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### **ACADEMIC BACKGROUND**

- 2001 – **Post Doctoral Studies**, NIDCR, National Institutes of Health Bethesda, Maryland. Advisor: Dr. Stephen Leppla
- 2000 – **PhD in Bacteriology University of Wisconsin-Madison, Madison, Wisconsin**  
Advisor: Dr. Timothy Donohue
- 1993 – **Master in Sciences in Biology University of Puerto Rico, Mayagüez Campus, Mayagüez, Puerto Rico.** Advisor: Dr. Carlos Betancourt
- 1989 – **Bachelor in Science in Industrial Microbiology University of Puerto Rico, Mayagüez Campus, Mayagüez, Puerto Rico.**
- 1989 – **Teacher License for Secondary School Education in Sciences from the Department of Education of PR as a part of a University of Puerto Rico, Mayagüez Campus Program.**

### **GENERAL PROFILE**

Dr. Carlos Rios-Velazquez undergraduate and graduate experience have allowed performing research studies with a diverse group of microbes including fungi, bacteria, and viruses; combined with the molecular and physiological understanding of their biological processes to test its potential for solving problems. The Microbial Biotechnology and Bioprospecting (MBB) laboratory developed by Dr. Rios-Velazquez in 2001 at UPR-Mayaguez seek the detection of activities with biomedical and biotechnological application from microorganisms in different environments using functional genomics, and combinatorial chemistry technology. Also, the Rios-Velazquez' MBB lab. has focused on using microbiological, biochemical, physiological and molecular approaches to isolate, and identify cultivable microbes. The MBB lab. has trained more than 500 students from the Biology, Microbiology and Biotechnology, and twenty (20) Graduate students have obtained their MS. Some of the undergraduate students have been able to participate with Dr. Rios-Velazquez in programs such as Faculty and Students Team (FaST: NSF, DOE at Lawrence Berkeley National

Laboratory), and Computational and Systems Biology initiative (CSBi: Howard Hughes at Massachusetts Institute of Technology) and Mastering Metagenomics at University of Wisconsin-Madison and Yale University. He was part of the NSF funded Microbial Observatory at Cabo Rojo Salterns, where Microbial Mats were molecularly analyzed in order to understand bacterial diversity and generating metagenomic libraries in order to find new genes and activities present in uncultivable microbes. Recent studies have been also performed in rainy and dry forests in Puerto Rico supported by USDA-CSREES. The expertise in metagenomics developed in the Dr. Rios-Velazquez MBB has allowed the developed of libraries from multiple environments such as water reservoirs, rives, caves, Microbial Mats, hot-springs, forests, invertebrates and new research is being done in microbiomes. Also, the MBB has been involved in the development of several workshops' metagenomics for investigators, teachers, and faculty in different educational institutions in Puerto Rico. This includes collaborations with colleagues in different disciplines. Besides having a teaching license from the Department of Education of Puerto Rico, and being a supervisor of the teachers' preparation program, Dr. Rios-Velazquez is actively involved in educational research and pedagogically activities and experiences for students teachers and faculty at different levels in topics such as emerging disciplines such as metagenomics, Geomicrobiology, Synthetic Biology, development models to involve secondary schools in research and Responsible Conduct of Research. Dr. Rios-Velazquez have been actively involved as a research mentor of students in MARC/Sloan, Louis Stokes Alliance for Minority Participation (PR-LSAMP mentor and science coordinator), Biominds, RISE (UPRM RISE2BEST), STEP UP, and BRIDGES programs. Also Dr. Rios-Velazquez have been the advisor/mentor of several students' organizations such as the Industrial Biotechnology Student Organization, the Honor Society in Biology Beta Beta Beta, SACNAS-RUM, Astrobiology, Exobiology Student Association and international Genetic Engineered Machines (iGEM-RUM). Finally, Dr. Rios-Velazquez is part of the faculty of the University Institute of Community Development, where he has been actively linking different courses to community service using the Participative Action Investigation.

### **KEY ACHIEVEMENTS**

- Developed a research lab. (Microbial Biotechnology and Bioprospecting) that has trained more than 500 undergraduate students in active research.
- Establish the MBB laboratory as an educational and research center for the students, faculty/teachers and general public to be aware and understand emerging disciplines such as Metagenomics, Astrobiology, Geomicrobiology, Synthetic Biology.
- Developed an expertise in metagenomics and have generated an impressive collection of metagenomic libraries from diverse environments in Puerto Rico that has allowed several collaborations in different departments at UPR-M and with other educational systems and universities at PR and USA.
- Developed initiatives to train college/school students and faculty/teachers in metagenomics, Biotechnology, Research Ethics, Mentoring and Team Work.

- Actively supported the development of scientific fairs and research participation of students in scientific fairs.
- Also, and in collaboration with other faculty from different educational centers, the generation and establishment of novel pedagogically models to develop of research skills and advance and engage students at college level and K-12 into research investigation.
- Developed platforms (SCiTeCC, CIENTEC, ABTech) at different levels to disseminate research and educational topics, to network and exchange knowledge.

### **ACADEMIC APPOINTMENTS, POSITIONS AND EMPLOYMENTS**

2016 – present UPRM-Arts and Science College representative of the University Institute for Community Development.

