



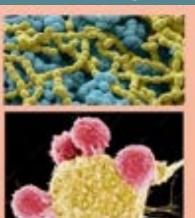




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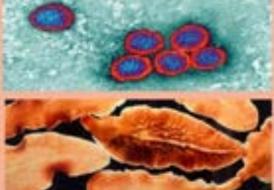












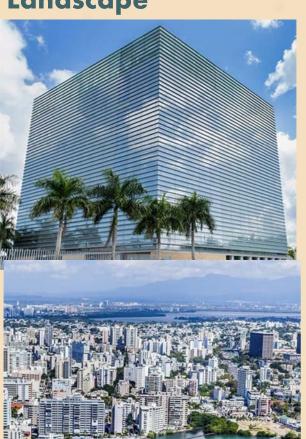
Microbiology and Medical Zoology School of Medicine - Medical Science Campus

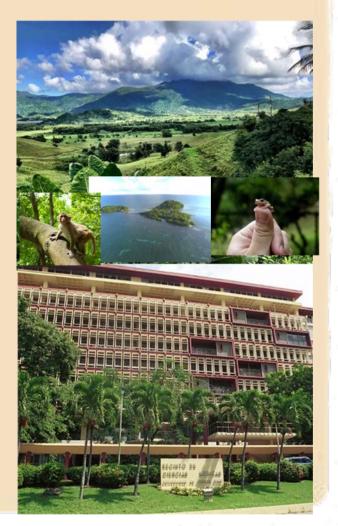
PROGRAMA GRADUADO MAESTRIA (M.S.) DOCTORADO (Ph.D.

Puerto Rico's Scientific Landscape





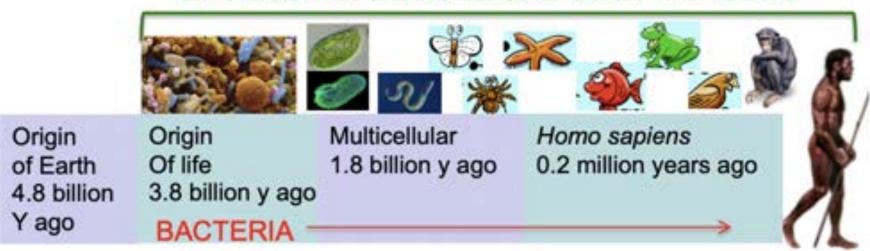






MICROBIOLOGY FIRST!

Evolution of bacteria and other life forms







What it means to be a Microbiologist?

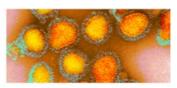
- The microbiologist is a connoisseur of the basic and clinical foundations of the different microorganisms (bacteria, fungi, viruses, parasites).
- He/she studies them at the cellular and molecular level, including their structure and function, their metabolism, using molecular biology, genetics, genomics and meta-omics techniques
- Studies the epidemiology, pathogenesis, diagnosis, treatment, and prevention of infectious diseases and malignancies
- Combines Techniques and knowledge from multiple fields to understand disease onset and progression







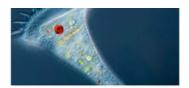
Archaea



Viruses



Fungi



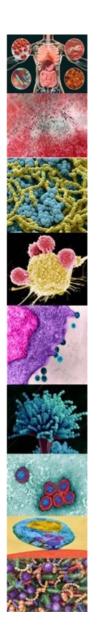
Protozoa



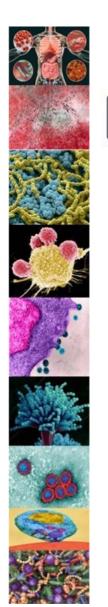
What are the Fields of Microbiology that Our Department Tackles?

- Bacteriology
- Bacterial Genetics
- Mycology
- Virology
- Parasitology
- Protozoology
- Helminthology
- Immunology
- Microbiome
- Big Data / Omics





RESOURCES CORE LABS/ RESEARCH CENTERS



Translational Proteomics Center

UPR, Medical Sciences Campus Comprehensive Cancer Center, Lab 5 787-772-8300 Ext. 1411







The Translational Proteomics Center provides training, resources, and tools for investigators and students seeking to use proteomics approaches to their research. The Center has been successful in fostering collaborations among researchers aiming to reduce health disparities.

