their pesticide applicator certified personnel (Left). Truck-mounted Buffalo turbine machine ready to start spray mission in Dorado (Right).

Bayamón

WALS was evaluated last year in two communities in the Municipality of Bayamón showing more than 30% reduction in the mosquito population. In 2019, the municipality decided to extend the project to six additional communities. A reduction in the mosquito population was observed for the areas treated with WALS (Figure 13). Although it was a modest reduction, these results are much better than what has observed after spray missions with permethrin conducted by a different municipality where no reduction in the population was observed.

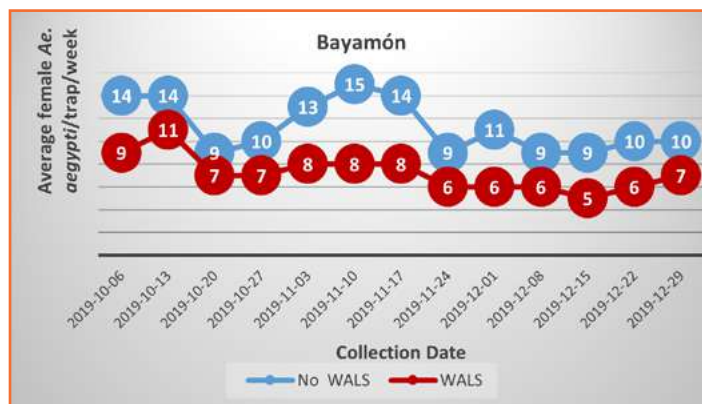


Figure 13. Average *Ae. aegypti* female counts per trap per week for Bayamón treated (red line) and untreated (blue line) areas.

Dorado

A collaboration with the Dorado Rotary Club and the Municipality was established to develop the first Integrated Vector Management Project in Puerto Rico. PRVCU provided technical support in vector control, mosquito surveillance, and insecticide resistance assays; the Dorado Rotary Club provided funds for the control strategy and the municipality supported vector control interventions. All partners supported in the community engagement activities led by PRVCU. Community and outreach activities included distribution of educational materials and repellents, telephone interviews, community meetings, schools' visits, educational booths and talks, house to house interventions, container index, and a health fair that reached 1,280 people.

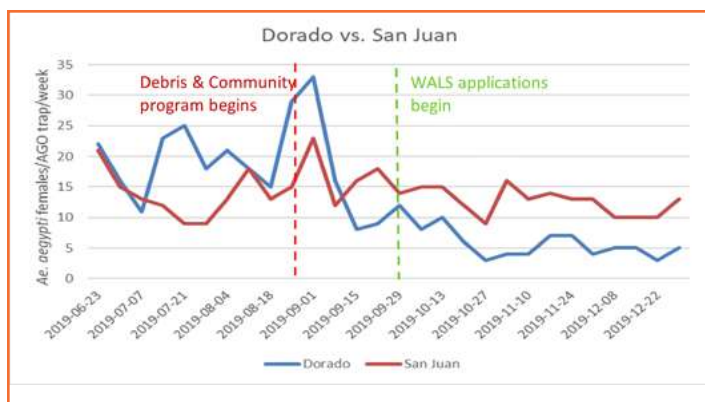


Figure 14. *Ae. aegypti* populations overtime after debris pickup and WALS application in Dorado as compared with San Juan where such activities did not occur. As seen, the effect of debris pick-up on *Ae. aegypti* populations can be dramatic.



Figure 15. After starting WALS in Dorado, 70% of the treated area was protected against dengue. In comparison, the percentage in San Juan remained around 10 – 20% (there are always a few places with too few mosquitoes to sustain an outbreak).

As part of the vector control efforts in Dorado, in September 2019, WALS was extended to the Municipality of Dorado and evaluated in three communities. For this project, specific adjustments were made based on the previous experience: 1) increased volume rate for the larvicide application, 2) debris pickup in the treated communities and 3) strong community engagement for breeding site reduction. As seen in Figure 14, after debris was collected from the community, the mosquito counts were reduced 2/3, from more than 30 female mosquitoes per trap per week to less than 10.

Figure 15 above shows the results in the treated area of Dorado vs the untreated area in San Juan. After a few weeks of WALS, up to 70% of the treated area of Dorado had too few mosquitoes to sustain a dengue outbreak compared with about 20% of San Juan. This analysis is based on the number of traps that had less than 3 mosquitoes per trap per week which according to Sharp et al. 2019, might be too few mosquitoes to sustain an arbovirus outbreak.

Tires Vector Management

Given that the pick-up of used tires in Puerto Rico has not been consistent in recent years, there is a huge accumulation of tires on the Island. These tires represent potential breeding sites for mosquitoes. To address this situation, Nyguard (Pyriproxyfen) has been identified as an effective product to use in tire shops. The Municipality of Bayamón in collaboration with PRVCU is applying this product to tire shops in their municipality. At the time of this report, over 80 tire shops have been treated in the area.

Implementation and Evaluation of *Wolbachia* Suppression in Ponce

Stakeholders Engagement

In September 2019, a full proposal to conduct an evaluation of *Wolbachia* Suppression in Puerto Rico was presented to the PRVCU leadership board and technical committee. The evaluation was proposed to be conducted as part of the COPA project. This project seeks to better understand the prevalence and incidence of arboviral diseases in Puerto Rico and the effects of vector control interventions in mosquito populations and disease risk. COPA is a collaboration between PRVCU, Ponce Health Sciences University (PHSU) and CDC. The proposal was considered acceptable and the project was supported to be carried out.

Additional meetings with stakeholders outside the PRVCU boards have been conducted as well to understand their concerns and determine if they would support the implementation of the technique. More than 35 stakeholders have been approached from academia, environmental groups, municipality representatives, central government, faith-based organizations, among others. None of them have expressed opposition against the evaluation of this technology and all understood the importance of considering this type of technologies for Puerto Rico.



Permits

In May 2019, the Environmental Protection Agency (EPA) issued an Experimental Use Permit (EUP) for the *Wolbachia wAlbB* strain to be evaluated as a biological control for *Ae. aegypti*. This permit included Puerto Rico as part of the sites where the technology could be evaluated. After the project was approved by the PRVCU boards and following several orientations with the Puerto Rico Department of Agriculture (PRDA), an application for a local permit was submitted and approved in February 2020.

Communications and Community Engagement Results

Based on the proposal approved by the PRVCU Board, the Community Mobilization team in Ponce implemented community activities to talk about mosquito awareness, the COPA project and *Wolbachia*. These activities include health fairs, booths, and talks. Some of the most important efforts for this project are summarized below.

1. **Trainings:** A training to provide PRVCU, CDC and PHSU personnel with basic knowledge about the project was conducted in October 2019. The training included basic concepts about *Wolbachia*, frequently asked questions, crisis management and communication techniques.
2. **Community meetings and presentations:** Nine meetings with a total participation of 73 community leaders were conducted to introduce the project. Additional meetings were not possible given the current pandemic, but four virtual educational talks were conducted with the Principal Investigators (PIs) reaching more than 500 people. Three of these talks were for the general public and one for researchers and academics. In addition, a presentation about the project conducted in collaboration with the EcoExploratorio reached over 10,000 views via Facebook live.
3. **Educational Material about *Wolbachia* and media efforts:**
 - **Video:** A video about *Wolbachia* was developed to educate the public about the technique and has become an important tool to educate about the technique. It is published in our website, social media and used in presentations.
 - **Website:** detailed content about the *Wolbachia* technique was created to provide additional information and answer frequently asked questions from the public. The site was launched in June 2020.
 - **Ad campaign:** A small ad campaign was developed targeting Ponce communities to increase awareness and understanding about the male mosquitoes with *Wolbachia* project in Ponce.
 - **Media Tour and press releases:** The project was officially announced in June 2020. The project was explained to the media during a virtual meeting and over 10 articles were published about the project, followed by 11 interviews to the PIs.
4. **House to house visits:** PRVCU is conducting house to house visits to provide information about COPA and *Wolbachia*. During these visits, PRVCU also supports PHSU personnel by scheduling visits for the PHSU personnel to conduct serosurveys and questionnaires. In person visits were put on hold due to COVID-19 restrictions and phone calls were conducted to reach community members. PRVCU personnel oriented over 370 residents via phone calls.
5. **After the lock down was lifted,** PRVCU conducted house to house visits following strict social distancing measures. At the time of this report, 31 clusters and almost 6,000 houses were visited, 1,865 people were oriented, and 1,765 people participated in the survey.
6. **Acceptability Survey:** A survey was developed to assess the acceptability of the Ponce residents for the male mosquitoes with *Wolbachia* Suppression technique. Initially, the survey was conducted via phone calls with a participation of 375. The interviewer explained the technique first and then asked a series of questions including if the person supported the use of male mosquitoes with *Wolbachia* in his/her community. 84.3% of the respondents supported this technique to be conducted in their communities.
7. **After the lock down was lifted,** the survey was conducted during the house to house visits. At the time of this report, 1,765 residents were interviewed, and the support remained very similar (83.9%, Table 6) to the one obtained during the phone calls. Only 4.5% of the residents expressed they did not support the project. The general reasons to oppose were that they have doubts about the technique, need more information or were concerns about unknown effects. Therefore, we continue with our plan to



provide orientation through various outlets. We have started to include restaurants and other businesses in our visits, not just residential areas.

Table 6: Frequency of responses during phone call and house visits interviews about *Wolbachia* implementation in Ponce.

Response	Frequency (%) of support during phone interviews	Frequency (%) of support during house visits (up to July 2020)
Oppose	15 (4.00)	80 (4.53)
Neutral	31 (8.27)	162 (9.18)
Support	316 (84.27)	1,481 (83.9)
Do not know	7 (1.87)	27 (1.53)
No response	6 (1.60)	15 (0.85)
Total	375	1,765

Implementation

In June 2020, PRVCU signed a contract with Verily Life Sciences to start the implementation of the project. Prior to this, discussions were already undergoing with Verily collaborators to adapt our facilities to run the *Wolbachia* project in Ponce. By September 2020, the laboratory and office spaces are expected to be completed with the necessary modifications. Equipment is being sent to Puerto Rico and the necessary assays are being conducted to start mosquito releases in September 2020.

Increased collaboration with municipalities and government agencies

During this year an important focus of PRVCU has been to establish collaborations with municipalities and offer our support. To date, we have been able to establish strong collaborations with several municipalities including Bayamón, Guaynabo, Dorado, Aguadilla, Toa Baja, Caguas and Ponce.

Puerto Rico Vector Management Association

PRVCU is establishing the Puerto Rico Vector Management Association. PRVCU staff drafted the By-laws which were revised by a selected group of stakeholders. In addition, an official logo was developed to represent the association (Figure 16).



Asociación para el Manejo
de Vectores de Puerto Rico

Figure 16. Selected logo for the Vector Management Association

A flyer of the Association was developed and distributed during outreach activities as well as posted in PRVCU social media pages. In addition, PRVCU participated in Experiencia Puerto Rico 2019, where mayors from Puerto Rico visited the PRVCU informational booth and showed interest in becoming part of the Association. To date, 59 individuals from different sectors (Table 7) have become members representing 32 local municipalities and two additional countries (Ecuador and Mexico). Efforts will continue to recruit members using social media strategies as well as announcements using traditional media.

Table 7 Participants of the Puerto Rico Vector Management Association by the type of organization they represent.

Type of member	Quantity
Private Sector	14
Academia	15
Public School	2
Municipal Government/Agency	24
Federal Agency	4

Truck Rodeo

On January 29, 2020, a truck rodeo was celebrated at the PRVCU facilities in San Juan. PRVCU and Clarke, a mosquito control company, collaborated in the inspection and calibration of ULV machines from the municipalities. The objective was to increase the municipality capacity for mosquito control in Puerto Rico. The activity included light mechanics, calibration of the ULV equipment, and basic maintenance. Seven municipalities participated of the event including Bayamón, Caguas, Canóvanas, Cataño, Dorado, Morovis, and Vega Alta. As part of the event, Clarke personnel provided training to PRVCU Field Technicians and certified them for ULV machine calibration, droplet size testing and basic mechanics. In addition, Field Technicians got certified in the use of Buffalo Turbines for WALS (Figure 17).

Figure 17. Truck Rodeo conducted to improve the capacity of the municipalities for vector control in Puerto Rico.



Collaboration with the Department of Health

PRVCU supported PRDH with a vector control project in cemeteries funded by hurricane emergency response funds. The purpose of the project was to determine the habitats, quantity, and species of mosquitoes found in cemeteries in Puerto Rico and understand where they come from to develop effective control strategies.

The role of PRVCU in this project was to develop an online tool to collect the data generated by the PRDH inspectors working on the cemeteries. The platform used was Survey123 from ESRI ArcGIS. PRVCU also established a mosquito surveillance system using AGO traps in 12 cemeteries to evaluate if the measures taken by the PRDH inspectors were effective. In addition, PRVCU developed and provided educational flyers and posters to be displayed in the cemeteries.



Emergency Outbreak response plan for municipalities

After the observed increase in the number of dengue cases in Puerto Rico, PRVCU developed the *Ae. aegypti* Emergency Management Plan for Puerto Rico Municipalities. The document included a series of recommendations, revised by CDC-Dengue Branch personnel, that were shared with the municipalities for their implementation. The plan not only includes actions that can be taken immediately, but also provides evidence about the most effective alternatives currently available and the resources that can be offered by PRVCU.

References

Sharp, T., Lorenzi, O., Torres-Velázquez, B., et al. (2019). Autocidal Gravid Ovitrap protect humans from Chikungunya virus infection by reducing *Aedes aegypti* mosquito populations. PLoS Negl Trop Dis. 13(7): e0007538.

Contact



Dr. Grayson Brown

Director

Web: <http://prvectorcontrol.org/>



Dr. Marianyoli Ortiz

Associate Director

Web: <http://prvectorcontrol.org/>



Events

Econo Campaign - August, 2019





With the community post Earthquake - January, 2020





Rodeo - January, 2020



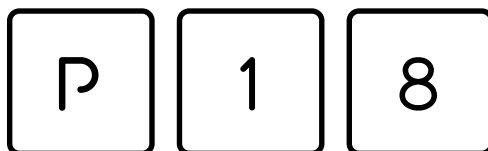


Fiestón Cultural - February, 2020



ENTREPRENEURSHIP

parallel¹⁸



Colmena66
Tu Conexión Empresarial

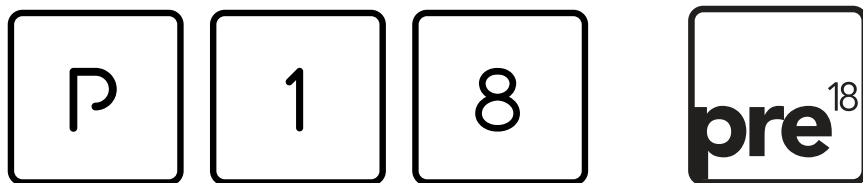


Resiliency and
Business Innovation



Puerto Rico
Science, Technology
& Research Trust

parallel¹⁸



Description of the Program

Parallel18 is a top-level, performance-driven international startup program with a social mission: offering 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 a little over two times the average in the startup world. Meanwhile, 61% of the startups that have graduated from parallel18 are Latinos.

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 an international business hub that offers US legal frameworks' structures and protections with cultural connections to Latin America and the Caribbean and a bilingual highly-trained workforce.

We provide:

- Training and mentorship (pre18 12 weeks; P18 20 weeks)
- A guide and methodology to track growth and structure the company for scalability
- Equity-free funding (pre18 US \$20K; P18 US \$40k)
- Connections with potential customers in top companies
- Investment opportunities
- Additional support through the Puerto Rico Science, Technology and Research Trust in areas such as intellectual property; technical assistance to access funding for research, development, and commercialization; matchmaking with top research talent and organizations, among other expert resources.



Impact Metrics



During the four (4) years and seven completed (7) generations of the P18 program, parallel18 has received **three thousand eight hundred and three (3,803)** applicant companies from over seventy (70) countries, with **one hundred ninety-eight (198)** companies that completed the program, a very competitive acceptance rate of only six percent (6%). Among these, **sixty-three (63)** have Puerto Rican founders, and **one hundred thirty-five (135)** are foreign, a local representation of thirty-two percent (32%) from the overall companies that have participated.

For pre18, during its two years (2) and three (3) generations, we received **eight hundred and fourteen (814)** applications from Puerto Rican entrepreneurs with developed concepts or prototypes. These efforts (from Gen.1 and Gen.2) led to thirty-three (33) Puerto Rican companies being selected for P18, demonstrating the quality and caliber of the pre18 pipeline that compete to join our international accelerator. Additionally, an average of thirty percent (30%) of companies in the program had a female as their team lead. This metric is way above the industry standard of twenty-two percent (22%) for comparable business incubation and acceleration [programs such as YC.](#)

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. Our latest assessments inform that for generation seven (7) of the program, the total revenues generated by our companies during their participation in the program were **three million one hundred sixty-five thousand (US \$3,165,000)**, for a total combined global revenue for the first seven (7) cohorts of **one hundred nineteen million eight hundred thirty-five thousand two hundred eighty-one dollars (US \$119,835,281)**. Puerto Rico revenues for generation seven (7) was nine hundred sixty-seven thousand three hundred fifty-four dollars (US \$967,354), for a total combined local revenue for the first seven (7) cohorts of forty million three hundred ninety-three thousand six hundred forty-five dollars (US \$40,393,645). At the same time, fifty-four (54) job positions were created by the companies in our generation seven (7), including full time, part-time, and internships, for a combined total for the first seven (7) cohorts of six hundred and 6 (606) job positions.