2016 - present UPRM-MARC program Director

2016 – UPR-M BRIDGES program co-director

2015 – 2016 Science Mentoring Coordinator of PRLSAMP at UPR-Mayaguez.

2011 – present Adjunct Faculty Food Science Technology Master Program at UPR-M.

2012 – present Journal of Microbiology and Biology Education **Editorial Board**.

2012 – present **Full Professor** at University of Puerto Rico at Mayagüez

2010 – present Responsible Conduct of Research (RCR) Coordinator in the RISE2BEST program at UPR-M.

2010 – present Member Mastering Metagenomics Advisory Board. Yale University.

2010 – 2014 UPR-M Industrial Biotechnology **Program Coordinator**

2011 – 2011 Member INDUNIV, BioAlliance Cluster.

2010 – present Advisory Board member of the Building Research Infrastructure and Capacity (BRIC) program: "Strengthening Interdisciplinary Research and Training at UPR Cayey".

2007 - 2009 **Professor** Biotechnology I: Introduction to Biotechnology: Certificate in Industrial Biotechnology Techniques. UPR-Humacao

2007 – present **Adjunct faculty** of the University Institute for the Community Development.

2005 – 2010 – **Co-Director** - Center for Hemispherical Cooperation in Research and Education in Engineering and Applied Sciences (CoHemis). University of Puerto Rico at Mayagüez (CoHemis).

2007 – 2012 Advisor - **Society for the Advancement of Chicanos/Latinos and Native American in Science** (SACNAS), UPR-M chapter.

2007 **NSF Panel Reviewer** – Microbial Interaction and Bioprocesses

2006 – 2010 **Science Mentoring Coordinator** – PR-LSAMP at UPR-Mayaguez.

2006 **Professor Biotechnology II: DNA analysis: Certificate in Industrial Biotechnology Techniques. UPR-Humacao**

2004 – 2005 **Biotechnology Advisory Board**. Council for Superior Education in Puerto Rico (CES).

2003 – 2011 **Associate Professor** at University of Puerto Rico at Mayagüez.

2002 - present **President of the Scientific Review Committee**. Southwestern Educational Society (SESO) Mayagüez, PR.

2001 – present Teacher Preparation Program; **teacher-student practicum school Supervisor**.

- 2001 – 2005 **Advisory Board.** Industrial Biotechnology Program. University of Puerto Rico at Mayagüez.
- 2001 - 2003 **Assistant Professor** at University of Puerto Rico at Mayagüez
- 2001 – present **Advisory Board** Industrial Biotechnology Program UPR-Mayagüez
- 2001- 2008 **Advisor** of the Caribbean Association of Industrial Biotechnology, Jr. Chapter
- 2000 - present **Professor at the Science and Math Upward Bound Program at the Inter American University of Puerto Rico at Ponce Campus.** (courses taught: Research Methods, and Science and Technology Topics)
- 2001 **Post-Doctoral Fellow**, National Institutes of Health, Maryland
- 1994 - 1995 **Faculty at Pontifical Catholic University of PR at Ponce** (courses taught include: Microbiology for nursing, general Biology and lab, Biological Sciences). **Advisor** of the Zeta Delta Chapter of the honor Society Beta Beta Beta.
- 1993 **Faculty at Inter American University of PR at Arecibo** (courses taught: Virology, Microbiology and lab, Microbiology for nursing, Seminar, the Human Being and the Environment and lab, General Biology and lab.)
- 1992 - 1995 **Qualified Assessor on the Academy of Scientific Research for Talented Students (AICET).**  
Inter American University, San Germán Campus
- 1992 Inter American **Laboratory Technician** University, Ponce Campus.
- 1991 – 1994 **Professor of Biology, Advance Biology and Research Methods at Upward Bound Science and Math Program.**  
Inter American University, San Germán Campus
- 1990 - 1993 **Instructor of Molecular and Cellular Biology, Virology, Immunology, Biological Sciences, General Microbiology, Microbial Ecology.**  
University of Puerto Rico, Mayagüez Campus
- 1990 - 1992 **Qualified Assessor on Academy of Scientific Research for Talented \ Teachers and Students (AICMET).**  
Inter American University at Ponce Campus.
- 1989 - 1990 **Research Assistant** at Oak Ridge National Laboratories
- 1985 - 1989 **Microbiology Collection Curator**, University of Puerto Rico, Mayagüez Campus
- 1988 **Research Assistant**, Temple University School of Medicine.

### **CREATIVE WORK ACTIVITIES:**

Member of the Asociación de Escritores de Mérida (AEM) and the cultural space: “*Parnassus Patria de Artistas*” where several of his poems have been recognized in the topics of social issues, healing in poems/prose, and Autumn and Summer love. His work has been presented and published in different sources such as: *Cadencias en dos tiempos recital*, *El Periplo de las Mariposas anthology (2015)*, *Alquimia en el telar de las palabras anthology (2016)*, *Memorias del Mar anthology (2017)*, *El viaje y los muros del paraíso (2018)*. *Virtual book: Letras Enfoque Social*, *El Vicio del Tintero*, *la Magna feria internacional del libro Eugenio María de Hostos* and the *IX Festival Internacional de Poesía en Todas Partes*, País de papel No. 4 (2018) among others.