Services

- Identify and quantitate the proteomes in your sample.
- Incorporate TMT Labeling
 for Protein Quantitation
- High resolution Mass
 Spectrometry: Q-Exactive
 Plus coupled to an Easy nLC
 1200.

Instrumentation

- Varioskan Flash Spectra Reader
- Chemi Doc XSR
- Speed Vacuum
- Ultracentrifug
- Analytical Balances, et

Available for registered users

Services and Fees

- Applications for sample analysis need a consultation and filling ar Official Registration Form
- Monday through Frida 9:00 AM to 4:00 PM
- http://rcmi.rcm.upr.edu/? q=proteomic-page







Contact People

Dr. Loyda M. Melendez, Director (loyda.melendez@upr.edu)
Yadira M. Cantres (ycantres@cccupr.org)
Ana E. Rodriguez (ana.rodriguez48@upr.edu)

Annual Workshops













PR-INBRE METABOLOMICS RESEARCH CORE

Nataliya Chorna, PhD Director PR-INBRE-MRC email: nataliya.chorna@upr.edu
Ph. 787-758-2525 ext. 1640







Tropical and Emerging Infectious Diseases (TEID) Core Lab



TEID

- The TEID aims to support research and promote collaborations in Tropical and Infectious Diseases.
- The TEID provides instrumentation facilities and key services to support and leverage research projects on Infectious Diseases and Health Disparities.
- A BSL-2 containment facilities equipped for sharing resources is available for users.
- Offers trainings, seminars, workshops and symposiums in Infectious Diseases.
- Located at the Department of Microbiology and Medical Zoology, Lab A-349, Guillermo Arbona Building.

CONTACT US



Adelfa E. Serrano, Ph.D. **TEID Core Lead** adelfa.serrano@upr.edu 787-758-2525 ext. 1313



Emilee E. Colón, Ph.D. Research Scientist emilee.colon@upr.edu 787-758-2525 ext. 1314



Tissue Culture Room

- CO₂ Incubator
- Shaker Incubator
- Tissue Homogenizer
- **Biological Safety Cabinet**
- Autoclave

Other Equipment

- SpectraMax M3 Multimode Reader
- DeNovix DS-11 FX
- Qiagen PowerLyzer 24
- Qiagen QIAxpert
- Amaxa Nucleofactor System
- Eppendorf Centrifuge 5810R
- PCR Workstation
- Veriti Thermal Cycler
- CHEF-DR III PFGE System
- BioRad GelDoc
- Chemical Safety Cabinet

EQUIPMENTS



Microscopes

- Fluorescence Microsco Nikon E800
- Stereomicroscope Nikon SMZ800N
- Nikon Inverted Microscope



Specialized Software

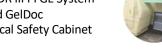
- GraphPad Prism 9
- Clone Manager
- Grammarly
- BioRender











ACKNOWLEDGEMENT

Please acknowledge CCRHD support using the wording below:

"Research infrastructure support and services were provided, in part, by the RCMI-Grant U54MD007600 from the National Institute on Minority Health and Health Disparities (NIMHD)".

INFORMATION



PR-Medical Sciences Campus Buillermo Arbona Main Building Department of Microbiology Lab A-349, Third Floor San Juan, PR 00935

http://rcmi.rcm.upr.edu/?q=tropical

CARIBBEAN PRIMATE RESEARCH CENTER



PI: Dr. Carlos A. Sariol



Grant Number: P40 OD012217

Services Provided

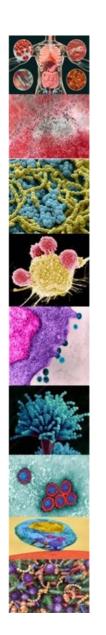
Demographic data: The demographic database of Cayo Santiago Field Station is based on daily visual census and includes over 60 years of data and over 11,000 rhesus monkeys. Data include ID, date of birth, date of death, social group, intergroup migration, and maternity.

Genetic data: The genetic database of the CPRC based on short tandem repeats (STRs) includes over 5,000 rhesus monkeys. Data are used for paternity and maternal confirmation.