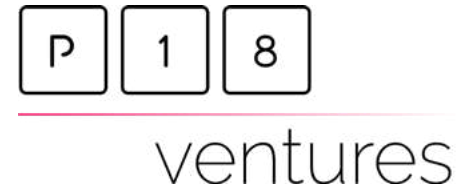
To foster the interest for innovating in Puerto Rico and to inspire more local entrepreneurs, parallel18 has continued executing its GiveBack Program. In it, participants must offer workshops to students on technology and entrepreneurial development, and provide mentorship support to emerging entrepreneurs at events of the Puerto Rico startup community, as mechanisms of empowerment. During its first six **(6) cohorts**, the program facilitated four hundred forty engagements **(440) by our entrepreneurs**, and an impact in **eleven thousand eight hundred thirty-two (11,832)** total lives around Puerto Rico.



Our sub programs

P18Ventures

Startups rely on investment to fund their operations and boost their growth. But raising smart money is not an easy task. Founders need a clear company strategy and to amplify their options to identify the right investors. This is exactly what our subprogram P18Ventures does: offer our startups advice, connections to curated investors, and the chance to apply to our follow-on matching fund.



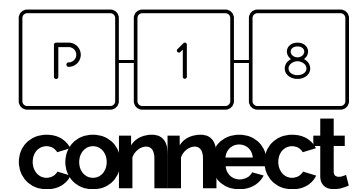
Our program has taken an active investing role to supplement the existing investment landscape in Puerto Rico and further provide capital to the growing number of emerging startups in the local ecosystem. Since our inception, we have been executing a follow-on matching fund designed to co-invest in promising startups fresh from parallel18 that are positively impacting Puerto Rico's economy. With this fund, the Puerto Rico Science, Technology, and Research Trust (PRSTRT) matches private capital raised by entrepreneurs with a target investment of US \$75K (tickets of US \$25K to the US \$150K), in exchange for equity or convertible notes. Up until Gen.7, P18Ventures has invested in twenty-four (24) parallel18 companies a total of one million seven hundred thousand dollars (US \$1.7M).

Collectively, P18 graduated companies have raised well over US \$100M in private capital. In fact, the island's investment landscape is growing exponentially, with Puerto Rico based investors deploying over US \$15M in parallel18 local companies in just the last four years, an unprecedented amount for local startup investment. The parallel18 investor network grows continuously to make available additional capital. To date, it has surpassed six hundred (600) local and international members, which actively invest in startups from Latin America, the United States, and Puerto Rico.

More recently, in our mission to support the long term sustainability and impact of innovation driven enterprises with commercial and operational ties to Puerto Rico, we launched a special million dollar (US \$1M) impact investment fund curated to support P18Alumni companies during the downturn of the global economy caused by the worldwide COVID-19 pandemic. With this fund, the Puerto Rico Science, Technology, and Research Trust provides equity-based investment financing with repayment flexibility for capital and operating costs. The goal is to ensure that companies previously supported by parallel18 can weather the challenges of an increase or decrease in demand due to the current situation or modify their business model or strategy to take better advantage of business opportunities under the actual circumstances. The Business Continuity Fund was rapidly and successfully deployed in thirty-nine (39) P18Alumni companies.

Corporate Innovation Program / 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 corporates 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. In the past four (4) years, up to generation seven (7), we've engaged with over 80 corporate partners and conducted over 130 P18Connect meetings between startups and corporates. Of those who met with corporates during the program 45% say that they are still in contact, and 29% have closed deals.

In line with these efforts, we also created the parallel18 Corporate Innovation School. This program exposes top employees of big companies to an entrepreneurship state of mind, encouraging them to solve their company's most significant challenges using disruptive trends and technology, and then connecting them with relevant startups to help them achieve this. These companies are well-established, traditional Puerto Rican businesses, or multinational companies with local presence that are committed to exposing their leadership team to innovative practices. We created this program because we believe the most effective way of integrating innovation into an established business is to involve the company's top talent, as they're the ones closest to the problems the company faces and are the ones who will



be in charge of implementing any changes in the business model. Puerto Rico is a unique place for startups to grow, in part because there's a healthy set of big companies from top industries that are thriving and that are looking to incorporate innovative practices. We believe the key to successful collaborations is to support both startups and big corporations in their journey of working together to ensure their relationships yield the maximum amount of impact for both parties and for Puerto Rico. In January 2020, we deployed the first cohort of this program with one corporate partner, Puma Energy. A post-program survey revealed that 100% participants felt that the objectives were met and that 85% of the participants were extremely likely to recommend this program to other companies.

Achievements



Parallel18 has

- Female-only entrepreneur initiatives like A Seat at the Table, made Gen.7 one of the generations that had more female-led companies raising investment.
- Stronger network of mentors and accelerator programs with a partnership with Google for Startups; participated in London to share our knowledge about operating an accelerator.
- Able to attract very experienced and high-quality mentors from Rinoti Amin, former Director of Digital Marketing at Paypal; Holly Chen, former Head of Global Growth at Slack; Ravi Mehta, former Chief Product Officer at Tinder; Jeff Nicholson, former CMO at VaynerMedia.

This year, P18Ventures executed an unprecedented 42 investments in P18Alumni to continue catalyzing the investment landscape in Puerto Rico. From our ongoing P18Ventures Matching Fund we deployed eight (8) new investments for a total of five hundred seventy-five thousand dollars (US \$575K) in the following companies: CINCO Engineering, Dokimi, DataWifi, Amasar, Agtools, BoxPower, Fitco, and Live Green Co, bringing the P18Ventures portfolio to twenty-four (24) startups and a total investment of one million seven hundred thousand dollars (US \$1.7M). Five (5) of the matching fund investees mentioned previously also received allocations from our special million-dollar P18Ventures Business Continuity Fund, which also supported an additional thirty four (34) P18Alumni, for a total of thirty nine (39) companies that received much needed funding during the challenging COVID-19 times.

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 Morro Ventures, Aurora Angel Network, Ashford Venture Partners, Guayacán IDEA Seed Fund and Semillero Ventures. 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.

As part of our efforts to further develop the startup and investment community in Puerto Rico and execute our commitment with the United States Economic Development Administration (EDA), on January 14-17 we launched in parallel two new multi-day annual events: the Puerto Rico Investor Roadshow and the P18Ventures Summit. For our first edition, seven visiting investors from the United States and Latin America visited parallel18 to learn firsthand about the local startup ecosystem and investment landscape in Puerto Rico. The event successfully showcased Puerto Rico as an emerging bridge growing ecosystem between North and South America and created new business and investment opportunities for the ecosystem. The investors also engaged with 11 alumni companies from our investment



portfolio during the P18 Ventures Summit celebrated in parallel18, and even served as panelists at the How to Invest in Startups investor education event series held quarterly to share their expertise with the community of current and potential angel investors in Puerto Rico. Both the investors and the P18Ventures companies were also able to mentor the Gen.7 cohort during that week. P18Ventures is committed to continue enhancing the investment support infrastructure of parallel18 and access to capital for Puerto Rican startups.

In terms of the program's global exposure it has been limited due to COVID-19. However, Eduardo did present in the Google for Startups Global Meetup, in London, sharing his experience about Operating and Accelerator in February 2020. Sebastián also was invited by the Government of Dominican Republic to participate as a keynote speaker on how governments can innovate and the parallel18 case study.

Currently, parallel18 is supporting its eighth cohort, the very first Puerto Rican only edition of the accelerator. This group is composed of 13 local startups.

COVID-19 impact and action plan



Even before lockdowns were put in place, parallel18 had a plan to adapt to a COVID-19 world. The first thing to be dealt with was Gen.7's DemoDay. The event was our first fully virtual initiative and had more than 6,000 views. Then, came figuring out what to do about Gen.8, at the beginning of the pandemic we were in the middle of the selection process for this international group at a time where borders were closing up. A decision was made to continue the process but only with Puerto Rican companies that were going to be evaluated by a special selection committee. They started the program in May, in what became our very first fully remote P18 cohort.

Last but not least, the team recognized that alumni were going to suffer the pandemic's economic impact and were going to need investments and connections to keep their companies growing or even afloat. This is when we formalized our Alumni Program, an initiative that offered mentorship, office hours, and connections for our graduated startups. The culmination of this Program was our amazing Alumni Week, in which we had corillos (strategic meetings between founders and parallel18 team) and top notch mentors (like Alfredo García, and Ravi Mehta.) A total of 16 corillos occurred and over 70 startups participated in the week's events.

In terms of investment for our alumni, we decided to design a special business continuity investment fund curated to support our alumni, and we called it the P18Ventures Business Continuity Fund. Already announced to our alumni, the investment portfolio will be under our follow-up fund subprogram, led by our Director of Operations, Lucas Arzola. The fund was rapidly and successfully deployed in thirty nine (39) P18 alumni companies.

The parallel18 team is still adjusting to the times and finding ways to impact underrepresented entrepreneurs in their goal of creating high-impact businesses.



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.

Our parallel18 team has learned, adapted, and developed key resources through an innovation and resiliency mindset, allowing us to act quickly and offer more customized tools and connections for our founders to deploy. This gave us the confidence to go head-on with the challenges of building a virtual community through this pandemic.

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.

Contact



Eduardo Padial

Operations Director

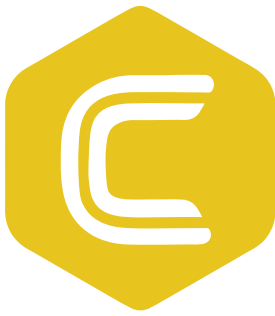
Web: <https://www.parallel18.com/>



Event

PRE18 Demo Day - September 20, 2019





Colmena66

Tu Conexión Empresarial

Mission & Vision

Colmena66 (C66), is a program of the Puerto Rico Science, Technology & Research Trust. We connect entrepreneurs with the resources they need to start or grow their businesses. We analyze the gaps in the entrepreneurial ecosystem and work together with our Business Support Network to find solutions.

The program's mission is to facilitate the access to the resources needed to start or grow a business and to strengthen Puerto Rico's entrepreneurial ecosystem.



The program's vision is an entrepreneurial ecosystem that is inclusive, diverse and accessible where anyone, regardless of their demographic or socioeconomic background, can start or grow their business.

"Entrepreneurship is at the intersection of economic and community development and entrepreneurs thrive when an ecosystem that allows for the fast flow of talent, information and resources helps them quickly find what they need at each stage of growth. 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."

Our Accomplishments

Part of a Family of Ecosystem Builders

Three years ago, Colmena66 was the newest member in a nationwide network of over 50 organizations of ecosystem builders. SourceLink, Colmena66's second family is an organization that helps communities with Research and Development to identify, connect, empower, and measure their entrepreneurial ecosystems.

For the past three years, Colmena66 has consistently ranked among the top affiliates in key performance indicators. We are very proud to know that among more than 50 nationwide affiliates of SourceLink in 2019, Colmena66 ranked on the top 5 affiliates in: use of our tracking tool SourceLink Pro (#4), Searches Using Resource Navigator (#2), Network Strength (#5) and Counseling Hours (#4).



“We are so proud to have Colmena66 as part of the SourceLink family. It has been a privilege to watch the development of the program in Puerto Rico over the past three years. Through its outstanding leadership, the program has adapted and grown based on the needs of the people they serve, through hurricanes, earthquakes and pandemics, providing excellent support to the community of entrepreneurs and small businesses. And that leadership extends beyond the island as they’ve engaged our community of ecosystem builders and generously shared forward their insights, learnings and tools with the entire SourceLink community.”

- **Maria Meyers**

Founder, SourceLink

Vice Provost and Executive Director, UMKC Innovation Center



Colmena66 Resource Network Is growing

In 2019, Colmena66 added 28 new members to the network (our beehive). The first measure of a strong beehive is the number of bees in the hive. Strong hives have an abundance of worker bees. A healthy ecosystem creates social capital through collaboration, cooperation, trust, and reciprocity from which we harvest success stories from our entrepreneurs. Our beehive is now made off more than 240 resource partners in multiple sectors such as non-profits, academia, public sector, and for-profit organizations. These organizations provide services such as capacity building, events, loans, investment, legal issues, among others. The variety of our network allows us to help entrepreneurs in different stages of the entrepreneurial process, from the concept to the expansion of the business.



Resource Network Meetups

To keep our beehive strong and united, we hosted 5 Resource Network Meetups where we connected with 124 participants from more than 80 different entrepreneurship support organizations (ESOs) in 5 different regions around the island: Mayaguez, Ponce, Gurabo, Barceloneta, and San Juan. Every year, we include new strategic regions such as East and Central regions.





What our Resource Partners in the beehive say about Colmena66:

- 92% Colmena66 adds value to the business ecosystem of Puerto Rico
- 97% Colmena66 has helped business support organizations be more interconnected
- 94% met other organizations that provide business support that they did not know before thanks to Colmena66
- 82% referred an entrepreneur to another organization in the business ecosystem to receive the service or support
- 97% Colmena66 helped make business support resources more visible and accessible to entrepreneurs



"Before Colmena66 the initiatives of organizations and agencies were dispersed and lacked connections. The Beehive has provided a structure and organization that was desperately needed in the ecosystem."

Dr. Manuel Lobato, UPR i+c
University of Puerto Rico Rio Piedras

Supporting communities and Resource Partners

We are committed to the community we serve. Our entrepreneurs go first. Through our Office Hours and participation in events around the Island, we make sure that a diverse audience knows about us, the tools we have developed, and resource partners that can assist them in their entrepreneurial process. During 2019, we attended more than 90 events around the Island as part of our community outreach efforts. These events included but were not limited to events organized by resource partners, college tours, symposiums, info sessions, workshops, launch of entrepreneurial programs, and startups demo days.



Serving more entrepreneurs

In 2019, with almost the same staff size, we exceeded the number of clients we served the year before by more than 1,330 and increased the volume of referrals by more than 6,000. We can say our worker bees were pretty busy. We took care of 2,300 entrepreneurs and business owners through our main communication channels. We assisted them and converted those interactions into more than 7,300 referrals in total to our resource partners. Thanks to our amazing Resource Partners we were able to support and guide Puerto Rico's entrepreneurs, while continuously surveying and measuring entrepreneurs' struggles and needs in order to keep breaking barriers and amplifying the access to resources and information.



Resource Navigator

Through our Resource Navigator™, entrepreneurs and business owners have 24/7/365 access to the more than 240 resource partners in the Red Colmena66. With this digital platform, they can filter their search by industry, business development stage, or type of business, as well as by geography and specific needs. This information is available both in Spanish and English serving in this manner a diverse audience. We registered 11,446 searches through this tool.



Central Calendar

One of our top priorities is creating access ramps to information and opportunities. Every week our team and resource partners upload their events and workshops in our Central Calendar. In one single place, entrepreneurs and business owners can find all the events, workshops, and programs created and hosted by our resource partners or private practitioners. In 2019, we published over 1,300 events in our Central Calendar.

Blogs & Newsletter

We love to share, and our favorite thing to share is knowledge! Through our weekly blog, entrepreneurs and business owners can learn about different resources, tools, programs, and services that can help them start or grow their businesses. During 2019 we published 71 new blog posts.

Every Monday we send our entrepreneurs an email informing them of opportunities, programs, events, in our ecosystem for the week. We had more than 580 new subscribers, resulting in a database of more than 10,000 subscribers.

Guides

Our team developed step by step guides based on frequently asked topics. One of the most popular guides for 2019 was the Merchant Registration, a step that every entrepreneur and business owner needs to complete. This guide was downloaded 642 times. These guides are often co-designed with experts from our network. We have managed to design, implement, and share through our website more than 20 guidelines including:

- a. Starting a non-profit organization
- b. Agricultural industry resources
- c. Financial fundamentals
- d. Intellectual property, patents, and trademarks
- e. Cybersecurity
- f. Marketing, sales and e-commerce

Personalized Action Plan

Entrepreneurs that need assistance usually want to know what the right next steps are to set up, establish, or grow their business. This year we developed the Personalized Action Plan (PAP) which is a customized checklist based on the needs of our clients, so they can have a checklist to understand where to start and how to move their businesses forward. We had 415 Personalized Action Plans requests. This initiative helped us streamline our referral process and increase the number of entrepreneurs that we serve by 509%. ¡That's is great news for Puerto Rico!



Plan de Acción Personalizado de Hilda



SBIR Road Tour

Colmena66 supports the PRSTRT's SBIR/STTR efforts by creating a support structure to help applicants in:

- **Connecting** entrepreneurs and business owners who fit the SBIR/STTR profile to the organizations and resources that can support them in submitting winning proposals.
- **Creating** awareness of the available opportunities in audiences all over the Island through our newsletter, social media and Colmena66 events.
- **Identifying** and pursuing opportunities to attract resources that can help us increase the number of successful SBIR/STTR proposals. For 2019, we decided to join forces and bring to Puerto Rico, for the first time, SBIR Road Tour. The SBIR Road Tour is a national outreach effort to educate and promote innovative technology grants provided through the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. This means that Federal and State Program Managers that represent \$2.5 billion in early-stage funding were able to meet with technology entrepreneurs and innovation supporters on the Island, therefore getting of entrepreneurs closer to their funding opportunities.