In 2015, Dr. Ríos Velázquez published his first virtual poetry book entitled: *Aires de Cambio* ([http://issuu.com/amarisw04/docs/libro\\_virtual\\_carlos\\_rios\\_velazquez](http://issuu.com/amarisw04/docs/libro_virtual_carlos_rios_velazquez)).

In 2016 was interview at “Talento Escondido” and a podcast was done of one of the poems in *Barricadas vivencias*:

<http://www.jyestudio.com/talentoescondido/poesia/desdelaventana/>

In 2016, he has published the first printed book: *Barricadas vivencias*.

### **Courses designed and offered at UPR-Mayaguez:**

1. Biol 5758 and Biol 5760 – Bacterial Genetics Lab.
2. Biol 6008 – Prokaryotic Molecular genetics and Gene Regulation
3. Biol 6003 – Biology and Technology of Plasmids
4. Biol 6004 - Biology and Technology of Plasmids lab.
5. Biol 6011 – Principles of Metagenomics
6. Biol 6012 – Principles of Metagenomics lab.
7. Biol xxxx – Principles and Applications of Synthetic Biology. Submitted to be accepted as formal course but offered in Spring 2019.
8. Biol xxxx – Principles and Applications of Synthetic Biology. Offered in Fall 2019.

### **Courses offered at UPR-Mayaguez:**

1. Biol 3051 – General Biology I
2. Biol 4368 – Microbial Physiology
3. Biol 5758 – Bacterial Genetics
4. Biol 3300 – Genetics
5. Biol 3770 - Microbiology

### **OTHER ACADEMIC ACTIVITIES:**

2014 Co-developer of: An Introductory Biotechnology course for secondary school. Offered at the Center of Educative Opportunities of Mayagüez (CROEM), Mayaguez, Puerto Rico.

2014 Developer of an academic Certificate in Biotechnology names: *Biotechnology for everybody...* as part of the Continued Education and Professional Studies Program (DECEP) at the University of Puerto Rico at Mayaguez.  
<https://www.youtube.com/watch?v=KJFLgejosX4>  
[https://upr.edu20.org/visitor\\_catalog\\_class/show/195810](https://upr.edu20.org/visitor_catalog_class/show/195810)

2012 – 2014 Organizer and Coordinator of the Applied Biotechnology (ABTech):  
a. ABTech 2012 – Bioenergy  
b. ABTech 2013 – Drug development

c. ABTech 2014 – Regenerative Medicine

2006 – 2010- Editor of the Newsletters: CoHemis Al día, CoHemisférico, and Colegiales Conquistas España.

2006 – 2010 Organizer and Coordinator of the Science and Technology Conferences (SciTeCC):

- a. SciTeCC 2010 – Biomimetics
- b. SciTeCC 2009 – Applied Metagenomics
- c. SciTeCC 2008 - Astrobiology
- d. SciTeCC 2007 - Bioprospecting
- e. SciTeCC 2007 - GeoMicrobiology
- f. SciTeCC 2006 – Systems Biology

2006 – 2010 co-organizer and Co-Coordinator of the Science and technology Symposium at the Upward Bound Program at Inter American University at Ponce Campus CIENTEC):

- a. CIENTEC 2007 – Conservation and Natural Resources
- b. CIENTEC 2006 – Understanding Life and the Discovery of Life
- c. CIENTEC 2004 – Integrating technology in Research and Scientific Formation
- d. CIENTEC 2003 - Integrating Technology and Health
- e. CIENTEC 2002 – Integrating Science and Technology

2006-2014 Organizer and Coordinator of Students and Teachers Summer Camp in Science Technology (**BETTeR-IC** and Science Technology, Environment and Community Service (**BETTeRT\_IC+**).

### **UPR-M COMMITTEES:**

2016 – present -Miembro Comité Ad Hoc para responder a la Certificación 12 (2014-2015) de la Junta Administrativa que estableció la “Política para operacionalizar el componente de Servicio Comunitario en la Universidad de Puerto Rico”.

2016 – present – Miembro Comité Ad Hoc de Investigadores creado por certificación del Senado Académico # 16-74 para atender asuntos relacionados a las preocupaciones de los investigadores con respecto a la AMEX, el CID y la Investigación

2008 – 2011; 2012 - present Personnel Committee member

2012 – Ad-Hoc Committee to evaluate and bring a list of recommendations to implement CRECE 21 project.

2008 – 2010 Comité Proponer políticas, mecanismos, y planes de acción para el desarrollo y la investigación de estudios graduados en el Recinto.

2007 – 2008 Institutional Committee for Faculty Evaluation.

2005 – present Institutional Biosafety Committee at UPRM.

2005 – present Researchers at UPR-M.

2005 – 2007 Graduate Committee

2005 – 2008, 2013, 2019 - present Assessment Committee

## **RESEARCH ACTIVITIES**

**Graduate advisor of the following students/research at the University of Puerto Rico at Mayagüez:**

### **Master Students graduated from my lab.:**

**Giovanni López: 2004.** *Collibia* sensu lato of the Central and Western Regions of Puerto Rico: Biotechnological Capabilities, Characterization and Identification Using Traditional and Molecular Techniques. (<http://grad.uprm.edu/tesis/lopezferrer.pdf>).