Skeleton collection: The collection consists of over 3,300 rhesus monkey skeletons (2,634 skeletons with known ID and life history).

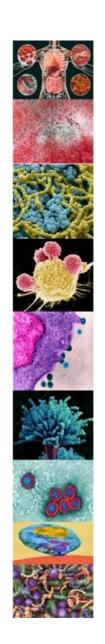
Molecular biology tools: The Virology Laboratory offers a set of molecular biology and bench services and tools for handling and processing samples, including real-time PCR, molecular cloning, SDS-PAGE, Western Blot, ELISA, immunophenotyping and dendritic cells determination.

Immunology Core (IC): The IC is integrated into the Virology Laboratory. Hercules, CA), and flow cytometry through the acquisition of an Attune Acoustic FACS (Life Technologies, Thermo Fisher Scientific, Waltham, MA) for cell phenotyping.



Program description

- The only one in PR that offers a Master's and Doctorate in Microbiology.
- 10 Professors + 2 Adjunct Professor + 2 Ac-Honorem
- 14 graduate students (3 MS and 11 PhD).
- Top quality physical facilities and technical equipment.
- Scientific interaction with the other basic and clinical Departments of the RCM and with academic institutions in PR, Europe and the United States of America.



Our Dept Aims to:

- Train the next generation of Microbiologists, in the frontier of basic and translational disciplines
- Create bridges among Faculty, other basic and clinical Depts, national and international collaborators
- Develop an evolving Creative vision
- Recognize Talent and Empower students
- Collectively embrace the future of science and technology



Microbiology and Medical Zoology

School of Medicine - Medical Science Campus

FACULTY AND LABS



Dra. Adelfa E. Serrano



Dr. Benjamin Bolaños



Dra. Edna E. Aquino



Dra. Loyda Meléndez



Dra. Stephanie Dorta



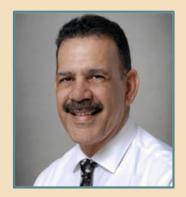
Dra. Ana M. Espino



Dr. Carlos A. Sariol



Dra. Idalí Martínez



Dr. Raúl Rivera

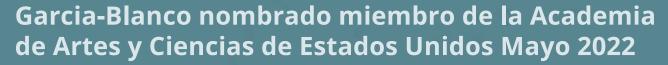


Dra. Filipa Godoy Vitorino



Mariano Garcia-Blanco, MD, PhD

Professor and Chair, Mildred Hajek Vacek and John Roman Vacek Distinguished Chair in Honor of President Truman G. Blocker, Jr. Adjunct Professor of Emerging Infectious Diseases, **Duke-NUS Medical School, Singapore** Professor, Ad-honorem, UPR School of Medicine, Dept Microbiology



Joel Vega-Rodriguez, Ph.D.

Stadtman Investigator Molecular Parasitology and Entomology Unit, Lab of Malaria & Vector Research Assistant Professor, Ad-honorem, UPR School of Medicine, Dept Microbiology

NIAID/DIR









Profesores Ad-Honorem 2022

Malaria Research Lab PI: Adelfa E. Serrano, Ph.D.

Mission: To conduct innovative research to better understand parasite biology, improve malaria treatment and control, and to strength students research and professional development.

Aims: Our long-term goal is to better understand Plasmodium parasite's biology to elucidate mechanism of drug resistance and identify and validate novel targets for therapeutic interventions.



- Molecular mechanisms of multidrug resistance in *Plasmodium* parasites.
- Glutathione metabolism in *Plasmodium*: implications for parasite development and drug resistance.
- Identification and development of novel antimalarial drugs.