Starting in 2018, Colmena66 started gathering resource partners in the innovation ecosystem that support entrepreneurs and researchers in their journey towards applying for SBIR/STTR grants. Some of these key players in the ecosystems are Small Business Administration (SBA), Puerto Rico Small Business & Technology Development Center (PR-SBTDC), Grupo Guayacán, University of Puerto Rico in Mayagüez, and the Puerto Rico Industrial Development Company (PRIDCO).

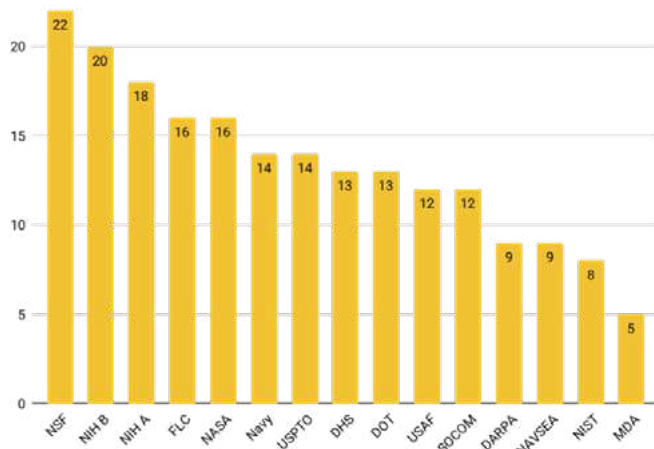
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Participants of the SBIR Road Tour had access to:

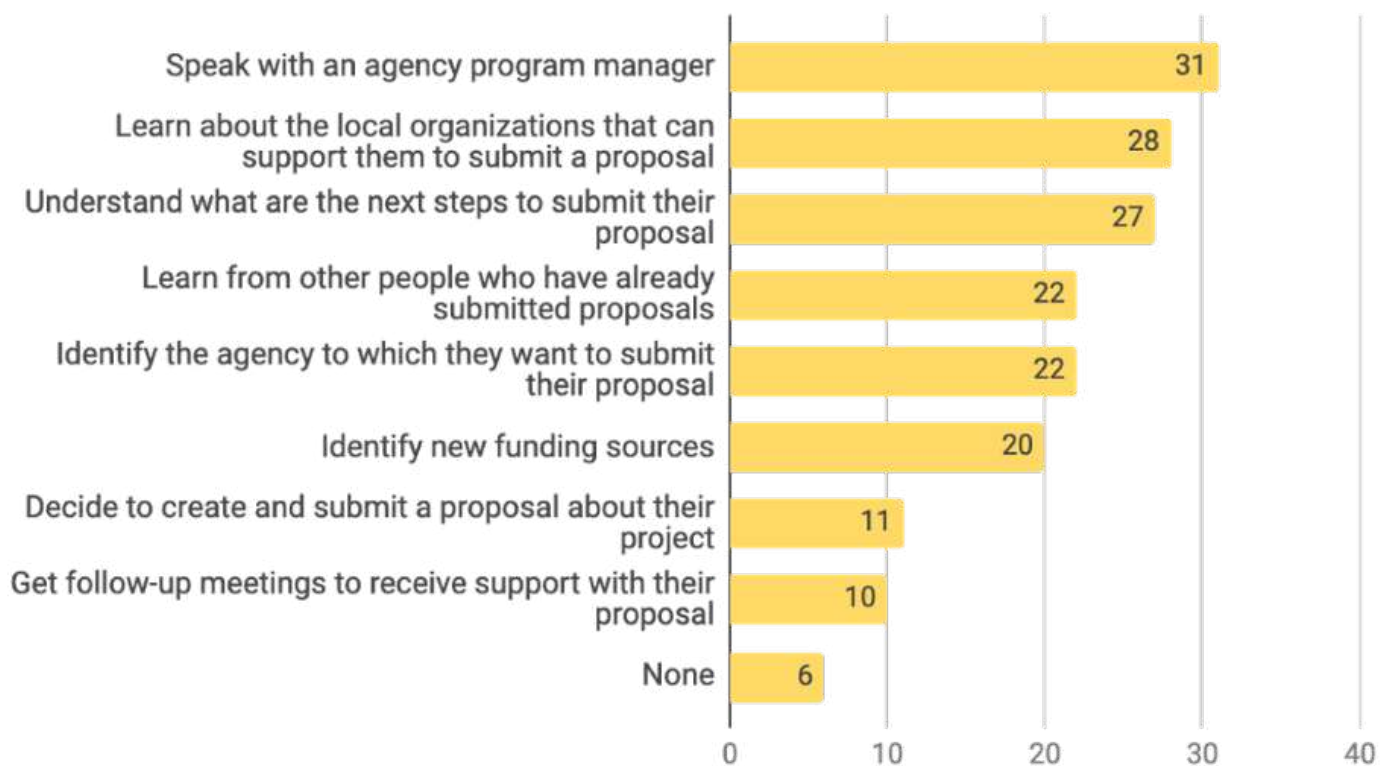
- 10 Educational Sessions
- 11 Agency Reverse Pitches
- 15 Agencies offering 1:1
- 8 Local Resources at Expo

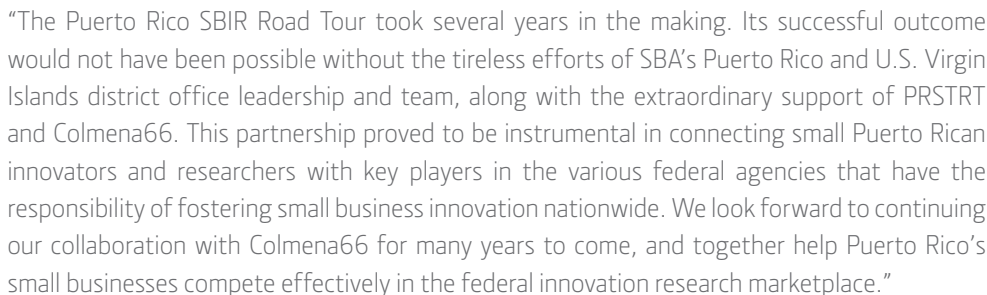


201 on-site meetings!



The participants who completed the post event questionnaire expressed that they were able to:

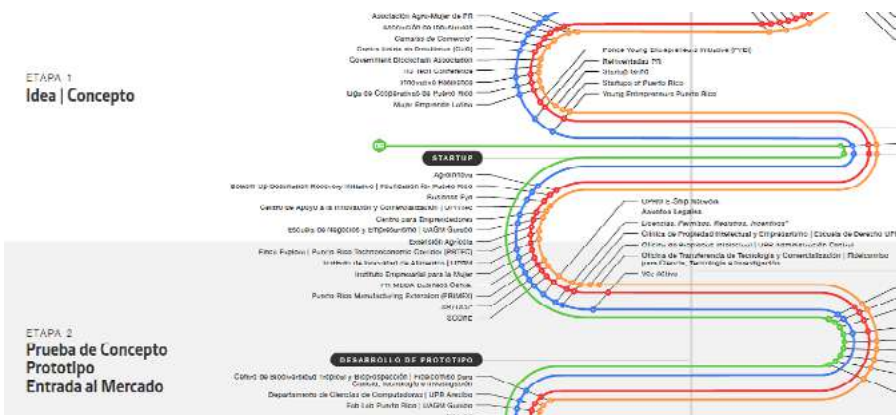




Steven Bulger
Regional Administrator
SBA Region II, NY, NJ, PR & USVI

Tu Camino Empresarial (TCE) is a [map that helps entrepreneurs](#) and business owners find the right resources for their type of business and development stage. In 2018, Colmena66 setup to co-design the first comprehensive map of Puerto Rico's entrepreneurship ecosystems with the help of our resource partners. Together we developed an amazing tool that has helped entrepreneurs navigate their startup development stages and has helped us identify gaps in programming or barriers of access to certain resources and opportunities.

We strongly believe that if it isn't broken you shouldn't fix it, on the contrary, you should grow it, update it, amplify it, upgrade it. That is what we did with Tu Camino Empresarial in 2019. We launched what we call: **Tu Camino Empresarial (TCE)** 2.0, our updated version of the original tool published in 2018 which helps entrepreneurs find the right resources for their type of business and development stage. As our network keeps growing, so does our TCE.





Tu Camino AGROempresarial

The planet has been sending us clear messages about the importance of agriculture, food security and sustainability. After identifying not only a growing need of support for agriculture centered enterprises, but also a wide variety of resources available for them, we knew this had to be linked. We already had the blueprint, we just needed to reach out to our network and make it work! **Tu Camino Agroempresarial:** a map of local organizations and programs which helps entrepreneurs and business owners to identify the right resources for their agricultural business according to their development stage.

Effective pollination increases the amount of agricultural produce, improves their quality and enhances the ecosystem's resiliency. Ecosystem building effective cross pollination among resources and entrepreneurs, increases produce, improves quality and enhances resiliency as well. Hurricane María changed the agriculture industry in Puerto Rico. For the first time, everyone understood the dangerous lack of food security and the importance of growing our own. Since then, especially since we launched Tu Camino Empresarial in October 2018, we have been receiving a great number of calls from agribusinesses who need specific support to meet their needs. As a response, new entrepreneurship support organizations and programs have emerged, thus, we have been increasingly adding agribusiness support programs to our Beehive.

It is important to help people find the right resource when they need it. That is why Colmena66 and 14 key partners from our Beehive meet to co-design an agricultural version, Tu Camino Agroempresarial. A resource map created with the purpose of supporting the local agricultural work and the development of agro-entrepreneurship in a viable, responsible, and sustainable way. C66 is making available over 1,000 printed copies, and 110 TCE Agroempresarial were downloaded through our website. This version includes 184 organizations that provide service on specific needs such as seeds, machinery, workforce recruitment, agricultural technical training, among others. On top of that, you can find highlighted all organizations that specialize in value added products and agroecology. After a year of planning and development, in November 2019 we published this most recent version, Tu Camino Agroempresarial.



Levanta tu Negocio

In 2017, the Levanta Tu Negocio PR initiative was created by a multisectoral voluntary group of professionals and entrepreneurs with the purpose of supporting business development in Puerto Rico after Hurricane María. In 2020, Colmena66 reactivated the initiative in response to the recent earthquakes and aftershocks in Puerto Rico, followed by the Covid-19 pandemic.



Earthquake Response

The morning of January 6th was a scary one for Puerto Ricans, especially those in the southern region. Led by Colmena66, the entrepreneurship ecosystem quickly reactivated this initiative. Many of these Resource Partners visited the impacted municipalities to collect data door to door via an initial survey created by Centro para Emprendedores that was eventually merged into the main survey. To help identify opportunities and foster synergies, the survey was developed using Survey123 ArcGis which is a Geographic Information System (GIS) tool that allows the team to collect data and share results to the public real-time in this dashboard http://bit.ly/levantatunegocio_dashboard which has had over 800 visits.



Simultaneously, Colmena66 researched all the business crisis support available and published a Resource Center available at <http://www.colmena66.com/es/levanta-tu-negocio-pr>.

Colmena66 consistently shared the survey results with Resource Partners, who were then able to effectively fundraise and deploy their resources strategically. As a result, the repository presented initiatives from partners that were offering funding, business assistance, and co-working spaces to help affected entrepreneurs. This includes a co-working space that was set up in Ponce by PRSTRT and Colmena66 in collaboration with Cámara de Comercio del Sur, Resiliency and Business Innovation (RBI), and Response Innovation Lab. Since January 22nd around 10 businesses benefited from this co-working space.

Colmena66 convened more than 32 Resource Partners from all sectors in the entrepreneurial ecosystem and collected more than 410 survey responses online at www.LevantaTuNegocioPR.com. Among the results, we learned that:

- 39% suffered infrastructure damages
- 27% lost raw material and/or finished products
- 25% of them are from Ponce and 22% are from Yauco
- 59% estimate damages of \$10,000 or less
- 64% need business assistance after the emergency
- 53% do not know if the infrastructure of their business is secure
- 67% need help to develop mitigation plans for future risks
- 33% need a temporary space to continue operating
- 68% need less than \$15,000 to continue operating



COVID-19 Pandemic

Levanta Tu Negocio was reactivated once again with a special edition to support our business owners and entrepreneurs seriously impacted by the COVID-19 pandemic. Once again, we developed a needs assessment survey and we published the results on: <https://levantatunegociopr.com/>

We received over 700 hundred responses from entrepreneurs all over the island. With the input from the survey, we structured a system consisting of three (3) steps to help entrepreneurs and their communities navigate and adapt to new challenges and manage uncertainty about the future.

- **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 SMEs organized by topic and industry updated daily to make it a less overwhelming process for the entrepreneur.
- **Stage 2: Refocus.** Entrepreneurs need to adapt their business quickly amid this constantly changing situation. Therefore, we continuously identified virtual workshops, educational forums and training programs of other business support organizations and published them on its website and social networks, thus reducing the burden of entrepreneurs that would otherwise need to do the research on their own.
- **Stage 3: Rebuild.** In order for entrepreneurs to not only survive this crisis, but to emerge stronger than before, Colmena66 continues 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.



Colmena66 in the News

As a program driven by technology and innovation, we capitalize digital platforms to enhance our reach and continue to develop greater communities. We have a constant and consistent presence in multiple communication channels, including Facebook, Instagram, Twitter, LinkedIn, and YouTube. Our social media presence is solid, and Colmena66 has been very successful reaching out to our clients using social media channels. We reached more than 150,000 clients via Facebook, over 25,000 on Instagram and had over 100 hours of watch time on YouTube.

But we also value and maximize traditional media exposure. In 2019, we appeared 85 times in the news. These media appearances are valued at \$139,774 had we paid for it. The most frequent channels were radio, press, television, and Facebook Lives. Allowing for inclusive access to information is one of our most important roles as ecosystem builders. We understand that different people have access to different channels of communication, so we do our best to make sure they can find us everywhere!

In Puerto Rico, Building a Disaster-Proof Business Is Part of Recovery





Colmena66 KPI'S

Tools & Services

1) 2,330 entrepreneurs and business owners reached out to us via our hotline or email seeking support to start or grow their businesses a year-over-year increase of 1,330.

- Δ 133% Increase in Entrepreneurs seeking assistance

2) Top 5 reasons they contact us in 2019

- 1 Starting a business
- 2 Access to capital (Grants, loans, others)
- 3 Mentoring
- 4 Business Plan
- 5 Education and training (Guides / Workshops / Events)

3) 7,303 referrals to our resource partners, a year-over-year increase of 6,103.

- Δ 509% Increase in Referrals

4) 28 new members added to our Resource Network. We are now 240 strong and growing.

5) 11,446 searches in our Resource Navigator.

- Δ 109% Increase in Resource Navigator Searches

6) 20 new guides share through our website including:

- Starting a non-profit organization
- Agricultural industry resources
- Financial fundamentals
- Intellectual property, patents, and trademarks
- Cybersecurity
- Marketing, sales and e-commerce

7) Communications

- 12,382 Facebook followers
- 71 new blog posts
- 60 Facebook Lives
- +50,000 Facebook Lives reproductions
- 12,003 Facebook engagement
- +150,000 Facebook Reach
- +25,000 Instagram reach
- 5,500 Twitter impressions
- 2,169 views on YouTube with 100.5 hours of watch time and 75 new subscribers



What is next

Colmena66 has analyzed additional gaps in the entrepreneurship ecosystem that it will tackle in the following year as we continue to lead the efforts to develop a world class entrepreneurial ecosystem in Puerto Rico that is strong, inclusive, and works for all.

- The digital version of Tu Camino Empresarial (TCE) at www.tucaminoempresarial.com will be redesigned for an improved user experience that facilitates the search for the right resource at the right time. It will be an interactive tool that will support the printed version of this resource map.
- Our efforts to increase the innovation pipeline in Puerto Rico will continue stronger than ever. Our team will be developing SBIR/STTR educational material both for beginners and experts. We will be working closely with the SBIR committee and other programs in the Puerto Rico Science Technology & Research Trust to help potential grantees receive the assistance they need, apply, and succeed.
- The Boricua Entrepreneur Fest is coming back! The first edition was an absolute success. An overwhelming majority (97%) indicated that they would like to participate in a second edition. Unfortunately, due to Covid-19 the event was postponed until further notice. But we are not giving up, we will be developing a virtual edition to help Puerto Rico's entrepreneurs overcome the new challenges facing their businesses.
- Resiliency is now front and center of every strategy for most businesses. As we analyze and measure the Levanta tu Negocio (LTN) survey responses, we learn what are the main struggles facing entrepreneurs and we are tackling each and every one of them with resources. Our team will be collaborating with organizations and experts to create a virtual series with workshops design to equip them with the resources and tools they need to weather this and other potential crisis.
- Colmena66 will be getting a makeover! We communicate with our clients using multiple channels, but our website is where a large number of entrepreneurs from all over the island go to learn about our Resource Partners, look for events, download our guides, sign up to receive help, read our blogs, and seek the latest information from the ecosystem. This is why we are redesigning it to make it better, easier to navigate, and with more content than ever.