**Alberto González: 2004.** Morphometric and Molecular Analysis of the *mabouia-brooki haitianus* Complex (Sauria: Gekkonidae) at the Western-Central Region of Puerto Rico. (<http://grad.uprm.edu/tesis/gonzaleznegron.pdf>). (This thesis was in collaboration with Dr. Jaime Acosta from the Biology Department).

**María F. Rojas: 2005.** Characterization and Potential Transductional Capabilities of *Rhodobacter sphaeroides* Bacteriophages, Isolated from Water Samples from the Southwestern Areas in Puerto Rico. (Bacteriófagos Específicos para *Rhodobacter sphaeroides*: Aislamiento, Caracterización y Potenciales Transductores. (<http://grad.uprm.edu/tesis/rojasduran.pdf>))

**Michelle Rivera: 2005.** Isolation and Characterization of Novel Antimicrobial Agents Producing Microbes and Generation of Metagenomic Libraries from Diverse Forest Soils in Puerto Rico. <http://grad.uprm.edu/tesis/riverarivera.pdf>.

**Ana Argüello López: 2007.** Isolation and identification of cyanobionts to coralloid roots of Cicads from the several *Zamia* species in Puerto Rico. <http://grad.uprm.edu/tesis/arguellolopez.pdf>.

**Yaliz Loperena: 2008.** Development of Physiological and Molecular techniques for the identification of *Cryptococcus neoformans*. <http://grad.uprm.edu/tesis/loperenaalvarez.pdf>.

**Juan Vega: 2009.** Isolation and Characterization of Photosynthetic Purple Non-Sulfur Bacteria from Phytothelmata of Several Plants in Puerto Rico.

<http://home.uprm.edu/tesis/vegasepulveda.pdf>

**Vanessa Cardona: 2010.** Molecular Analysis, Physiological Study and Biotechnological Capabilities of Blue Pigmented Bacteria from Puerto Rico.

<http://home.uprm.edu/tesis/cardonacardona.pdf>

**Ricardo Burgos: 2010.** Isolation of Interacting Peptides to *Bacillus anthracis* Lethal toxin (LF) by T7 Phage Display.

<http://home.uprm.edu/tesis/burgos.muñiz.pdf>

**Josué Malavé: 2011.** Development of Biosensors Using Bioluminescent Bacteria from Marine Environments in Puerto Rico.

**Kristina Soto: 2011.** Characterization of Purple Non-sulfur Bacteria Isolated from the Tropical Hypersaline Microbial Mats from the Cabo Rojo Salterns.

**Irimar Torres: 2012.** Generation of Large-insert Metagenomic Libraries from Subtropical Hypersaline Microbial Mats and their Screening for Antibiotic Resistance.

**Albin Cardona: 2015.** Isolation of Lethal Factor peptide Interaction partners using Phage Display using new Human cDNA libraries.

**Frank Ferrer: 2015.** Development of Metagenomic Libraries from Dry Forest Soils in Guanica and screening for antibiotic resistance. (his training and research thesis was developed completed in my lab).

**Edgar Ferrer: 2015.** Unraveling Potential BioMedical Bioremediation activity using metagenomics.

**Laura del Valle 2016:** Novel antimicrobial agents detection and analysis using metagenomic libraries from water reservoirs.

**Wilmer Rodríguez 2017:** Identification of antimicrobial agents producing microbes using cultivable and genomic approaches.

**Karlen Correa 2017:** Detection and microbiological and molecular characterization of *Vibrio parahaemolyticus* in the clam *Phacoides (Lucina) pectinatus* (Gmelin, 1791) and the oyster *Crassostrea rhizophorae* (Guilding, 1828) from the southwest coast of Puerto Rico.

**Robert Rabelo 2018:** Development of a terrestrial Snail Microbiome and search for functional activities.

**Jesie Rullán 2019:** Identification and Biotechnological Potential of Novel Purple Non-Sulfur Bacteria (PNSB) from Aquatic Environments in Puerto Rico.

**Franklin Román 2020:** Molecular characterization of genomes of bacteriophages specific to anoxyphototrophic bacteria.

### **Current Graduate Students:**

**Angélica González:** Isolation of specific bacteriophages for bacterial strains with biomedical impact.

**Flavio Rodríguez:** Isolation of Anthrax Toxin Lethal Factor Interacting Partners Using Human Heart T7 Phage Display cDNA Libraries.

**Luis Morales:** Isolation and characterization of thermotolerant clones from metagenomic libraries generated from soil samples from Centralia, USA.

**Angel Rubio:** Characterization of Purple non-sulfur bacteria capable of producing antimicrobial agents.

**Víctor López:** Surveying Local Metagenomes for Contaminant-Inducible Elements through a Functional Metagenomics Approach.