Interests: Parasitology, Malaria Drug Resistance, Malaria Drug Discovery, Molecular Biology of Malaria

Opportunities: Publications, International

Collaborations, Experimental Techniques, Presentations, Mentorship



Research Team



Emilee E. Colón, Ph.D. Research Scientist



Sergio Ramos PhD Candidate USal



Angélica M. Rosado Roberto G. Díaz PhD Candidate UPR-RP

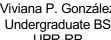


PhD Student UPR-RP



Viviana P. González Undergraduate BS **UPR-RP**



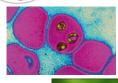














Virology Laboratory: Flavivirus Program

Dr. Carlos A. Sariol Principal Investigator •





Nicole Marzán Rivera Ph.D. Candidate







Mitchell Sánchez Ph.D. Candidate



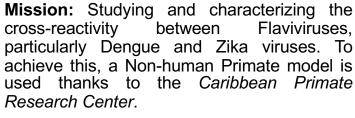




Ph.D. Candidate



Ángel E. Miranda Santiago Crisanta Serrano, Ph.D. Post-Doc







scholarships





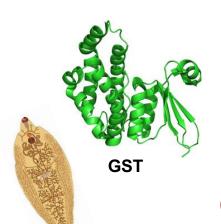




Laboratory of Immunology and Molecular Parasitology

Dr. Ana M. Espino, PI











Dr. Bianca Valdes Post-Doctoral

Albersy Armina P.h.D. Candidate

Marimar Figueroa P.h.D Candidate



Aims: To identify and characterize molecules from Fasciola hepatica with capacity to interact with TLRs of macrophages, dendritic cells and neutrophils and suppress the inflammatory responses.

We seek to device potential therapeutic targets against inflammatory diseases including sepsis and ulcerous colitis. For this, mouse models of septic shock, and ulcerous colitis and non-human primate sepsis model are used.

Areas of Interest: Parasite Immunology & Biochemical of proteins Opportunities: Publication, Mentorship, Collaborations and Professional Development



Riseilly Ramos M.S. Student



Charlie Ocasio Research Assistant



Veronica Olivo P.h.D. Student



Diego Suarez M.D. Student





Dr. Loyda M. Meléndez Viral Immunology Laboratory







Mission: Train students in Viral Innate Immunity, focusing in understanding the role of macrophages and the mechanisms of virus induced pathogenesis. We seek to devise potential diagnostic and therapeutic targets against viral infections including HIV, Zika, and SARS-CoV2.

Projects

- Determine the role of cannabinoid receptor type 2 activation in cathepsin B secretion and neurotoxicity from HIV-infected macrophages
- Role of placenta in mother to child transmission of Zika virus
- Host factors associated to COVID-19 disease severity
- Targeting host factors and signaling pathways to prevent long-neuro-COVID-19







Gabriel Borges Dr. Lester Rosario

Proteomics Services

Mission: Core facility is supported by RCMI /INBRE/ and Comprehensive Cancer Center and provides resources and expertise in Proteomics to scientists in Puerto Rico.

Contact Information

Email: loyda.melendez@upr.edu

Telephone: (787)-758- 2525 Ext. 2818 (Lab) **Websites:** https://rcmi.rcm.upr.edu/proteomic-page https://md.rcm.upr.edu/micro/dt team/dr-loyda-m-

melendez/

Location: 3rd Floor of the Comprehensive Cancer

Center



The 2022-23 Team

Mentor:

Dr. Loyda M. Meléndez, MT. MS, Ph.D. Graduate Students:

- Gabriel Borges-Vélez, PhD Candidate Collaborating Postdocs
- Lester Rosario Rodriguez, PhD
- Yisel Cantres Rosario, PhD

Undergraduate Students:

- Veronika Rivera-Nieves
- Alexandra Rosas

Proteomics Services and Workshops:

- Yadira M. Cantres, MS
- Ana E. Rodríguez De Jesús

Molecular Virology Lab PI: Idalí Martínez, Ph.D.

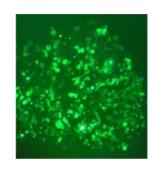


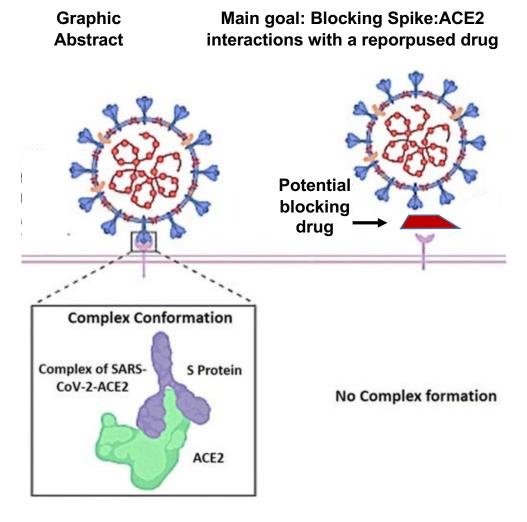
Project: Identification and evaluation of SARS-CoV-2 cell entry inhibitors as novel drugs for COVID-19

UG student: Marcos Rodríguez Montes









Adapted from Baig et al., Drugs in R&D (June 2020), 20; 161-169.