Denisse Rodríguez Colón
Executive Director, Colmena66



Events

TCE Agroempresarios - July, 2019



SBIR Kickoff - September, 2019





SBIR Tour - November, 2019





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 and 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. Resilient Innovations is the focus of the program for its second year of services. The aim is to support and promote startups and established businesses to scale up their resilient innovations for societal benefits and promotion of sustainable economic development.

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

By helping build a resilient business model benefitting Puerto Rican entrepreneurs, RBI has been able to impact businesses, organizations, and university programs that support businesses through collaboration, capacity building, training, research, and technical assistance. Through collaboration with other entrepreneurial programs, RBI has certified business coaches and mentors helping businesses create their resiliency plans.

In a year, 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.



1,310 Participants
receiving training, referrals
or other project support

2019 in Numbers

4Researches
Sponsored**6**SBIR award
applications
supported**18**Mentoring
and coaching**12**Resiliency
Trainings**166**Outreach
Events**93**Marketing
Efforts**88**Technical
Assistance**39**Concepts
Reviewed**27**Entrepreneurs
Startups

Building a Resilient Business Community Through Education and Research

The RBI project is part of the effort of the Science, Technology, and Research Trust, to lead the way in researching business resilience methods and best practices, creating educational programs on how to implement those methods and best practices, and even enabling Puerto Rico to become a global leader in nurturing resilience in the face of the risk from natural disaster and their effects throughout the world.

MASTER YOUR DISASTER

A series of training by International Disaster preparedness and recovery expert Leann Hackman, CEO of Economic Developers of Alberta, Canada, and author of the series of guidebooks *"Master Your Disaster"* were organized by the RBI on November 13 and 14, 2019. The workshops were designed to help individuals, businesses and communities prepare, respond, and recover from a disaster.

"Master Your Disaster" in Your City, was aimed at directors of economic development, emergency management, planners, and assistant mayors while *"Master Your Disaster" in Your Business* was aimed at companies of all sizes and professional organizations.

The panel *"Doing Business in the Aftermath of a Disaster"* was part of the workshop with presentations from Mrs. Daneris Fernández, Chairman of the Board of the Puerto Rico Business Emergency Operations Center (PR-BEOC); Pedro Acevedo, Director of the Federal Contractor Center (FCC); Germán Hernández Garcés, Attorney Advisor and Public Affairs Specialist of the Office of Disaster Assistance at the Small Business Administration and Mr. Nelson Vazquez, Chairman of the Board of Selectos Supermarkets (Caguas, Coamo, Gurabo) and Board member of MIDA (Mayorista, Distribuidores de Alimentos). Both, Leann Hackman and Annie Mustafa served as moderators.

Besides the training, RBI coordinated a radio interview, a book signing event at Librería Norberto in Plaza Las Americas, and a special international networking event with the Women's Chapter of the Puerto Rico Manufacturers Association (PRMA). RBI's sponsorship made Hackman's expertise available to 200 Puerto Ricans who were directly impacted by her experience and knowledge.





BUILDING A RESILIENT BUSINESS: BEFORE, DURING, AND AFTER A DISASTER

With the collaboration of George Mason University's Center for Resilience and Sustainable Communities, and Echar Pa'Lante, the RBI designed two, custom made courses titled "Building a Resilient Business: Before, During, and After a Disaster" to be given free of charge.

The courses were created and delivered by Faculty members from George Mason University, totally online due to COVID social distancing protocols, the course had to be adapted as a webinar series. The 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 global STAR-TIDES knowledge-sharing network focusing on building resilience and sustainability at community levels. His work focuses on community resilience, emergency management, and cyber-security. He served for 51 years with the Defense Department. Wells earned a B.S. degree from the U.S. Naval Academy, an M.S.E. in Mathematical Sciences and a Ph.D. in Political Science (International Relations) from Johns Hopkins University.
- **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, and previous director of the executive degree programs in the George Mason School of Business including the MS in Technology Management, the MS in Management of Secure Information Systems and the Executive MBA. He is also co-founder and current president of the International Academy of CIO. Auffret earned a B.S. degree from Duke University where he was an A.B. Duke Scholar, an M.B.A. from the University of Virginia, and a Ph.D. in Physics from American University.
- **Bob Rogers** was #250 of Inc Magazine's Top 500 rankings of the fastest-growing privately held companies in the United States. He has won over \$100 million in Government Contracts and WSI Digital Solutions is his 5th business. He has a BS in Engineering from the United States Air Force Academy, an MBA from Washington University in St. Louis Missouri, and is an OPM Graduate of Harvard Business School.

A certificate of participation and a Digital Badge from RBI, the Center for Resilient and Sustainable Communities (C-RASC) at George Mason University and Echar Pa'Lante, were issued to those that completed the courses and passed a short quiz.

The two courses were created to provide education on resiliency methods and concepts as all of Puerto Rico continues to rebuild from natural disasters resulting in economic hardships and hurdles.

One of the courses was aimed at Entrepreneur Support Practitioners and the other aimed at businesses. At the end of the course the participants, based on their needs, had either learned how to teach and/or advise businesses on how to create a Resilience Plan or created a Resilience Plan for their business based on the following concepts:

- How to prepare for the 4 Phases of Resilience (Anticipate, Withstand, Recover, Adapt/Reposition)
- Identify resources available to small and medium businesses to help build resilience in PR, including special assets related to COVID-19
- The value of a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis
- How to analyze hazards to businesses in Puerto Rico and their impacts
- How to protect core business assets such as people, data, operations, etc.
- How to develop an effective business resilience plan that can adapt to changing business conditions
- How to exercise the plan and keep it up to date



G2 Building a Resilient Business Community: A Course for Support Practitioners

4 weeks course

G3 Creating a Resilience Plan: A Course for Businesses

6 weeks course *Resilience for Businesses*

totals

162

97%



38%



62%

Profiles:

Registered

Completed

Male

Female

totals

274

26%

40%

60%

Job Title

25%

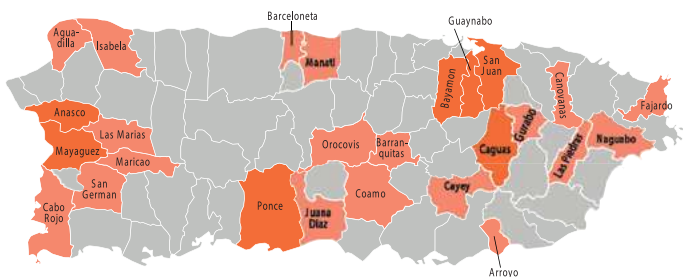
President, CEO, Founder, Owner, Executive Director

75%

Vice-President, Consultant, Professor, Manager, Assistant, Director and other

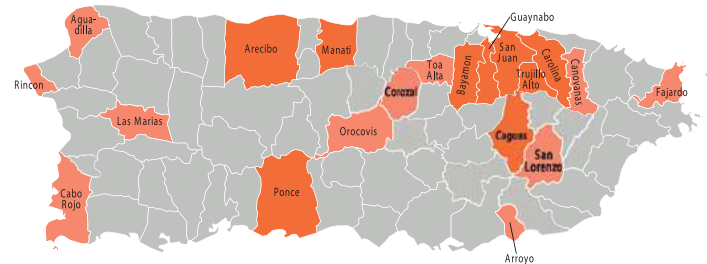
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64%



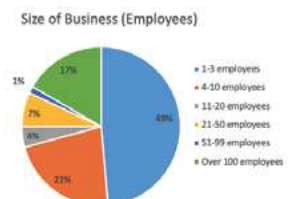
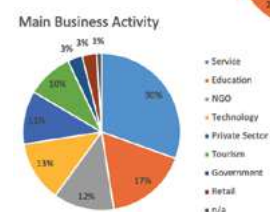
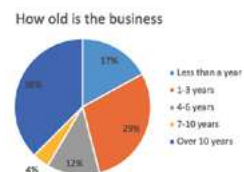
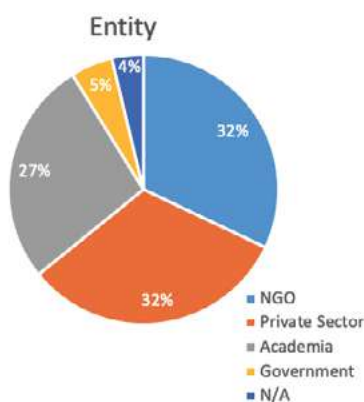
26

Total Cities



20

*Other cities & countries: Florida, Texas, Washington DC e India





Group 2

The goal of the course **"A Resilience Curriculum for Entrepreneurs Support Practitioners"**, aimed at senior business leaders and academics who provide direct support to entrepreneurs, was to give participants the tools to educate them about capacity-building and strategic analysis. The course content was delivered over four weeks, from May 19th until June 9th, 2020, for a total of 12 hours.

A Resilience Curriculum for Entrepreneurs Support Practitioners
SCHEDULE (Subject to Changes)

- Module 1:** (May 19) Preparation for teaching the curriculum for Businesses and Discussion of Lesson #1: Spring Forward from COVID-19, Resilience Concepts, Recent Experiences.
- Module 2:** (May 26) Strategy & Policy Presentation and Discussion of Lesson #2: Introduction to Business Resilience Workbook: SWOT and Hazard Analysis.
- Module 3:** (June 2) Discussion of Lesson #3 Business Impact Analysis, Protection of People, Data, and Operations and Lesson #4: Protection of Inventory, Equipment, and Buildings.
- Module 4:** (June 9) Discussion of Lesson #5 "Adapt & Reposition," Finalize Resilience Plan and Lesson #6: Lessons Learned and Best Practices from Resilience Plans, Way Ahead, Presentation of Certificates.

Group 3

The goal of the course **"A Resilience Curriculum for Businesses"** aimed at businesses of all sizes, was to help them create their Resilience Plan. The course content was delivered over six weeks from May 21st until June 25th, 2020, for a total of 12 hours.

A Resilience Curriculum for Businesses
SCHEDULE (Subject to Changes)

- Lesson 1:** (May 21) Spring Forward from COVID-19, Resilience Concepts, Recent Experiences.
- Lesson 2:** (May 28) Introduction to Business Resilience Workbook: SWOT and Hazard Analysis.
- Lesson 3:** (June 4) Business Impact Analysis, Protection of People, Data, and Operations.
- Lesson 4:** (June 11) Protection of Inventory, Equipment, and Buildings.
- Lesson 5:** (June 18) "Adapt & Reposition," Finalize Resilience Plan.
- Lesson 6:** (June 25) Discuss Lessons Learned and Best Practices from Resilience Plans, Way Ahead, Presentation of Certificates.

Events

Private Sector and Emergency Management Responders
RESILIENT RECOVERY APPROACHES:
Using Earth Observations to Understand Vulnerability and Exposure in Land and Infrastructure Planning.

SAVE THE DATE
Wednesday, August 7th, 2019
8:30AM - 4:00PM
Register using eventbrite link:
<https://bit.ly/2ZuynKw>
*Last seats and dependent upon registration.

University and Environmental Related Agencies
RESILIENT RECOVERY APPROACHES:
Using Earth Observations to Understand Vulnerability and Exposure in Land and Infrastructure Planning.

SAVE THE DATE
Tuesday, August 6th, 2019
8:30AM - 4:00PM
Register using eventbrite link:
<https://bit.ly/2ZuynKw>
*Last seats and dependent upon registration.

The Challenges of the Sea Level Rising in Puerto Rico
by John Engdinger, oceanographer.

Save the Date
Tuesday, August 6th, 2019
8:30AM - 4:00PM
<https://bit.ly/2ZuynKw>

"Master Your Disaster" in Your Business
Thursday, November 14, 2019
8:00 AM

Resiliency and Business Innovation
REQUEST FOR PROPOSALS FOR RESEARCH PROJECTS

Eligible: The project is open to all faculty members with a Ph.D. or M.S. degree in a relevant field. The project must be research-oriented and have the potential for commercialization. The project must be submitted by the deadline of August 15, 2019. The project must be submitted to the Resiliency and Business Innovation Center for review and approval.

Project Objectives:

- 1. Develop a research project that addresses a specific business challenge.
- 2. Develop a research project that addresses a specific business challenge.
- 3. Develop a research project that addresses a specific business challenge.

Contact: Dr. Karen L. Orenge, Director of Resiliency and Business Innovation, 1000 University Avenue, Suite 100, Arlington, VA 22202, USA. Email: karen.orenge@resiliencyandbusinessinnovation.org

Research

A primary objective of the RBI involves matching entrepreneurs needing proof-of-concept support with researchers from local universities, and particularly from the University of Puerto Rico, able to assist with those efforts.

A Request for Proposals (RFPs) for local academic investigators interested in researching one of the following thematic areas: (1) Best practices used by a company, an industry sector, or a community that can serve as a model to replicate or (2) The development of products and/or concepts which improves resilience following a disaster and has the potential for commercialization, was publicize in February 2020 with submissions and responses received through the grants' platform ZENGINE. Proposals were reviewed by a selected group of Subject Matter Experts (SMEs) that represented the private sector, economic development agencies, and professional associations. Four projects were selected in March and each research project was awarded \$5k. Due to COVID limitations, the deadline to submit final work was extended until the first week of July. The winning projects were:

- 1. "Between Hurricanes and Earthquakes: PR Rico Banana Inc. 2017-2020" by Dra. Libia M. Gonzalez Lopez, from the University of Puerto Rico, Rio Piedras Campus.** This project is based in a historic case focusing Resilience of a Second Generation family agribusiness primarily in the Banana Ripening Industry and how it was able to improve their mitigation and recuperation plans in Guayanilla and Cayey after hurricane Maria and to the southern coast where recent earthquakes have destroyed homes leaving many families homeless.
- 2. "Customer Relationship Management Resiliency Strategies after a Natural Disaster" by Dr. Karen L. Orenge, from the University of Puerto Rico, Rio Piedras Campus.** The proposed research project explores the resilience of companies in PR focused on management strategies, specifically, on how these companies adapted by deploying new customer relationship management (CRM) strategies to



meet customer needs during and after the set of earthquakes of 2020.

3. **“Best and Worst Resiliency Strategies Adopted by the Food and Beverages Supply Chain in the Aftermath of a Natural Disaster” by Dr. Maribel Ortiz -Soto, from the University Ana G. Mendez.** This proposal aims to identify and compare the best versus worst management practices applied by members of the food and beverage supply chain (FBSC) in Puerto Rico in the aftermath of a natural disaster.
4. **“Online Trade Data Service for SMEs and Humanitarian Resiliency” by Dr. Maribel Aponte-Garcia, from the University of Puerto Rico, Rio Piedras Campus.** The proposed research will design an Online Service for SMEs that provides information on Trade Value Chains to help build resiliency, design an Online Trade Data Service Blueprint, design and Carry out Pilot Project to identify alternatives to disruption for four products, utilizing databases on trade, identify alternative sources of imports and evaluate the feasibility of online service’s commercialization.

Businesses are referred for support to business incubators, experts in obtaining capital and where necessary direct assistance by grant experts to assist preparing applications for Small Business Innovative Research (SBIR). RBI also assists businesses in soliciting Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) and other efforts to provide innovative entrepreneurs with what they need to be successful. RBI works in collaboration with other PRSTRT programs as well as other Puerto Rican based business support programs as deemed adequate.

2020 Earthquakes

In addition to the direct business support included in the original RBI project plan, the RBI provided direct response and support to businesses and NGO’s as a result of the earthquakes that begun in early January 2020 (with EDA knowledge and approval) as follows:

Due to the January 2020 Puerto Rico earthquakes, RBI designed and distributed, by email, a one-pager Fact Sheet titled “Earthquake Preparedness for Businesses” to members of business associations at the Island, to be shared among their members. The Fact Sheet was available in Spanish and English.