### **HONORS**

- 2020 Nominated and accepted to be member of the Sigma Xi, The Scientific Research Honor Society.
- 2019 Member Faculty Research and Education Development (FRED) and participant at the mock Grant Review Panel for the NSF-funded program, Washington, DC at the Annual Meeting of the American Society for Cell Biology. Faculty mentored by me: Dr. Yaliz Loperena, Pontifical Catholic University at Mayaguez Campus.
- 2018 *Herminio Lugo Lugo Award*, Awarded by the Beta Beta Beta Honor Society distinguishing the research, the education, and the promotion of scientific activity among the students as well as bringing support to the Tribetas.
- 2017 American Society for Microbiology Microbe Minority Travel Award. New Orleans.
- 2016 One of the distinguished “Playero” citizens from La Playa de Ponce. Carnaval de Vegigantes de la Playa de Ponce.
- 2015 SACNAS Distinguished Scientist Award. The National Diversity in STEM Conference, Washington D.C.
- 2015 Awarded as one of the “Faces of Bioscience in Puerto Rico”. INDUNIV & PR BioAlliance – Bio Week Annual Event.
- 2015 Induction Ceremony Acts Dedication, Biology Honor Society BBB Zeta Alpha Chapter.
- 2015 Recognition as the President of the Scientific Review Committee (IRB) at SESO., Southwestern.
- 2013 Lilly’s grant to the our lab. as the research laboratory that hosted Miss Nerymar Ortiz, as the recipient of the Dr. Frank M. Deane Passion for Science award.

- 2012 Dr. Arturo L. Carrión Award ( A Pioneer in Microbiology in Puerto Rico). Given by the Puerto Rico Microbiology Society. Distinguishing the humanism, integrity, and passion for the profession, as well as the contribution for research in the Microbiology Field, and education in science at all levels.
- 2010 Dedication of the Honor Society BBB Zeta Alpha Chapter Induction Ceremony Acts.
- 2009 *Hermínio Lugo Lugo Award*, Awarded by the Beta Beta Beta Honor Society distinguishing the research, the education, and the promotion of scientific activity among the students as well as bringing support to the Tribetas.
- 2009 *MERCK Health Innovation Award 2009*, Category of Education, as Adjunt member of the University Institute for the Community Development.
- 2007 Dedication of the Yauco's High School Club Quantum Induction Ceremony Acts.
- 2007 Dedication of the Industrial Microbiology Student Society Induction Ceremony Acts.
- 2007 Newsletter: La Voz de la Playa de Ponce. Reseña Biográfica (noviembre)
- 2007 Recognition to the members of the Advisory boards of the Council for Superior Education in Puerto Rico (CES).
- 2006 Co-Chair session: Multidisciplinary Approaches to Biological and Computational Systems Research. - Society for Advancement of Chicanos and Native Americans (SACNAS).
- 2005, 2006, 2007, 2008, 2009, 2010, 2011, Recognition as the President of the Scientific Review Committee (IRB) at SESO.
- 2005 Computational and System Biology initiative (CSBi) awardee. Massachusetts Institutes of Technology (MIT).
- 2005 Dedication of the Industrial Biotechnology Student Society Induction Ceremony Acts.
- 2003 NSF/DOE **Faculty and Students Team Program** (FaST) awardee, LBLN, Berkeley. The research involved the analysis of microbial community structure in chromium contaminated soils using biochemical [Phospholipid fatty acid analysis (PLFA)], and Molecular techniques (DNA isolation from soil, rDNA amplification, generation of rDNA libraries, T-RFLP, and rDNA microarrays).
- 2003 Dedication of the Industrial Biotechnology Student Society Induction Ceremony Acts.
- 2002 **Institute for teaching and mentoring, Bridges Scholar Awardee**, Virginia
- 2001 NSF/DOE **Faculty and Students Team Program** (FaST) awardee, LBLN, Berkeley.
- 2000 **Chair's Award**. University of Wisconsin-Madison Microbiology Department.
- 1999 **Vilas Professional Development Award**. Madison-Wisconsin.
- 1998 **Predoctoral Fellowship for Minority Students, National Research Service Award** (NRSA), 1FGM19382.
- 1996 **Advanced Opportunity Fellowship** (AOF). Graduate School, Univ. of Wisconsin-Madison, Spring 1996.
- 1992 **Student Society of Industrial Microbiology "Carlos Ríos Velázquez Award"**
- 1989 **Medal of excellence in teaching**, Teachers Association of Puerto Rico.

## **SELECTED PEER-REVIEWED PUBLICATIONS.**

### **EDUCATIONALLY FOCUSED**

**Rios-Velazquez, C.,** R. Cox, and T.J. Donohue. 2001. Characterization of *Rhodobacter sphaeroides* cytochrome *c*<sub>2</sub> proteins with altered heme attachment sites. *Archives of Biochemistry and Biophysics*. 389: 234-244.

**Rios-Velazquez, C.,** Coller R., and T.J. Donohue 2003. Features of *Rhodobacter sphaeroides* CcmFH. *Journal of Bacteriology*. 185:2: 422-431.

Lopez G.J., and **C. Rios-Velazquez.** 2005. A non-toxic Scanning Electron Microscopy Method to Study the Reproductive Structures of Agaricales Using Simple Fixation in the Field. *Caribbean Journal Science*. 41:857-860.

