National Aeronautics and Space Administration

HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

NASA TECHNOLOGY INFUSION

ROAD TOUR

AND MINORITY-SERVING INSTITUTIONS

University of Puerto Rico

Aeronautical and Aerospace Institute of Puerto Rico

Office of Small Business Mentor-Protégé Program

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AERONAUTICAL & AEROSPACE
INSTITUTE OF PUERTO RICO

University of Puerto Rico and Aeronautical and Aerospace Institute of Puerto Rico Capability Statement

Office of Small Business Mentor-Protégé Program

OVERVIEW

Created on **1903** is the oldest and largest university system in Puerto Rico.

Eleven **(11)** campuses distributed among the island serving a total of approximately 60,000 students.

463 different academic degrees in Arts, Sciences, Business, Engineering and Technology.

450 Ph.Ds conferred in the past five years, half have been in Science and Technology.

Growth Focus: bio-pharma, materials characterization, nanoparticles and materials, medical, energy issues its sustainability and community impact, and its latest addition currently under development aeronautics and aerospace.

Enabling research and development within an academic environment and as a strategic effort for socio economic development in a knowledge based economy with Researchers in science, engineering, biology, medicine, social sciences.

Creation of specialized centers across the island within its campuses and as subsidiary corporations.

AERONAUTICAL & AEROSPACE
INSTITUTE OF PUERTO RICO

The Aeronautical and Aerospace Institute of Puerto Rico (AAIPR):

A non-profit corporate subsidiary of the University of Puerto Rico with the value proposition of a comprehensive knowledge ecosystem.

CURRENT RESEARCH CAPABILITIES

Bio-Pharma and Materials

Bio Molecular Sciences Center: HIV/AIDS, Bio informatics, Sequencing and Genotyping, Proteomics.
Material Characterization Laboratory: characterization, identification of unknown materials and analysis to industrial partners under (cGMP's, GLP's) conditions.
Nanotechnology Center for Biomedical and Environmental and Sustainability Applications: nanoscaled materials for cancer therapy assisted by the application of magnetic fields and specialized light sources, composites for removal of emerging contaminants from water sources, including pharmaceuticals and personal care products, and selected pathogens, nanostructured composite materials using polymers as the main component, intended for the next generation of fuel cells applications, nanocatalysts for the conversion of renewable resources.
Center for Biomedical Engineering and Nanomedicine: Biological Applications and Characterization of Nanomaterials.

Medical

Institute of Neurobiology: oscillating neuronal circuits in lobster ganglia, the interactions between neurons and glial cells in amphibians, gene expression in individual identified pyloric neurons in lobsters, calcium signaling in muscle, and the activity, synthesis and turnover of the sodium pump in vertebrates and invertebrates.
Caribbean Primate Research Center: collaborative studies on the entire life cycle of rhesus monkeys as a biological model for humans.
Comprehensive Cancer Center: research and provision of clinical services and treatment related to cancer.

Energy

Center for Renewable Energy: Algal Biomass Production, Conversion of Algal Biomass into Biogas by Anaerobic Digestion, Thermochemical Conversion of Algal Biomass into a Liquid Fuel.

Transdisciplinary

NASA-MIRO Center for Innovation, Research, and Education in Nanotechnology (CIREN): Advanced High Energy Materials, sensing devices that remain operational in harsh conditions in collaboration with NASA, Microgravity Research Technology.

National Institute of Energy and Island Sustainability: provides industry, government, communities, and non-profit organizations with integrated, innovative and sustainable approaches to the solution of energy issues and problems. Consulting in energy policy and energy governance processes, Design of public participation processes, community capacity building, and futures visualization, Identification of areas of needs/services and knowledge gaps, Technology testing and evaluation.

Cayey Institute of Interdisciplinary Research: responsible for disseminating Census information to communities and conduct demographic and economic research.

ON DEVELOPMENT RESEARCH CAPABILITIES

Aeronautical and Aerospace Institute for Multidisciplinary Technologies: Will be dedicated to research, development and commercialization on propulsion technologies, material sciences, navigational technologies, atmospheric sciences and human factors.

FACILITIES: DEDICATED CURRENT AND PROJECTED

Bio molecular Sciences Center-DNA Microarray, global gene expression, cellular/ biological imaging & analysis, Quantitative Gene Express, Microarray Verification, Quality control and Assay Validation, Pathogen Detect, SNP Genotyping, MicroRNA Analysis, Viral Quantification through both Real Time PCR and Thermal Cycle PCR.

Aeronautical and Aerospace Institute for Multidisciplinary Technologies(AAIMT)- Forty nine (49,000) thousand square feet space dedicated for development of five specialized laboratories for research and development activities on propulsion technologies, material sciences, navigational technologies, atmospheric sciences and human factors, a high performance computing facility, six classrooms and meeting spaces, one auditorium and administrative offices.

MAYOR & SPECIALIZED INSTRUMENTATION

Scanning Electron Microscopy, florescence, Infrared, NMR, UV/Vis. High speed centrifugation, Fluorescence Microscopy, Real time PCR, Particle Size Analyzer, Vector Network Analyzer, 3- D Printing, Real time PCR, flow cytometer, Atomic absorption Spectroscopy, GC-Mass Spectroscopy. a state-of-the-art ultra high resolution(HR) Cs probe corrected TEM (JEOL JEM-2200FS), a HR TEM (JEOL JEM-2100F), a conventional energy filtered TEM (Zeiss LEO 922), a HR field emission SEM (JEOL JSM-7500F), and a focused ion beam system (JEOL JEM-9310).

PAST PERFORMANCE

The UPR System for several years has had grants with NASA, NSF and NIH. Specifically with NASA the UPR has an SBIR Phase 1 and 2 in joint venture with Faraday Technology. Current business partners such as Honeywell are using the UPR thru the AAIPR to increase their human capital skills and knowledge to attract new business and initiatives in "IoT" and Microsatellites to their facilities in the island. Honeywell also is a main stakeholder in the AAIMT project.

NATIONAL AND GLOBAL OUTREACH

Global Outreach:

Part of the Select USA strategic efforts to attract foreign direct investment to the United States.

2016, 2017, 2018 Hannover Messe in Germany.

2017, 2018

Select USA Investment Summit Exhibitor as an Economic Development Organization.

National Outreach:

With the AAIMT initiative the University of Puerto Rico and the USA have with more capabilities to develop and commercialize and transfer technological and scientific innovations in alignment with the strategic efforts of the USA Department of Commerce, the USA Department of Labor, NASA and in the near future other federal agencies strategies.

Questions?