By partnering with Colmena66, RBI helped arrange a free co-working space with internet access at the PRSTRT facility in Ponce. The well-equipped space enabled businesses located at the South (the most affected area in PR) without basic infrastructure as a result of the earthquakes, to continue conducting business, and to mitigate the disaster effects for those businesses that occupied the space. Collaboration and support from the Chamber of Commerce of the South included provision of tables and chairs for the businesses as well as the promotion of the space available. RBI was also involved in the following efforts to assist businesses due to the ongoing earthquake occurrences:



By partnering with Colmena66, RBI helped arrange a free co-working space with internet access at the PRSTRT facility in Ponce. The well-equipped space enabled businesses located at the South (the most affected area in PR) without basic infrastructure as a result of the earthquakes, to continue conducting business, and to mitigate the disaster effects for those businesses that occupied the space. Collaboration and support from the Chamber of Commerce of the South included provision of tables and chairs for the businesses as well as the promotion of the space available. RBI was also involved in the following efforts to assist businesses due to the ongoing earthquake occurrences:

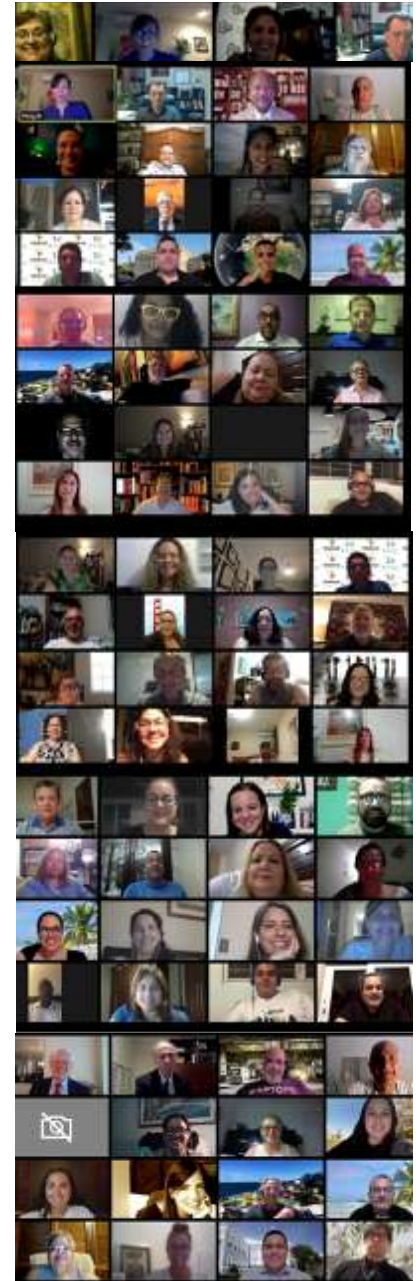
A key player in connecting the Footprint Project (NGO) with Danosa (a local business), that developed in a partnership to implement a portable free solar power system capable of going to the areas of the South Region. Besides, the Footprint project worked with Multi-Axis Manufacture (based in the USA), who designed a solar-powered refrigerator. This modeled the kind of collaborations that encourage business resiliency despite disasters. All three businesses were already being serviced by RBI.

Served as a liaison to the Hispanic Federation with Walmart, Sears/Kmart, the PR Chamber of Commerce, the PR Products Association, and the Retailers Association so they could buy their disaster response materials locally at preferential pricing.

Connected Coqui Charitie’s reverse osmosis water filtration system that can produce up to 15,000 liters per day, with NGO donors to support operating NGOs in the affected communities. NGOs first responders stationed operations in the South and provided free water for local residents who brought their water containers.

Assisted the NGO International Medical Corps in identifying a space to receive and distribute their medical donations in Ponce and connected them with the Puerto Rico Exports Company of the Department of Economic Development and Commerce (DDEC). RBI helped the International Medical Corps in finding a site with a lower rent and introduced them to an insurance broker.

Co-administered the non-governmental organization (NGO) Whatsup Group, to keep a quick and direct line of communication among the various NGOs. This helped in the rapid identification of needs and resources available to distribute relief assets efficiently. RBI facilitated various meetings with NGOs and assisted PRVOAD (PR Voluntary Organizations Active in Disaster) and PREMA (Puerto Rico Emergency Management Agency) relief coordination meetings.



(from left to right) Lic. Manuel Laboy, Secretary of the Department of Economic Development and Commerce (DDEC); Mr. Jose Ledesma, PRCC President 2019-2020; Annie Mustafa Ramos, RBI Program Manager; Lcdo. Luis Gierbolini, PRCC President elect 2021-2022 and Miguel Vargas, PRCC Executive Director.



Collaboration and partnership: Key to success

Over a year, the RBI has reached and partnered with over 30 organizations to promote all activities. The continued RBI management's active involvement with different professional business organization enabled accessibility to reach promptly the much-needed information about resiliency and RBI services to our target groups.

Collaborators include The Puerto Rico Chamber of Commerce, Echar Pa Lante the Puerto Rico Manufacturers Association, the Chamber of Commerce of the South, AFAE, the Coalition of the Private Sector, Hecho en Puerto Rico, the Retailers Association, the CPA Collegiate, the Collegiate of Engineers and Surveyors, the Puerto Rico Constructors Association, the IT Cluster, MIDA (Food Wholesaler and Distribution Association); state and municipal Economic Development agencies and public and private higher education entities.

In June 2020, the Puerto Rico Chamber of Commerce awarded the RBI Program Manager, Annie Mustafa Ramos with the President's Special Recognition Award for her work and collaboration with the Chamber.

Thanks



Colmena66
Tu Conexión Empresarial



RESPONSE
INNOVATION
LAB



Shrinking time
between disaster
and recovery.





Future

As disasters continue to strike Puerto Rico, the RBI had the painful opportunity to teach best resilient practices to businesses and to assist entrepreneurs in developing their resiliency-based plans. RBI will continue to implement real-time resiliency applications and concepts to support businesses affected by the ongoing earthquake events and the long term global COVID-19 pandemic threat.

Continuing 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 is the focus and aim of the Program.

We will be concentrating our efforts in the second cohort of the resilience course with emphasis on Innovations related to Resilience. A new course in Resilience focusing on Innovation will be created through our ongoing alliance with George Mason University. We will continue to support our clients to adapt accordingly to the new opportunities or challenges ahead. The second edition of the RFPs will include several topics from energy resiliency to identification and removal of barriers to completing phases 2 and beyond of the SBIR program.

Contact



Annie Mustafá Ramos

Program Manager

Web: <http://rbipr.org/>



Event

2020-05 Online Course Resilient Business

- A Resilience Curriculum for Entrepreneurs Support Practitioners – G2 <https://prsciencetrust.org/rbig2/>
- A Resilience Curriculum for Businesses – G3 <https://prsciencetrust.org/rbig3/>

Adapt your strategic response

Covid-19 Impact Matrix
Source: MIT Sloan School of Management
Notes: Strategic response also depends on each position, competitive position and industry structure

Severity And Duration Of Economic Impact (GDP Percent / Business revenue) / Economic policy	POSITIVE Revenue growth through demand surge e.g. E-commerce	MILD/NONE Subsided sales 0-15% in Q2 e.g. Groceries
0.5 YEAR IMPACT Vigorous rebound; Effective pandemic control and economic stimulus	Ride the wave; boost supply to keep up with demand surge	Push through for fast trade-up
1.5 YEAR IMPACT Linear recovery; Social distance measurements prolonged; economic stimulus causes damage	Push for growth and market share	Defend competitive position and find new growth
3 YEAR IMPACT L-shaped recovery; failed pandemic control, and wide-spread bankruptcies and credit defaults	Aggressive push for growth and market share	Defend, improve competitive position, and find new growth

Impact
Direct impact of Covid-19 / Indirect

Source: MIT Sloan School of Management

What Small Businesses in the U.S. Are Doing to Ready for and Begin Recovery

Source: CBS Evening News

Critical Needs of Businesses

Source: <https://eljacaguero.com/lider-empresarial-borica-dictara-conferencia-en-la-uasd-sobre-emprendimiento-y-exito/nerma-albertorio/>

Nerma Albertorio,
Founder and Executive
Director of Centro de
Emprendedores and
leader of StartUps of
Puerto Rico

Critical Needs of Businesses

Source: <https://eljacaguero.com/lider-empresarial-borica-dictara-conferencia-en-la-uasd-sobre-emprendimiento-y-exito/nerma-albertorio/>

Nerma Albertorio,
Founder and Executive
Director of Centro de
Emprendedores and
leader of StartUps of
Puerto Rico

Readying for the Next Event

Baseline Assessment

Recover

Adapt/Reposition

Measuring Outcomes



Education & 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 \$262, 065.34** in science, technology, research & entrepreneurship training initiatives, including the following:

Casa Grande Interactive; Intarz Technologies IAC 2019 Development Program ; Universidad Central del Caribe SACNAS Annual Conference 2019, Animus Summit 2019; Alpha Astrum Corp. "Impacting Communities" ; Sociedad de Administradores de Investigaciones "22nd. Annual Conference"; PR Consultants Group Annual Conference; Obsidis Consortia Security B Sides P.R.; Universidad de Puerto Rico Centro de Apoyo a la Innovación; Universidad de Puerto Rico, Women in Data Science in Puerto Rico; Engine 4 COVID Resilience Program; UPR Mayaguez, "Colaboración para mejorar la cultura de investigación e innovación entre estudiantes y profesores"; Universidad de P.R. Recinto Ciencias Médicas, "5º. Simposio de retinitis pigmentosa"; Universidad Central del Caribe "27th. P.R. Neuroscience Conference"; Sociedad Puertorriqueña de Ciencias Agrícolas; Dr. Tugrul Giray, "P.R. Honey Bee and Evolution of Invasive Organism on Islands"; Sociedad Nacional de Honor en Biología.



Memorandum of Understanding signed and conceptualized on 2019-2020

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 oficialized alliances during this fiscal year.

Memorandum of Understanding (MOUs) (July 2019 – June 2020)

1. Ponce Health Sciences University, Inc
2. Juntos y Unidos por Puerto Rico
3. Save The Children
4. Migrant Clinicians Network
5. Puerto Rico Manufacturers Association
6. Departamento de Educación
7. Universidad Interamericana de Puerto Rico
8. Casa Grande Interactive
9. G8 Grupo de las ocho comunidades aledañas al Caño Martín Peña
10. George Mason University
11. COSSAO
12. Ponce Medical School Foundation
13. Municipio de Orocovis
14. Municipio de Yauco
15. Municipio de Guayanilla
16. Municipio de Villalba
17. Municipio de Toa Baja
18. Municipio de Ponce
19. Municipio de Comerío
20. Municipio de Hormigueros
21. Municipio Las Marías
22. Municipio de Yabucoa
23. Municipio de Coamo
24. Municipio Las Piedras
25. Municipio de Sabana Grande
26. Municipio de Añasco
27. Municipio de Cabo Rojo

Programs and sponsored entities





PRSTRT Annual events & appearances



**"Los datos del
Censo son vitales
para determinar
las estrategias de
desarrollo
socioeconómico."**

Lucy Crespo

Principal Oficial Ejecutiva
del Fideicomiso para
Ciencia, Tecnología
e Investigación
de Puerto Rico.

**Censo
2020**
Puerto Rico

August 2019 – Censo 2020 - Lucy Crespo Trusted Voices



August 2019 - Washington Chamber Visit



August 2019 – John Englander presentation
LMM Event



January 2020 – PRGG Startups presentation



March 2020 - Women in Data Science



July 2020 - Mitsubishi Outlander Donation



July 2020 - Premio Zenith - Cámara de Comercio
de Puerto Rico

Media Coverage

The background features abstract geometric shapes. A large orange triangle is in the top right corner. A grey triangle is positioned below it, pointing towards the center. A large light grey triangle occupies the middle and bottom left areas. The text 'Media Coverage' is written in orange in the top left area.



3/19/2020 | El Nuevo Día (ENDI)



3/19/2020 | Metro



3/19/2020 | Es Noticia



3/19/2020 | Noticel



3/19/2020 | La Perla del Sur



8/6/2019 | Voces del Sur



7/31/2019 | Sin Comillas



8/26/2019 | ENDI



9/13/2019 | Metro



9/18/2019 | Noticel



9/17/2019 | News is my Business (NIMB)



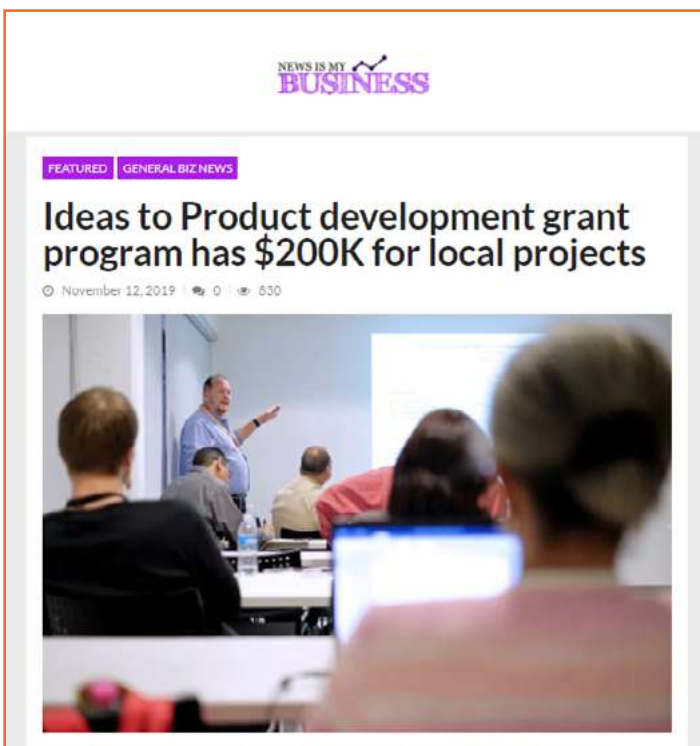
9/13/2019 | ENDI



10/11/2019 | ENDI



11/13/2019 | The Weekly Journal (TWJ)



11/12/2019 | NIMB



11/29/2019 | Magazine PR



12/12/2019 | Magazine PR



1/24/2020 | ENDI



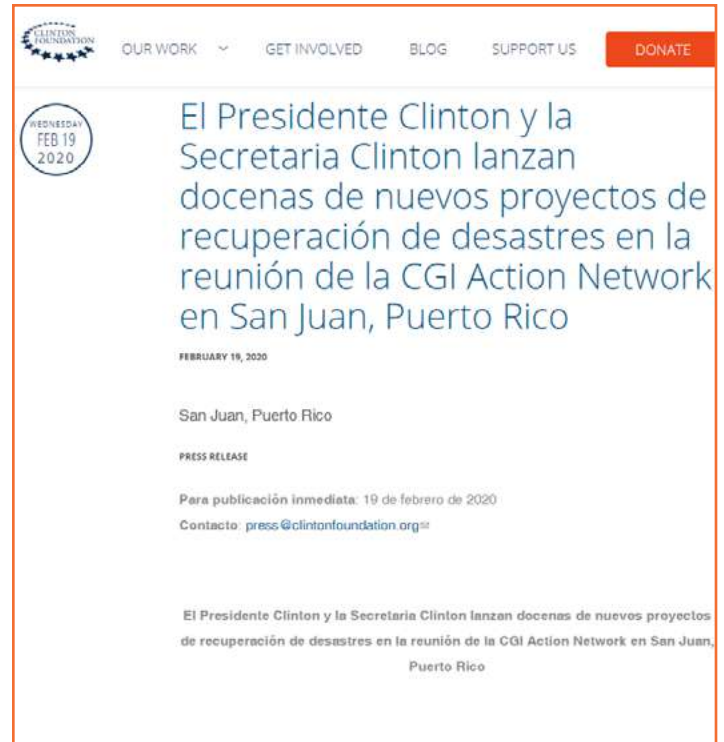
12/13/2019 | Metro



2/7/2020 | Metro



2/10/2020 | TWJ



2/19/2020 | Clinton Foundation



2/18/2020 | ENDI



3/3/2020 | Caribbean Business (CB)



Learning Undeclared Expands Mobile STEM Lab Program Outside Continental U.S. to Support Puerto Rican Schools Damaged by Recent Earthquakes

Disaster Recovery Program to Serve More than 6,000 Students in Southwestern Puerto Rico



March 11, 2020 08:30 AM Eastern Daylight Time

GAITHERSBURG, Md. — (BUSINESS WIRE) — Learning Undeclared, a nonprofit organization that provides life-changing STEM experiences for under-resourced communities, announced today that for the first time it will provide mobile STEM lab resources outside the continental United States. Working in partnership

3/11/2020 | Business Wire

Diseñan plataforma para identificar brotes de coronavirus en la Isla

La plataforma en línea fue diseñada para observar en tiempo real la incidencia del virus

Redacción, EL VOCERO 17/03/2020



Jonathan E. Brando Gomez / EL VOCERO / Archivo

Una plataforma en línea de monitoreo diseñada para observar en tiempo real la incidencia de coronavirus (Covid-19) tendrá el fin de obtener datos que permitan conocer los posibles brotes del virus y evaluar su comportamiento en la Isla.

Así lo informó el equipo de epidemiólogos del Programa de Salud Pública de Ponce Health Sciences University (PHSU) junto a investigadoras del Ponce Research Institute, quienes diseñaron la plataforma en línea en colaboración con el Fideicomiso de Salud Pública de Puerto Rico.

La doctora Kenira Thompson, presidenta del Ponce Research Institute y vicepresidenta de investigación de PHSU, indicó que, ante la

3/17/2020 | El Vocero

'Achú', un libro digital para ayudar a los niños a entender el coronavirus

Por: NotiCel

Publicado: Mar 14, 2020 12:42 PM



3/14/2020 | Noticel

Más de 21,000 personas participan de encuesta para identificar posibles brotes de Covid-19

Disponibles los primeros datos del sistema de vigilancia que ayuda a identificar posibles brotes de COVID-19 en Puerto Rico

Por Metro Puerto Rico

Sábado 21 de marzo de 2020, a las 10:26

El grupo que lidera la iniciativa del sistema de vigilancia de síntomas asociados al



3/21/2020 | Metro



Sin comillas
.com

Banca Economía » Gobierno Tecnología

Subvención de \$500,000 para iniciar programas de Telemedicina y Tele salud

Tue, Mar 24, 2020 Salud

★ Por redacción de Sin Comillas
El Fideicomiso de Ciencia, Tecnología e Investigación (PRSTRT por sus siglas en inglés) y el Fideicomiso de Salud Pública de Puerto Rico (PRPHT por sus siglas en inglés) han iniciado un proyecto piloto para establecer programas de Telemedicina y Telesalud en Puerto Rico. El mismo consiste en la compra de equipo especializado que permitirá ofrecer servicios de salud de forma remota en las comunidades de Castañer en Lares, Florida, Rincón, Arroyo, Las Marías, Maricao y Culebra.