**Rios-Velazquez, C.,** R. Robles-Suarez, A.J. Gonzalez-Negron, and I. Baez-Santos. 2006. The Delta Cooperative Model: a Dynamic and Innovative Team-Work Activity to Develop Research Skills in Microbiology. *Microbiology Education*. 7:20-27.

**Rios-Velazquez, C.** “Constructing knowledge” actively in Bacterial genetics Using Synthetic Biology. 2006. Focus on Microbiology Education (FOME). Vol 13, 1: 10-12.

**Rios-Velazquez, C.,** L. Casillas-Martinez and P., T., Visscher. 2007. Learning Geomicrobiology as a team using microbial mats, a multidisciplinary approach. *Journal of Biology and Microbiology Education* Vol 8: 28 - 35.

Luna-Pineda Tatiana; Soto Feliciano Kristina; De la Cruz-Montoya Edwin; Londono Leonardo C.; **Rios-Velazquez Carlos;** HERNANDEZ-RIVERA Samuel P. 2007. Spectroscopic characterization of biological agents using FTIR, normal Raman and surface-enhanced Raman Spectroscopies. *Chemical and Biological Sensing VIII, Proceedings* Vol. 6554.

Roger Valle-Molinares, Sonia Borges, **Carlos Ríos-Velázquez.** 2007. Characterization of possible endosymbionts in *Onychochaeta borincana* (Annelida: Glossoscolecidae). *European Journal of Soil Biology*. 43:14-18.

Isenbargar, T. A., Finney, M., **Rios-Velazquez, C.,** Handelsman, J., and Ruvkun, G. 2008. Miniprimer PCR, a New Lens for Viewing the Microbial World. *Appl. Environ. Microbiol.* 74(3): 840-849.

Maria F. Rojas-Duran, Rebecca Vazquez and **Carlos Rios-Velazquez.** 2009. Molecular and Morphological Characterization of *Rhodobacter sphaeroides* Bacteriophages from Puerto Rico. *Caribbean Journal Science*. 54(1).

Loperena-Alvarez, Y., P. Ren, X. Li, D.J. Bopp, A. Ruiz, V. Chaturvedi, and **C. Rios-Velazquez.** 2010. Genotypic Characterization of Environmental Isolates of *Cryptococcus gattii* from Puerto Rico *Mycopathologia*. PMID: 20306144.

Malave-Orengo J., Eva N. Rubio-Marrero and **C. Rios-Velazquez.** 2011. Isolation and characterization of bioluminescent bacteria from marine environments of Puerto Rico. *Current Research, Technology and Education Topics in Applied Microbiology and Microbial Biotechnology*. Vol. 1 (2),103-108.

Soto-Feliciano K. , M. De Jesús, J. Vega- Sepúlveda and **C. Ríos-Velázquez**. 2011. Isolation and characterization of purple non-sulfur anoxyphototropic bacteria from two microecosystems: tropical hypersaline microbial mats and bromeliads phytotelmata. . Current Research, Technology and Education Topics in Applied Microbiology and Microbial Biotechnology. Vol. 1 (2), 109-116.

Cardona-Cardona V., David Arroyo, J. Schellekens and **C. Ríos-Velazquez**. 2011. Characterization of blue pigmented bacteria isolated from Puerto Rico. Current Research, Technology and Education Topics in Applied Microbiology and Microbial Biotechnology. Vol. 1 (2), 117-123.

José M. Cruz, Manuel A. Ortega, Jean C. Cruz, Pedro Ondina, Rossivette Santiago, and **Carlos Ríos-Velázquez**. 2011. Unraveling activities by functional-based approaches using metagenomic libraries from dry and rain forest soils in Puerto Rico. Current Research, Technology and Education Topics in Applied Microbiology and Microbial Biotechnology. Vol. 2 (2), 1471-1478.

Malave-Orengo J., S. E. Borglin, T. C. Hazen and **C. Rios-Velazquez**. 2011. A modified cell extraction method to access microbial community structure in soil samples by phospholipid fatty acid analysis. Current Research, Technology and Education Topics in Applied Microbiology and Microbial Biotechnology. Vol. 2 (2), 1562-1568.

Torres-Zapata I., A. Gonzalez-Montalvo, C. Castro-Ruiz and **C. Rios-Velazquez**. 2011. Generation of large insert metagenomic libraries using indirect DNA extraction methods from benthic and ephemeral tropical hypersaline microbial mats. Current Research, Technology and Education Topics in Applied Microbiology and Microbial Biotechnology. Vol. 2 (2), 1569-1575.

Brodie EL, Joyner DC, Faybishenko B, Conrad ME, **Rios-Velazquez C**, Malave J, Martinez R, Mork B, Willett A, Koenigsberg S, Herman DJ, Firestone MK, Hazen TC. Chemosphere. 2011 Microbial community response to addition of polylactate compounds to stimulate hexavalent chromium reduction in groundwater. 85(4):660-5. Epub 2011 Aug 27. PMID:21872904

Brodie, E.L., Joyner D. C., Faybishenko B., Conrad M. E., **Rios-Velazquez C.**, Mork B., Willet A., Koenigsberg S., Herman D., Firestone M. K., Hazen T. C., Malave J. 2011. Evaluation of sustained release polylactate electron donors for removal of hexavalent chromium from contaminated groundwater. Chemosphere. 85 (4).