Microbiology Department Aquino's Lab (A370)

Field

Molecular Mechanisms of Antibiotic Resistance in Bacteria.

Projects

- 1. Identification and Molecular Characterization of β-lactam Resistance in Selected Multidrug Resistant Bacterial Clinical Isolates in PR (in collaboration with Dr. Guillermo J. Vázquez).
- 2. Effect of Circadian Variations on Human Milk (in collaboration with Rutgers University & Dr. Filipa Godoy).
- 3. Characterization of Microbiota and Identification of associated ARGs in Human Breast Milk (in collaboration Dr. Filipa Godoy, Dr. Maribel Campos & Título V-Reto-Motor)

Team

- Edna E. Aquino Piñero, PhD, MT (ASCP)
- Angel A. Torres Román
- Melissa M. Cabrera Ruiz
- Andrea Lorenzo-Meléndez
- Adriana Lorenzo-Meléndez



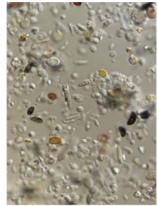
Laboratory of Mycology











Field of study: Mycology and Aerobiology

Currently working projects:

- San Juan and Caguas AAAAI Stations
- Outdoor aeroallergens and COVID-19 pandemic in PR
- Airborne fungal communities and immunotoxicity in the aftermath of hurricane Maria

Mycology laboratory team:

- Dr. Benjamin Bolaños-Rosero
- Lorraine N. Velez-Torres Ph.D. candidate
- Xaymara Hernández-González M.S student







Medical Bacteriology





Epidemiology and Mechanisms of Resistance a Anti-microbial Agents in Bacteria



Dr. Raúl Rivera



Dra. Edna E. Aquino



Dr. Guillermo J. Vázquez

UPR Microbiome Lab

Principal Investigator



Filipa Godoy Vitorino, Ph.D.

Graduate students



Ph.D. candidate



Eduardo Tosado-Rodríguez Natalie Meléndez Vázquez Ph.D. candidate



Elif Kardas Ph.D. candidate











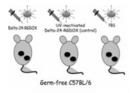
Kimil T. Acosta Pagán MS 2022

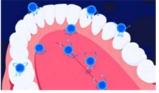


Luis A. Acevedo Márquez M.S. 2022

























Mission

The UPR Microbiome Lab's mission is to translate microbial ecology to improve human health, empower graduate and undergraduate education in microbiome sciences, and reveal multi-kingdom biodiversity underlying microbiome-driven malignancies.

Stephanie M. Dorta Estremera, Ph.D. Cancer Immunology Laboratory







Topics of interest

- Immune-mediated mechanisms for immunotherapy resistance in HPV-related cancers
- Interplay of microbial and immune cells at mucosal tissues in HPV-related cancers



Funding by:

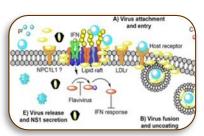
Comprehensive Cancer Center
Hispanics in Research Capability
The Alliance
U54-IMPACT Program
RCMI

<u>Laboratory</u> techniques

- Cell culture
- Mouse models
- Flow cytometry
- •ELISA



Division of Vector-Borne Diseases (DVBD)