El Programa de Telemedicina y Telesalud del PRPHT ha establecido colaboraciones con proveedores, pagadores y administradores de servicios de salud para ofrecer servicios



Foto: José R. Madera

3/24/2020 | Sin Comillas

endi

Tecnología OTROS

El Fideicomiso para Ciencia otorgará \$500,000 para proyectos que ayuden a combatir el COVID-19

El fondo de subvenciones está dirigido a investigadores en busca de soluciones en la isla

martes, 31 de marzo de 2020 - 11:43 a.m. Por ELNUEVEDIA.COM

Nota de archivo: este contenido fue publicado hace más de 90 días.



3/31/2020 | ENDI

endi

Editorial

domingo, 29 de marzo de 2020

Nuestra fuerza científica al servicio de la salud

Ante la rápida propagación de la nueva cepa de coronavirus, Puerto Rico está convocado a apoyar los esfuerzos investigativos que han colocado a nuestros científicos a la vanguardia de aportaciones para controlar enfermedades letales, como lo fue con el Síndrome de Inmunodeficiencia Adquirida (Sida).

TAGS:
Coronavirus

Ver 0 comentarios

Compartir

3/29/2020 | ENDI

The Weekly Journal

FEATURED

Telemedicine's Time Has Come

\$500,000 grant to start telemedicine and telehealth programs in remote communities

Rosario Fajardo, The Weekly Journal Apr 1, 2020 Updated Apr 1, 2020



4/1/2020 | TWJ



4/1/2020 | ENDI



4/17/2020 | ENDI



4/2/2020 | NotiUno 630AM



4/21/2020 | ENDI



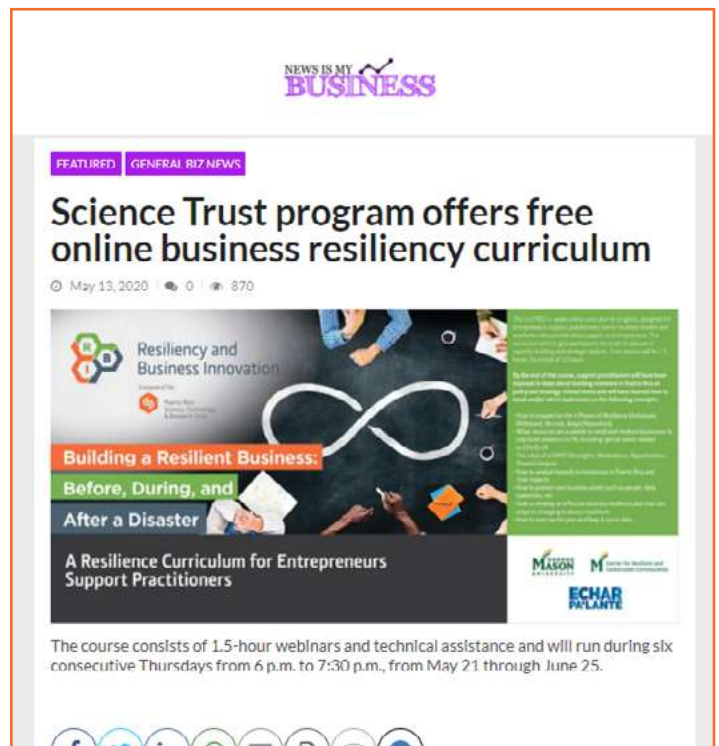
4/24/2020 | ENDI



5/8/2020 | ENDI



4/29/2020 | Sin Comillas



5/13/2020 | ENDI



5/21/2020 | Foro Noticioso



6/10/2020 | Primera Hora



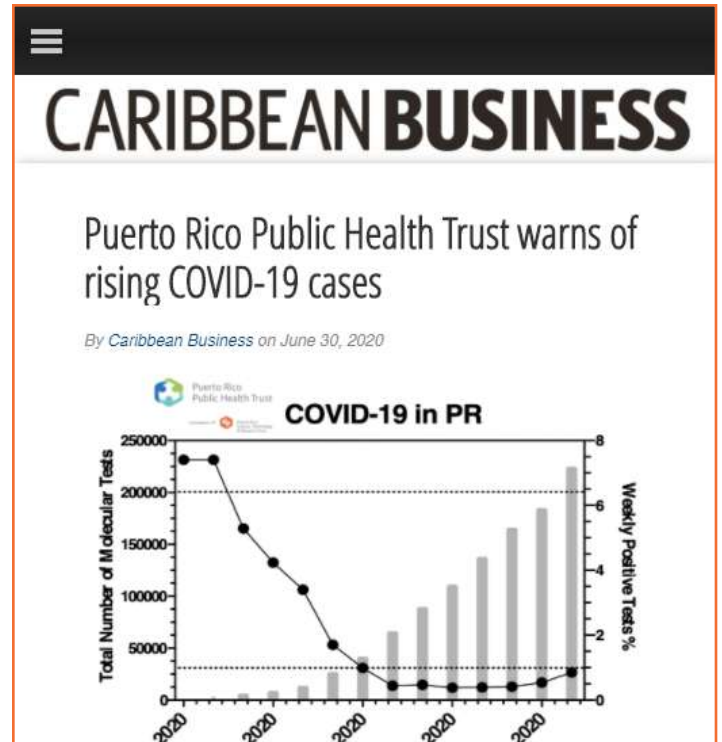
5/30/2020 | Sin Comillas



6/13/2020 | ENDI



6/29/2020 | Primera Hora



6/30/2020 | CB



6/29/2020 | Press PR Wire



Design
Marketing
Communications



Communications & Marketing Growth & Value

Non Paid Publicity - ROI (Both agencies)



\$5,215,047.98M

THE BIG
THINK
GROUP

\$5,000,037.98 M

133,550,528 Impressions

bcw

\$215,010.00 M

985,698,010 Impressions

Total impressions (Both agencies)

1,119,248,538M

Appearances

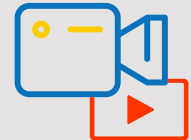
THE BIG
THINK
GROUP 510

+

bcw 124

=634

Videos produced



214

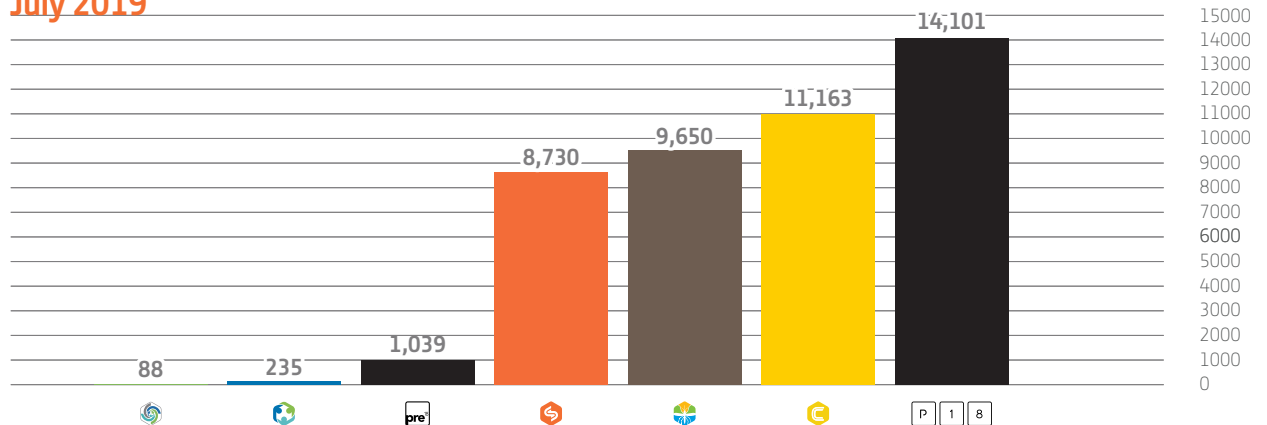
Followers in Social Media



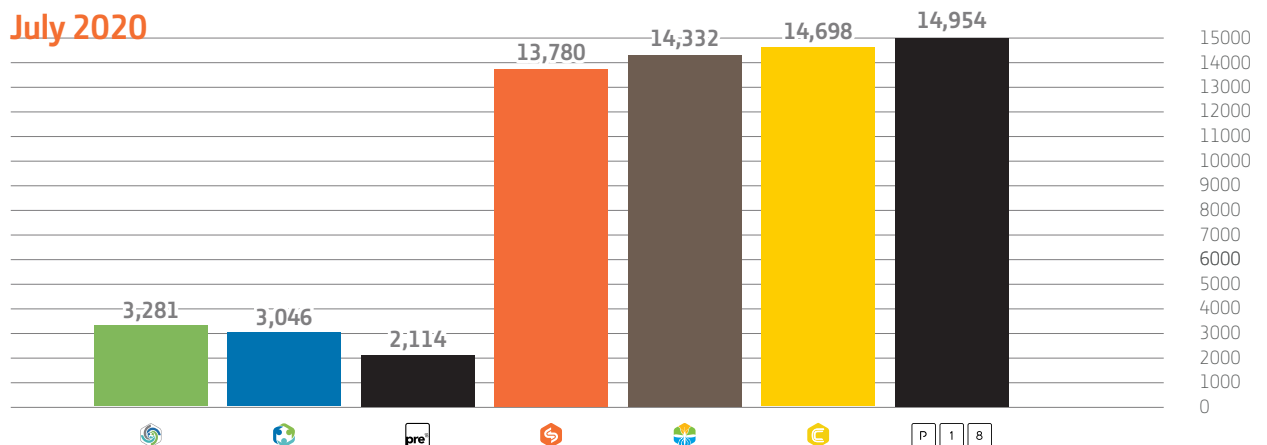
July 2019

Programs

- PRHRH
- PRPHT
- Pre18
- PRVCU
- PRSTRT
- Colmena66
- P18



July 2020

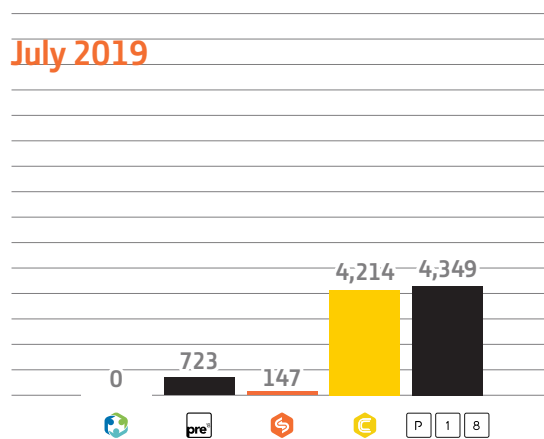




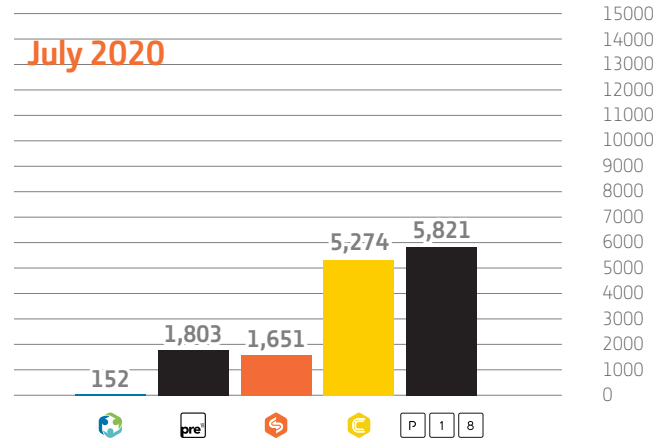
Programs

- PRPHT
- Pre18
- PRSTRT
- Colmena66
- P18

July 2019



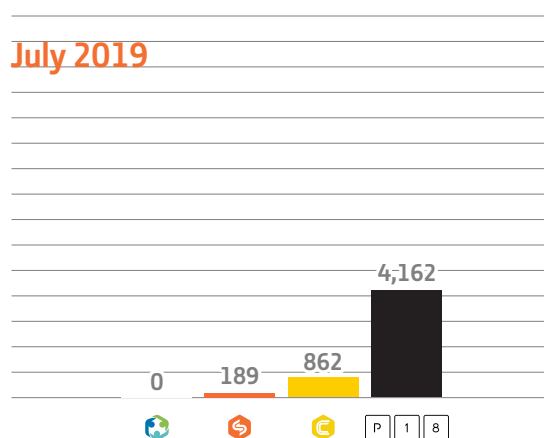
July 2020



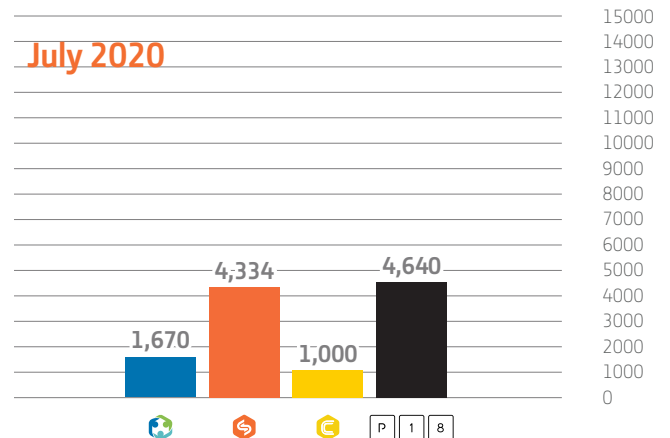
Programs

- PRPHT
- PRSTRT
- Colmena66
- P18

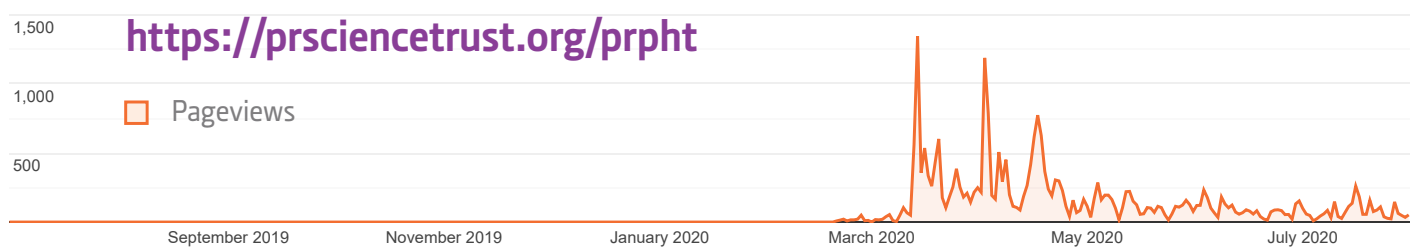
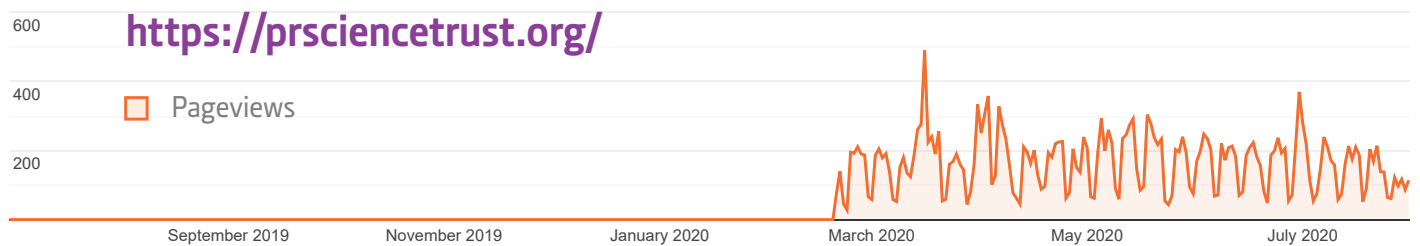
July 2019