Hilsamar Félix-Rivera , Roxannie González, Gabriela Del Mar Rodríguez, Oliva M. Primera-Pedrozo, **Carlos Ríos-Velázquez**, and Samuel P. Hernández-Rivera. 2011. "Improving SERS Detection of Bacillus thuringiensis Using Silver Nanoparticles Reduced with Hydroxylamine and with Citrate Capped Borohydride," International Journal of Spectroscopy, vol. 2011, Article ID 989504, 9 pages, 2011. doi:10.1155/2011/989504

**Rios-Velazquez, C.**, L.L. Williamson, K.A. Cloud-Hansen, H.K. Allen, M.D. McMahon, Z.L. Sabree, J.J. Donato, and J. Handelsman. 2011. Summer workshop in metagenomics: one week plus eight students equals gigabases of cloned DNA. Journal of Microbiology Biology Education. DOI: 10.1128/jmbe.v12i2.177.

**Ríos-Velázquez**, Carlos, W. J. Frey, E. Jaramillo-Giraldo, and M. Echeverry-Solarte. 2013. Accepting the Likelihood of Ambiguity and Disagreement on Moral Matters. Transitioning into the “Gray World”. *Teaching Ethics*. 13(2): 55-72. DOI: 10.5840/tej20131324.

Padilla-Jiménez A.C., Ortiz-Rivera W., Castro-Suarez J.R., **Ríos-Velázquez C.**, Vázquez-Ayala I., Hernández-Rivera S.P. 2013. Microorganisms Detection on Substrates using QCL Spectroscopy. *Proc SPIE*. 8710:871019-1 – 871019-12.

Padilla-Jiménez, A.C; W. Ortiz-Rivera; **C. Rios-Velazquez**; I. Vazquez-Ayala, and S.P. Hernández-Rivera. 2014. Detection and discrimination of microorganisms on various substrates with quantum cascade laser spectroscopy. *Optical Engineering* 53(6), 061611-01 – 061611-10.

Cardona-Correa A., and **C. Rios-Velazquez**. 2016. Profiling lethal factor interacting proteins from human stomach using T7 phage display screening. *Molecular Medicine Reports*. 13:3797-3804. DOI: 10.3892/mmr.2016.5031.

Castellanos J, **Rios-Velazquez C**, Morales F, Miranda-Berrocales V, Liquez-Gonzalez J, Cortez I, Padilla, R, Vega-Olivencia CA, & Hernández-Rivera PA. 2016. Cyclic voltammetry as a screening tool for the fungal degradation of 2,4,6-trinitrotoluene in aqueous media. *International Journal of Environmental Analytical Chemistry*. 96 (10) 978–989.

Padilla-Del Valle R., L.R. Morales-Vale and **C. Rios-Velazquez**. 2017. Unraveling the microbial and functional diversity of Coamo thermal spring in Puerto Rico using metagenomic library generation and shotgun sequencing. *Genomics Data*. 11, 98-101.

Rodriguez-Nuñez, K.M., J.M. Rullan-Cardec and **C. Rios-Velazquez**. 2018. The metagenome of bromeliads phytotelma in Puerto Rico. *J. Data in Brief*. 16, 19-22. <https://doi.org/10.1016/j.dib.2017.10.065>.

Rabelo-Fernandez R.J., K. Santiago, L. Morales-Vale and **C. Rios-Velazquez**. 2018. The metagenome of *Caracolus marginella* gut microbiome using culture independent approaches and shotgun sequencing. *J. Data in Brief*. 16, 501-505. <https://doi.org/10.1016/j.dib.2017.11.043>.

Rodriguez-Ramos L.E., **C. Rios-Velazquez**. 2018. Microbiome dataset from Clara Cave and Empalme Sinkhole waters in Puerto Rico. *Data in Brief*. 21, 1674-1677. <https://doi.org/10.1016/j.dib.2018.11.028>.

Soriano Berliza M., L.M. Del Valle-Perez, L. Morales-Vale and **C. Rios-Velazquez**. 2018. Datasets generated by shotgun sequencing of metagenomic libraries of the Guajataca water reservoir. *Data in Brief*. 21, 2531-2535. <https://doi.org/10.1016/j.dib.2018.11.114>.

Cardona-Cardona V. Z., Y. Loperena-Alvarez, G. Ramos-Marrero, J. Schellekens, **C. Ríos-Velázquez**. 2019. Characterization of a Puerto Rican Isolate of *Aspergillus* sp. with High Copper Resistance. 49(2-3). *Caribbean Journal of Science*. <https://doi.org/10.18475/cjos.v49i2.a1> Caribbean Journal of Science Volume 49(2-3).

Rodriguez-Reyes M.G. and **C. Rios-Velazquez**. 2019. Soil metagenome datasets underneath the Arecibo Observatory reflector dish. *Data in Brief*, 104710. <https://doi.org/10.1016/j.dib.2019.104710>.

Sotomayor-Mena R.G. and **C. Ríos-Velázquez**. 2019. Soil microbiome dataset from Guanica dry forest in Puerto Rico generated by shotgun sequencing. Data in brief, 28, 104919. <https://doi:10.1016/j.dib.2019.104919>.