Todos Contra

Virology and Epidemiological Surveillance Laboratory CDC San Juan

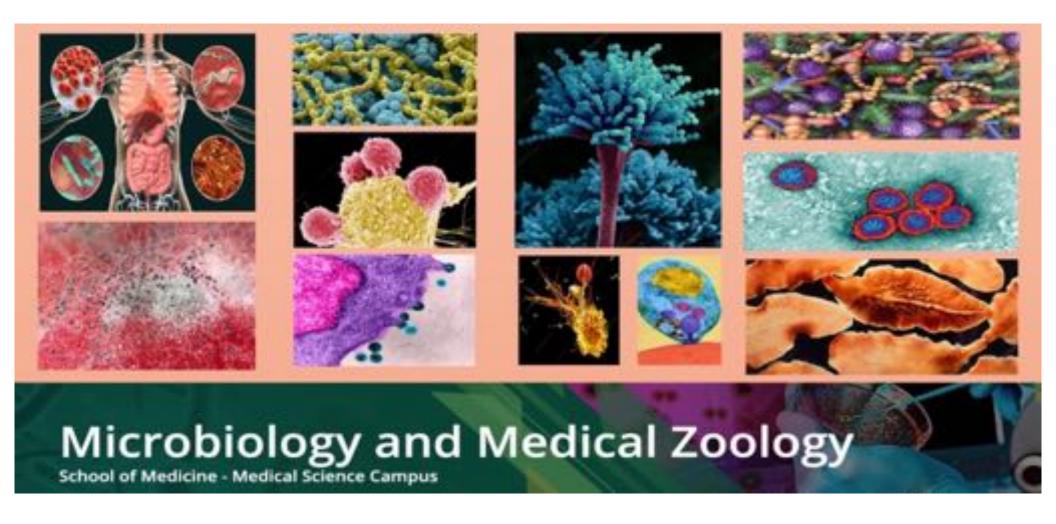
Pathogenesis caused by Dengue virus Phylogenomics Interactions between Dengue and Interferon Pathways



Jorge L. Muñoz, Ph.D.



Fabiola Cruz, Ph.D.



ACTIVITIES AND OUTREACH

Microbiology Graduate Student Chapter UPR-MSC

Mission

We promote the importance of Microbiology in our lives as a multidisciplinary science and we are a poin of contact between students and faculty of different disciplines who have an interest in Microbiology.

Board 2021-2022 Mentor: Dr. Edna Aquino Piñero President: María Del Mar Figueroa Vice-president: Natalie M. Meléndez

Secretary: Jennifer Díaz Rivera **Public Relations:** Xaymara Hernández

Treasurer: Angélica Rosado **Historian:** Gabriel Borges Vélez **Vocal:** Ángel Miranda Santiago

Who can join us?

Students enrolled in a full-time academic course in our institution and faculty from any discipline.



- Outreach activities
- Conferences
- Networking
- Improve your leadership skills
- Professional development
- Expand your knowledge in Microbiology
- Apply to scholarships, internships and fellowships for SMPR or ASM members









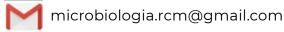
Capítulo de Microbiología-Recinto de Ciencias Médicas



@microbiologia.rcm









GWIS - Puerto Rico Chapter

Mission:

To create a community that inspires, supports, recognizes and empowers women in science, or any individual who identifies as a woman, belonging to any academic and/or professional stage.





Contact us: puerto-rico@gwis.org

Follow us:







@GWIS Puerto Rico

https://www.gwis.org/page/fellowship_program

Our Board:



Albersy Armina Rodríguez, MS President



Lorraine N. Vélez Torres, MPH Vice-President



Xaymara Hernández González Secretary



Valeria De La Rosa Reyes Treasurer



Alexandra Torres Bracero **National Liaison** Officer



Jaylene M. Álvarez Del Valle Outreach Coordinator



Cindy M. López Hernández **Public Relations** Officer



Our Mentor



Microbiology Department

Membership:

	Regular	Transitional	Graduate Student	Affiliate-Undergraduate	National Life	Emeritus	Honorary
National	\$65	\$45	\$30	\$10	\$650	\$25	\$0
Chapter	\$20	\$15	\$10	\$5	\$20	\$10	\$0
Total	\$85	\$60	\$40	\$15	\$670	\$35	\$0

WELCOME ACTIVITIES

Class 2017-2018



Class 2019-2020



Class 2018-2019





Sociedad de Microbiólogos de Puerto Rico (SMPR)







Sociedad de Microbiólogos de PR ASM Branch



Dr. Ana M. EspinoRecipiente del Premio Arturo Carrión-2019 Recipiente de la Medalla El Koury-Medina-2019c