July 2020



Website visits





New landing pages, new programs & projects launched

Colmena66



STEM Education Program



Puerto Rico Public Health Trust



Research Grants Program



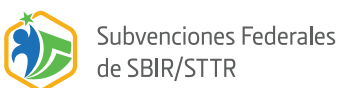
PRoDTEC



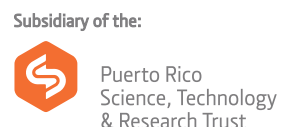
PRSTRT



SBIR



PRCCI





Puerto Rico
Science, Technology
& Research Trust

ANNUAL PUBLICITY 2019-20

THE **BIG**
THINK
GROUP

JUN
2019

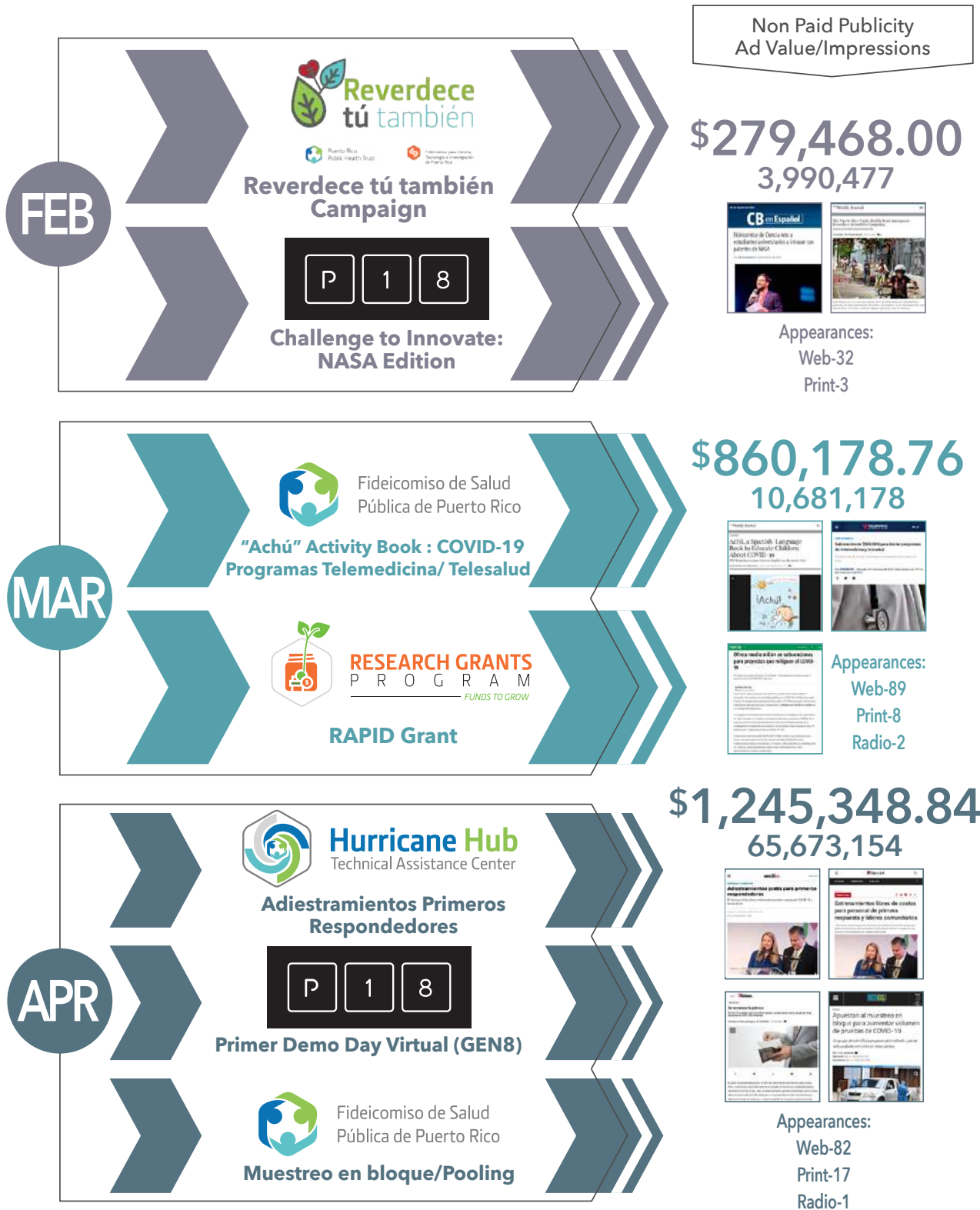
Communications Support to
Puerto Rico Science, Technology
and Research Trust and its programs.

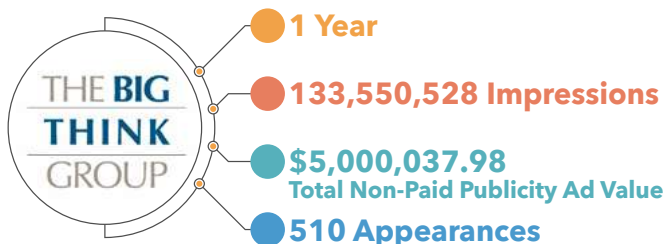
JUN
2020

Non Paid Publicity
Ad Value/Impressions











PUBLICITY REPORT SUMMARY JULY 2019 - JUNE 2020



Total ROI **\$215,010**

Total impressions **984,907,200**



for



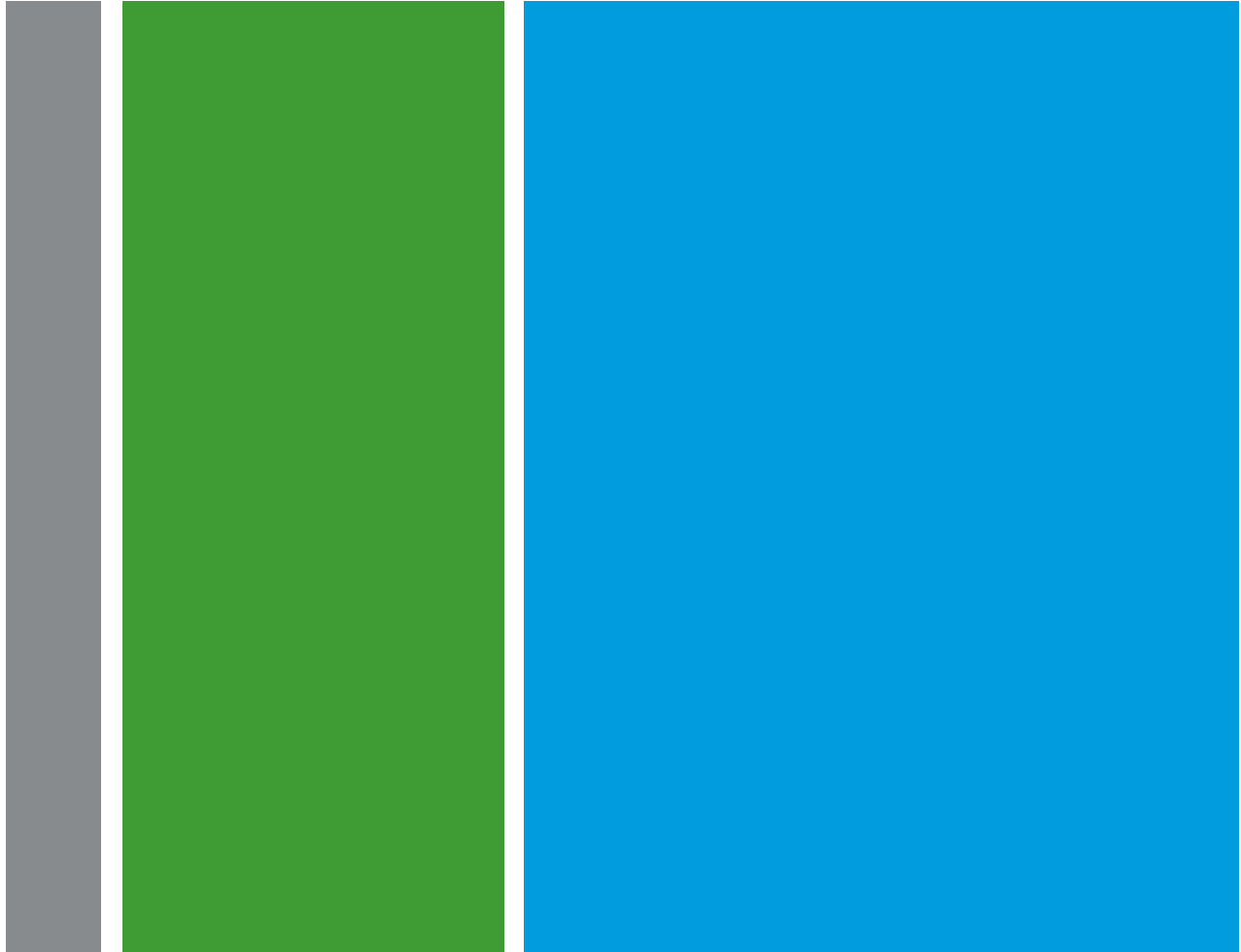
Unidad de Control de
Vectores de Puerto Rico

Consolidated Financial Statements

The background features abstract geometric shapes. A large orange triangle is in the top right corner. A grey triangle is positioned below it, pointing towards the center. The remaining areas are filled with white and light grey, creating a modern, minimalist design.



RSM Puerto Rico



PUERTO RICO SCIENCE, TECHNOLOGY AND
RESEARCH TRUST AND SUBSIDIARIES
(A Puerto Rico Not-For-Profit Organization)

Basic Consolidated Financial Statements
June 30, 2020 and 2019



RSM Puerto Rico
PO Box 10528
San Juan, PR 00922-0528

T 787-751-6164
F 787-759-7479
www.rsm.pr

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, 2020 and 2019, 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, 2020 and 2019, 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 23, 2020.

Stamp No. E431669 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, 2020 and 2019**

	2020	2019
ASSETS:		
Cash	\$ 33,040,055	\$ 29,632,070
Accounts receivable	703,527	1,864,680
Prepaid expenses	175,763	107,735
Due from governmental entities	1,128,892	4,978,063
Investments	6,235,611	35,953,708
Convertible promissory notes receivable	560,000	375,000
Other assets	29,483	19,484
Endowment fund	35,609,069	-
Property and equipment, net	676,294	450,237
Building, net	6,120,644	6,071,064
Land and property for research, development and infrastructure project related to science and technology	16,100,307	16,100,307
Land development costs	11,329,395	11,329,395
Construction in progress - Science City	11,148,356	11,149,857
	<u>\$ 122,857,396</u>	<u>\$ 118,031,600</u>
LIABILITIES AND NET ASSETS		
LIABILITIES:		
Program service payable	\$ 1,634,879	\$ 717,037
Accounts payable	1,965,232	2,271,267
Accrued expenses	454,658	448,240
Other liabilities	11,019	8,500
Loan payable	1,786,300	-
	<u>5,852,088</u>	<u>3,445,044</u>
NET ASSETS:		
Without donor restrictions:		
Undesignated	61,636,932	94,667,109
Designated by the Board of Trustees for endowment	35,609,069	-
	<u>97,246,001</u>	<u>94,667,109</u>
With donor restrictions:		
Purpose restrictions	3,659,000	3,819,140
Perpetual in nature	16,100,307	16,100,307
	<u>19,759,307</u>	<u>19,919,447</u>
	<u>117,005,308</u>	<u>114,586,556</u>
	<u>\$ 122,857,396</u>	<u>\$ 118,031,600</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, 2020 and 2019

	2020		
	Without donor restrictions	With donor restrictions	Total
REVENUES, SUPPORT AND OTHERS:			
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
	28,048,645	2,321,540	30,370,185
Net assets released from restrictions:			
Satisfaction of program restrictions	2,481,680	(2,481,680)	-
	30,530,325	(160,140)	30,370,185
OPERATING EXPENSES:			
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
	23,901,945	-	23,901,945
Supporting services:			
Management and administrative	4,049,488	-	4,049,488
	27,951,433	-	27,951,433
CHANGE IN NET ASSETS	2,578,892	(160,140)	2,418,752
NET ASSETS, beginning of year	94,667,109	19,919,447	114,586,556
NET ASSETS, end of year	\$ 97,246,001	\$ 19,759,307	\$ 117,005,308

Continues . . .


**PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST
AND ITS SUBSIDIARIES**

CONSOLIDATED STATEMENTS OF ACTIVITIES
For the years ended June 30, 2020 and 2019

Continued . . .

	2019		
	Without donor restrictions	With donor restrictions	Total
REVENUES, SUPPORT AND OTHERS:			
State grants and assessments	\$ 16,759,924	\$ -	\$ 16,759,924
Federal grants	7,837,675	124,970	7,962,645
Private grants and sponsorships	408,684	2,957,448	3,366,132
Donations and contributions	46,631	-	46,631
Clinical trials	215,139	-	215,139
Rental income	331,057	-	331,057
Interest income	179,885	-	179,885
Other income	228,221	-	228,221
Net investment loss	(8,562,596)	(553,326)	(9,115,922)
	17,444,620	2,529,092	19,973,712
Net assets released from restrictions:			
Satisfaction of program restrictions	3,096,175	(3,096,175)	-
	20,540,795	(567,083)	19,973,712
OPERATING EXPENSES:			
Program and services:			
Research and data	1,530,644	-	1,530,644
Public health initiative	9,504,182	-	9,504,182
Technology transfer and commercialization	5,164,645	-	5,164,645
Science City development	266,011	-	266,011
	16,465,482	-	16,465,482
Supporting services:			
Management and administrative	3,791,868	-	3,791,868
	20,257,350	-	20,257,350
	283,445	(567,083)	(283,638)
NON-OPERATING INCOME:			
Gain on settlement of RSA	3,087,580	324,085	3,411,665
Forgiveness of debt	622,113	-	622,113
	3,709,693	324,085	4,033,778
CHANGE IN NET ASSETS	3,993,138	(242,998)	3,750,140
NET ASSETS , beginning of year	90,673,971	20,162,445	110,836,416
NET ASSETS , end of year	<u>\$ 94,667,109</u>	<u>\$ 19,919,447</u>	<u>\$ 114,586,556</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, 2020 and 2019

	2020				
	Program activities				Support activity
	Research and data	Public health initiative	Technology transfer and commercialization	Science City development	Management and administrative
					Total
Program support:					
Capacity building and sponsorships	\$ 96,575	\$ 20,000	\$ 145,490	\$ -	\$ -
Research and development grants	3,348,312	-	46,193	-	-
Matching grants	-	-	445,770	-	-
Parallel 18 grants	-	-	2,701,877	-	-
Other program initiatives	94,764	2,448,010	50,000	-	-
	<u>3,539,651</u>	<u>2,468,010</u>	<u>3,389,330</u>	<u>-</u>	<u>-</u>
Personnel costs:					
Salaries and wages	600,310	6,279,768	1,151,571	75,568	1,222,096
Benefits and payroll taxes	226,203	1,667,067	423,844	22,189	498,982
	<u>826,513</u>	<u>7,946,835</u>	<u>1,575,415</u>	<u>97,757</u>	<u>1,721,078</u>
Professional services	212,964	546,273	539,591	191,017	774,237
Occupancy expenses:					
Depreciation and amortization	25,460	150,122	94,998	-	222,213
Rent	-	-	162,120	-	24,205
Repairs and maintenance	-	-	420	5,700	214,069
Security	-	-	-	-	139,446
Other	2,048	15	886	-	378,911
	<u>27,508</u>	<u>150,137</u>	<u>258,424</u>	<u>5,700</u>	<u>978,844</u>
Travel	22,554	122,591	100,052	2,456	31,122
Other	250,013	1,251,549	371,267	6,338	544,207
	<u>272,567</u>	<u>1,374,140</u>	<u>471,319</u>	<u>8,794</u>	<u>575,329</u>
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>

Continues . . .


**PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST
AND ITS SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF FUNCTIONAL EXPENSES
For the years ended June 30, 2020 and 2019**

Continued . . .