Dra. Loyda MelendezRecipiente del Premio Arturo Carrión-2021



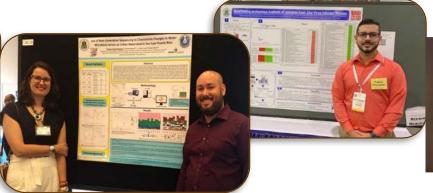


https://www.isme-microbes.org/

Oral and Posters Presentations in Local, National and International Forums

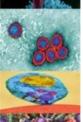












Graduates of the Department of Microbiology

Dr. Marcos Ramos Research Fellow, The NIH Clinical Center



Dr. Joel Vega en John Hopkins



Industria Gobierno (FDA, Dept Salud) Investigación Docencia **PostDoctorados**



Dr. Lester Rosario, NIH K00 award recipient

Dr. Erick Perez Postdoc Scientist, Takeda Pharmaceutical Company





Dr. Ivan Ferrer Dept de Salud Dr. Kimberly Cabán Ely Lilly Frances Vilá, Ms CDC Dr.María del Mar Cancer Center Scientist



Dr. Krystal Colón / Dr. Yisel Cantres Pfizer, Tenessee / NIH R00 award recipient

Respiratory and Immunology Project and Laboratory Research Team- Larkin University





Fabiola Cruz, Ph.D. Epidemióloga

Places to work once graduated











MERCK

AMGEN

Universidad de Puerto Rico

Puerto Rico Science, Technology & Research Trust







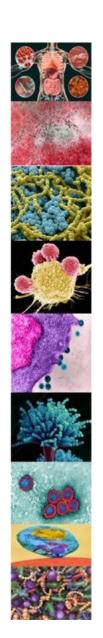
Johnson Johnson =









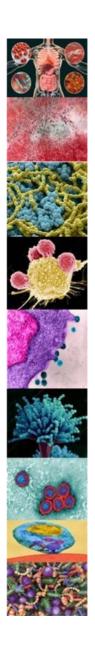


Requisitos de Admisión

Requisitos M.S. y Ph.D.

- **BS** en Ciencia de Institución Acreditada
- GPA mínimo de 3.0 en Ciencias y General
- GRE General
- 3 cartas de recomendación
 - Entrevista
 - Ensayo Metas Profesionales
 - Fecha Limite: 1ro de Diciembre





Total Créditos Requeridos

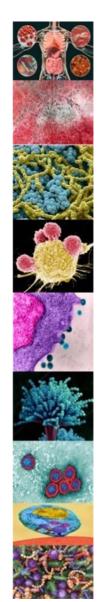


Maestría en Ciencias (M.S.) (min. 3 años)

- 27 Créditos en Cursos
- 6 Créditos de Tesis
- 33 Créditos Total

Doctor en Filosofía (Ph.D.) (min. 6 años)

- 46 Créditos en Cursos
- 15 Créditos en Tesis
- 61 Créditos Total



Financial Support

- Ayudantía (UPR)
- Préstamos Estudiantiles
- Suplementos de Proyectos Federales
- Becas:
 - NIH Predoctoral Fellowship (F31)
 - Gates Millenium
 - Ford Foundation
- Programa RISE
- Grants de Profesores
- Gant Diversity Supplement
- •(NIH salary)



Administrative and Technical Officers



Filipa Godoy-Vitorino, Ph.D. Chair



Lcdo. Pedro Rivera, MT (Encargado Lab Enseñanza)



Teresa Arana. MT, MPH (Administradora Lab. Virología)



Brenda Carrucini, BS
Asistente Administrativa IV
Administradora
brenda.carrucini@upr.edu
A-367, EXT 1389

Department Chair B321, ext. 2096



Contact

Department of
Microbiology and Medical
Zoology
School of Medicine
Medical Sciences Campus
University of Puerto Rico

Address PO BOX 365067 San Juan, P.R. 00936-5067





https://md.rcm.upr.edu/micro/



¡We're waiting for you! ¡LOS ESPERAMOS!





CapituloDeMicrobiologiaRecintoDeCienciasMedicas



@microbiologia.rcm