	2019					
	Program activities				Support activity	Total
	Research and data	Public health initiative	Technology transfer and commercialization	Science City development	Management and administrative	
Program support:						
Capacity building and sponsorships	\$ 77,150	\$ 300	\$ 141,550	\$ -	\$ -	\$ 219,000
Incubators support	-	-	6,082	-	-	6,082
Research and commercialization grants	16,007	-	-	-	-	16,007
Matching grants	-	-	171,231	-	-	171,231
Parallel 18 grants	-	-	2,181,385	-	-	2,181,385
Other program initiatives	-	2,432,079	1,943	-	-	2,434,022
	<u>93,157</u>	<u>2,432,379</u>	<u>2,502,191</u>	<u>-</u>	<u>-</u>	<u>5,027,727</u>
Personnel costs:						
Salaries and wages	533,337	3,819,910	921,059	29,231	1,149,279	6,452,816
Benefits and payroll taxes	152,991	978,634	274,311	9,752	506,478	1,922,166
	<u>686,328</u>	<u>4,798,544</u>	<u>1,195,370</u>	<u>38,983</u>	<u>1,655,757</u>	<u>8,374,982</u>
Professional services	<u>144,176</u>	<u>302,967</u>	<u>490,094</u>	<u>212,553</u>	<u>682,240</u>	<u>1,832,030</u>
Occupancy expenses:						
Depreciation and amortization	17,864	21,179	94,236	-	189,202	322,481
Rent	-	-	152,215	-	15,584	167,799
Repairs and maintenance	-	-	7,548	6,800	238,314	252,662
Security	-	1,834	-	-	177,531	179,365
Other	-	615	1,885	-	275,900	278,400
	<u>17,864</u>	<u>23,628</u>	<u>255,884</u>	<u>6,800</u>	<u>896,531</u>	<u>1,200,707</u>
Travel	77,197	172,140	210,473	4,192	92,703	556,705
Other	511,922	1,774,524	510,633	3,483	464,637	3,265,199
Total operating expenses	<u>\$ 1,530,644</u>	<u>\$ 9,504,182</u>	<u>\$ 5,164,645</u>	<u>\$ 266,011</u>	<u>\$ 3,791,868</u>	<u>\$ 20,257,350</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, 2020 and 2019

	2020	2019
CASH FLOWS FROM OPERATING ACTIVITIES:		
Change in net assets	\$ 2,418,752	\$ 3,750,140
Adjustments to reconcile change in net assets to net cash provided by operating activities:		
Bad debts expense in convertible promissory notes receivable	75,000	-
Gain on conversion of notes receivable	(6,904)	-
Gain on settlement of RSA	-	(3,411,665)
Unrealized loss on investments	2,339,199	9,890,566
Realized gain on investments, net	(1,134,162)	-
Investment received in lieu of interest payment	(169,116)	-
Capitalized investment income	(212,635)	-
Unrealized gain on Endowment fund	(630,184)	-
Depreciation and amortization	492,792	322,481
Property and equipment received as donation	(39,425)	-
Changes in operating assets and liabilities-		
Decrease (increase) in assets:		
Accounts receivable	1,161,153	(731,937)
Prepaid expenses	(68,028)	9,406
Due from governmental entities	3,849,171	(2,074,304)
Other assets	(9,999)	(6,951)
Increase (decrease) in liabilities:		
Program service payable	917,842	(147,952)
Accounts payable	(306,035)	(2,975,713)
Accrued expenses	6,418	229,381
Other liabilities	2,519	(2,600)
Net cash provided by operating activities	<u>8,686,358</u>	<u>4,850,852</u>
CASH FLOWS FROM INVESTING ACTIVITIES:		
Redemption of certificates of deposits	-	6,786,666
Collection of promissory notes receivable	-	150,000
Advances under convertible notes receivable	(335,000)	-
Proceeds from sale and redemption of investments	28,879,080	192,617
Purchase of investments	(115,000)	(225,000)
Purchase of Endowment fund	(34,766,250)	-
Purchase of property and equipment	(489,261)	(256,473)
Addition to construction in progress - building	(238,242)	(462,505)
Net cash provided by (used in) investing activities	<u>(7,064,673)</u>	<u>6,185,305</u>
CASH FLOWS PROVIDED BY FINANCING ACTIVITIES:		
Proceeds from loan payable	<u>1,786,300</u>	<u>-</u>
NET INCREASE IN CASH	3,407,985	11,036,157
CASH, beginning of year	29,632,070	18,595,913
CASH, end of year	<u>\$ 33,040,055</u>	<u>\$ 29,632,070</u>

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, 2020 and 2019

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 \$6,340,000 or 31% out of the monies deposited in the Special Fund for Economic Development managed by the Puerto Rico Industrial Development Company (PRIDCO) for the fiscal years ended June 30, 2020 and 2019 (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, 2020 and 2019, 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.

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, 2020 and 2019

- 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 businesses.

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, 2020 and 2019.

- 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 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 have been prepared in accordance with U.S. generally accepted accounting principles (US GAAP), which require reporting 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, 2020 and 2019, 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, 2020 and 2019

- 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 10 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 US 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 maintains 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, 2020 and 2019

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 derive its revenues from state and federal grants, contributions received from the government, corporations, sponsors and individuals. Grants and contributions subject to routine performance requirements by the Trust and its Subsidiaries are recorded when first awarded. Conditional promises to give, that is, those 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, 2020 and 2019

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.

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, 2020 and 2019.

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, 2020 and 2019, 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. During the year ended June 30, 2016, the Trust and its Subsidiaries implemented Parallel 18 (P18), a startup creation initiative. The purpose of P18 is to provide startups, selected competitively from Puerto Rico and abroad, with funding, complete support system, and an acceleration program with high-level resources and access to a global network of mentors. The P18 program is financed by the support from the Economic Development and Commerce Department, the Puerto Rico Industrial Development Company, and the Trust.
- *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.



PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2020 and 2019

- *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.
- *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, 2020 and 2019.

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.

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, 2020 and 2019, the Trust and its Subsidiaries incurred in advertising and promotion expenses of approximately \$160,000 and \$232,000, respectively.

Adoption of accounting standards – In June 2018, the FASB issued 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. Where the Trust and its Subsidiaries is the resource recipient, the ASU 2018-08 is applicable to contributions received for annual periods beginning after December 15, 2018. Where the Trust and its Subsidiaries is a resource provider, the ASU 2018-08 is effective for annual periods beginning after December 15, 2019 and interim periods within annual periods beginning after December 15, 2020. During the year ended June 30, 2020, the Trust and its Subsidiaries adopted the ASU 2018-08 for resource recipients.

During the year ended June 30, 2020, the Trust and its Subsidiaries adopted the FASB ASC-321 *Investments - Equity Securities*. The guidance establishes standards of financial accounting and reporting for investments in equity securities and other ownership interests in an entity. The standard is effective for fiscal years beginning after December 15, 2018.



PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2020 and 2019

Recent accounting pronouncements – In May 2014, the FASB issued 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 FASB has also issued several updates to ASU 2014-09. The new standard supersedes US GAAP guidance on revenue recognition and requires the use of more estimates and judgments than the present standards. It also requires additional disclosures. This standard is effective for annual reporting periods beginning on or after December 15, 2019, using either of two methods: (a) retrospective to each prior reporting period presented with the option to elect certain practical expedients as defined within ASU 2014-09; or (b) retrospective with the cumulative effect of initially applying ASU 2014-09 recognized at the date of initial application and providing certain additional disclosures as defined in ASU 2014-09.

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. 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 August 2018, the FASB issued 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. The ASU 2018-13 is effective for all entities for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019.

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 US 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, and interim periods within those fiscal years. Early adoption is permitted. The amendments in ASU 2020-01 should be applied prospectively.

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, 2020 and 2019, the Trust and its Subsidiaries' cash deposits exceeded the insured limits of FDIC and SIPC by approximately \$31,339,000 and \$27,975,000, respectively.



PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2020 and 2019

For the years ended June 30, 2020 and 2019, grants and contributions from state and federal entities represent approximately 79% and 83%, respectively, out of total revenues. The balance due from these state and federal entities represent approximately 79% and 84%, respectively, of total accounts receivable.

3) Liquidity and availability:

As of June 30, 2020 and 2019, 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	2020	2019
Cash	\$ 33,040,055	\$ 29,632,070
Account receivable	703,527	1,864,680
Due from governmental entities	1,128,892	4,978,063
Investments	6,235,611	35,953,708
Endowment fund	35,609,069	-
	76,717,154	72,428,521
Less amount not available to be used within one year:		
Net assets with donor restrictions	(3,920,749)	(3,819,140)
Financial assets available to meet general expenditures over the next twelve months	\$ 72,796,405	\$ 68,609,381

4) Investments:

As of June 30, 2020 and 2019, the investments consisted of the following:

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	340,000	340,000
	\$ 8,574,810	\$ 6,235,611
Description	2019	
	Cost	Fair value
Fixed income:		
Puerto Rico government bond	\$ 44,451,982	\$ 34,561,416
Private equity securities	1,167,292	1,167,292
SAFE investments	225,000	225,000
	\$ 45,844,274	\$ 35,953,708



PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2020 and 2019

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, 2020, and 2019, the Trust and its Subsidiaries' investments are classified as follows:

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>
Description	2019			
	Level 1	Level 2	Level 3	Total
Fixed income:				
Puerto Rico government bond	\$ -	\$ 34,561,416	\$ -	\$ 34,561,416
Private equity securities	-	-	1,167,292	1,167,292
SAFE investments	-	-	225,000	225,000
	<u>\$ -</u>	<u>\$ 34,561,416</u>	<u>\$ 1,392,292</u>	<u>\$ 35,953,708</u>



PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2020 and 2019

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	2020		
	Private equity securities	SEFA 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>

Description	2019		
	Private equity securities	SEFA investments	Total
Balance at July 1, 2018	\$ 1,167,292	\$ -	\$ 1,167,292
Purchases	-	225,000	225,000
Balance at June 30, 2019	<u>\$ 1,167,292</u>	<u>\$ 225,000</u>	<u>\$ 1,392,292</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, 2020 and 2019:

Description	Valuation Technique	Unobservable Input
Private equity securities	Acquisition cost	None
SEFA investments	Acquisition cost	None

**PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH
TRUST AND ITS SUBSIDIARIES****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**
June 30, 2020 and 2019**6) Convertible promissory notes receivable:**

As of June 30, 2020 and 2019, the Trust is the holder of the following convertible promissory notes:

Description	2020	2019
6% interest bearing promissory note, convertible to shares of common stock of the issuer. The note was due in August 2018.	\$ -	\$ 75,000
2% interest bearing promissory note, convertible to shares of common stock of the issuer. The note was originally due in July 2019 and was extended to April 2021.	75,000	75,000
5% interest bearing promissory note, convertible to shares of common stock of the issuer. The note was due in July 2019 and converted during the year ended June 30, 2020.	-	75,000
6% interest bearing promissory note, convertible to shares of common stock of the issuer. The note was originally due in November 2018 and was extended to 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 is due in July 2020.	50,000	-
7% interest bearing promissory note, convertible to shares of common stock of the issuer. The note is due in October 2020.	75,000	-
5% interest bearing promissory note, convertible to shares of common stock of the issuer. The note is due in June 2020 and is currently under negotiation.	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	-
5% interest bearing promissory note, convertible to shares of common stock of the issuer. The note is due in January 2021.	75,000	-
	<u>\$ 560,000</u>	<u>\$ 375,000</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, 2020 and 2019**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, 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 year ended June 30, 2020, consisted of the following:

Description	Amount
Endowment fund at beginning of year	\$ -
Investment return:	
Investment income, net	212,635
Net appreciation	630,184
Total investment return	842,819
Contributions	34,766,250
Endowment fund at end of year	\$ 35,609,069



PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2020 and 2019

8) Property and equipment:

As of June 30, 2020 and 2019, property and equipment consist of the following:

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>
Description	June 30, 2019		
	Cost	Accumulated depreciation and amortization	Book value
Furniture and fixtures	\$ 109,906	\$ 101,035	\$ 8,871
Computer and laboratory equipment	248,225	122,562	125,663
Leasehold improvements	612,271	296,568	315,703
	<u>\$ 970,402</u>	<u>\$ 520,165</u>	<u>\$ 450,237</u>

9) Building:

As of June 30, 2020 and 2019, building consists of the following:

Description	2020	2019
<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	\$ 3,056,568
<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>	<u>6,603,500</u>
Less: Accumulated depreciation	<u>(789,196)</u>	<u>(599,033)</u>
	<u>5,871,791</u>	<u>6,004,467</u>
Construction in progress	<u>248,853</u>	<u>66,597</u>
	<u>\$ 6,120,644</u>	<u>\$ 6,071,064</u>



PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2020 and 2019

As of June 30, 2020 and 2019, 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.

As of June 30, 2020 and 2019, 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 \$11,148,000 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:

On May 1, 2020, the Trust and its Subsidiaries received a loan of approximately \$1,786,000, under the Payroll Protection Program (PPP), created by the Coronavirus Aid, Relief, and Economic Security Act (CARES Act). The Trust and its Subsidiaries and the Small Business Administration (SBA) jointly guarantee this loan. The money received from the loan will be used for certain eligible expenses such as payroll costs, group health care benefits, rent, and utilities, among others. The Trust and its Subsidiaries must comply with certain restrictions and conditions included in the CARES Act in order for the loan to be fully or partially forgiven. The loan amount not forgiven will bear interest at 1.0% and will be payable commencing on November 1, 2020 up to maturity on April 30, 2022.



PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2020 and 2019

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, 2020 and 2019, the Trust and its Subsidiaries leases a facility for five (5) years expiring during the year ending June 30, 2021. The monthly rental payments approximate \$18,000.

For the years ended June 30, 2020 and 2019, revenues on rental agreements amounted to approximately \$269,000 and \$331,000, respectively.

Future minimum collections related to the lease agreements after June 30, 2020, are approximately \$237,000.

14) Operating lease agreements:

The Trust and its Subsidiaries entered into a lease agreement for the use of the facilities for P18, described in Note 1B. The agreement calls for escalating monthly rental payments ranging from \$11,983 to \$13,510 through December 2020. Total rent expense related to this agreement for the years ended June 30, 2020 and 2019, amounted to approximately \$186,000 and \$168,000, respectively.

On September 17, 2018, 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. Total rent expense related to this agreement for the years ended June 30, 2020 and 2019, amounted to approximately \$63,000 and \$20,000, respectively.

Future minimum lease payments subsequent to June 30, 2020, are as follows:

Year ending June 30,	Amount
2021	\$ 171,060
2022	22,500
Total future minimum lease payments	<u>\$ 193,560</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, 2020 and 2019, amounted to approximately \$107,000 and \$25,000, respectively.

**PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH
TRUST AND ITS SUBSIDIARIES****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**
June 30, 2020 and 2019**16) In-kind contributions:**

In-kind contributions for the years ended June 30, 2020 and 2019, amounted to approximately \$3,800 and \$3,000, respectively, which consisted mainly of services provided by tenants related to science, technology, and research.

17) 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.

18) Supplemental disclosures for the statements of cash flows:

- A) Non-cash from investing and financing transactions – During the years ended June 30, 2020 and 2019, non-cash investing and financing transactions were as follows:

Description	2020	2019
Conversion of certificates of deposits to investment in bond	\$ -	\$ 44,644,599
Property and equipment received as donation	\$ 39,425	\$ -
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, 2020 and 2019, the Trust and its Subsidiaries make no interest payments.

19) Reclassifications:

Certain prior year amounts have been reclassified for consistency with the current year presentation. The reclassifications had no effect on the reported change in net assets.

20) Subsequent events:

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).



PUERTO RICO SCIENCE, TECHNOLOGY AND RESEARCH TRUST AND ITS SUBSIDIARIES



NOTES TO CONSOLIDATED FINANCIAL STATEMENTS June 30, 2020 and 2019

In August 2020, the Puerto Rico Department of Housing, a public agency of the Government of Puerto Rico, and the primary recipient of the Community Development Block Grant - Disaster Recovery (CDBG-DR) funds awarded the Trust and its Subsidiaries with approximately \$30,472,000 to implement the Re-Grow Puerto Rico – Urban Rural Agriculture Program (the Re-Grow Program). The Re-Grow Program aims to build agricultural capacity and meet the needs created by the Hurricanes Irma and María, in a wide variety of viable and sustainable agricultural activities. The Re-Grow Program will focus on small farms and agricultural businesses and non-governmental organizations engaged in sustainable agricultural activities that contribute to the strengthening of the agricultural economy after the hurricanes. The Re-Grow Program expires in August 2023.

In August 2020, the U.S. Department of Agriculture (USDA) granted the Trust and its Subsidiaries with approximately \$998,000 under the Distance Learning and Telemedicine Grant Program (the DLT Program) administered by the Rural Utilities Service. The DLT Program aims to provide telemedicine services to improve the patient's health by permitting two-way, real time interactive communication between the patient and the physician or practitioner at a distant site; and distance learning services based and focused on health education curriculum to encourage people to increase knowledge, develop adequate skills and desirable attitudes to improve and maintain an optimum health status. The DLT Program expires in July 2023.

In September 2020, the Centers for Disease Control and Prevention (CDC) awarded \$885,000 contract (the Contract) to the Trust and its Subsidiaries for the Puerto Rico Vector Control Unit. The aim of the Contract is to conduct a research project named *Determining Aedes Aegypti Density Thresholds Preventing Human Arboviral Infections*. The Contract expires in September 2023.

Subsequent events were evaluated through October 23, 2020, the date on which the consolidated financial statements were available to be issued.



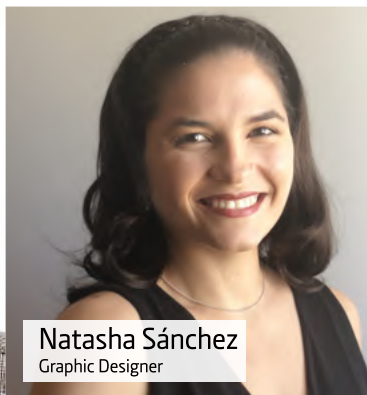
Meet the team



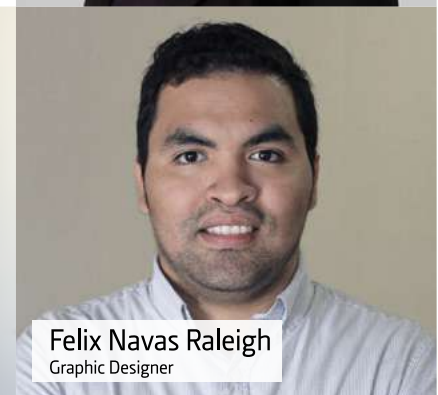
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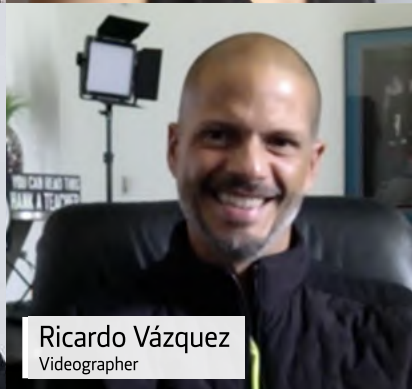
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