**Book: Ríos-Velázquez C.**, and L. Casillas. In W. Gonzalez, Colon D.A., and Felio M.I. Ciencia Boricua: Ensayos y Anécdotas del Científico Puertorriqueño. Edic. Callejon, 1<sup>ra</sup> Ed. P46 and P66. 235pp.

**The two essays in the book:**

1. Bibliotecas metagenómicas: Descubriendo y conservando las riquezas microbianas en los bosques puertorriqueños. P 46.
2. Tapetes Microbianos: Invaluable Tesoro Científico y Ambiental Puertorriqueño. P 66

**Book:** Herrera-Sandoval G. M., H. Félix-Rivera, A. C. Padilla-Jimenez, M. Balaguera-Gelves, C. A. Ortega-Zúñiga, L. C. Pacheco-Londoño, O. M. Primera-Pedrozo, P. M. Fierro, **C. Ríos-Velázquez** and S. P. Hernández-Rivera. 2013 Synthesis and Characterization of Silver Nanoparticles and Nanostructures for SERS Applications. Chapter 4 in I. Armentano and J. Maria Kenny (Eds). Nanotechnology Science and Technology, Materials Science and Technologies, Nanotechnology and MEMS, Materials Science, Technology and Engineering. pp.59-100. ISBN: 978-1-62808-402-3

**REGISTERED GENES IN GENBANK:**

**Kristina Soto and Carlos Ríos-Velázquez: 2016**

Accession numbers: KU992635, KU992636, KU992637, KU992638, KU992639, KU992640, KU992641, KU992642, KU992643, KU992644, KU992645, KU992646, KU992647, KU992648, KU992649, KU992650, KU992651, KU992652, KU992653, KU992654, KU992655, KU992656, KU992657.

**Vanessa Cardona and C. Ríos-Velázquez: 2010**

Accession numbers: HM488363, HM488362, HM488361.1, HM488360.1, HM488359.1, HM488358.1, HM488357.1, HM488356.1, HM488355.1, HM488354.1, HM236170.1, HM236169.1

**Juan Vega and C. Ríos-Velázquez: 2008**

Accession numbers: FJ036904, FJ036905, FJ036906, FJ036907, FJ036908, FJ036909, FJ036910, FJ036911, FJ036912, FJ036913, FJ036914, FJ036915, FJ036916, FJ036917, FJ036918, FJ036919, FJ036920, FJ036921, FJ036922, FJ036923, FJ036924, FJ036925, FJ036926, FJ036927, FJ036928, FJ036929.

**Loperena Yaliz, Acevedo A. and C. Ríos-Velázquez: 2008**

Accession numbers: EU402428, EU402435, EU402429, EU402436, EU402430, EU402437, EU402431, EU402432, EU402438, EU402433, EU402439, EU402434, EU402440.

**Argüello López, Ana and C. Ríos-Velázquez. 2007**

Accession numbers: EF424121, EF424122, EF424123, EF424124, EF424125, EF424126, EF424127, EF424128, EF424129, EF424130, EF424131, EF424132, EF424133, EF424134, EF424135.

**López-Ferrer, G. and C. Ríos-Velázquez. 2004.**

Accession numbers: AY8482953, AY842957, AY842954, AY842952, AY822014, AY842955, AY842958, AY842956.

**González-Negrón, A. J. and C. Ríos-Velázquez. 2004.**

Accession numbers: AY854091, AY854092, AY854093, AY854094, AY854095, AY854096.

**Ríos-Velázquez, C., Horwitz, G.J. and Donohue, T.J. 2000.** Accession number: AF321136.

*Rhodobacter sphaeroides* maturation protein CcmF (*ccmF*) and maturation protein CcmH (*ccmH*) genes, complete cds; and enoyl-CoA-hydratase-like protein gene, partial cds.

## **RESEARCH COLLABORATIONS (SYNERGISMS) and AFFILIATIONS**

### **Synergistic Activities:**

- 2010 – present CROEM, Residential Center for Educational Opportunities in Mayaguez. Students from the center perform research in my lab. under my mentoring. So far the Student Ricky Padilla last year and this year won the best project in Microbiology category (scholar, district and regional). Also, this year, Mr. Ricardo Ortiz won the second Place in Microbiology (scholar, district, regional).
- 2010 – present, Jo Handelsman, Yale University, Master metagenomics project, Mastering Metagenomics Advisory Board. Training students in developing metagenomic libraries and perform different monitoring.
- 2011 – present, collaboration with UPR- Rio Piedras using combinatorial chemistry approaches (Phage Display) to detect human diseases.
- 2007 – present, collaboration Chemistry department at UPR-M using SERS and nano particles technology to detection microorganisms.
- 2008-present, collaborations with Chemical Engineering at UPR-M, using metagenomics to search for clones capable of degrading complex compounds with application in bioenergy generation.
- 2008- present collaboration with the Biology and Chemistry Department at UPR-Humacao, monitoring metagenomic libraries to search for different activities in hypersaline systems and development of detection systems.
- Member, peer review panels: 2007, Microbial Interaction and Bioprocesses.
- 2006- Co-Chair session: Multidisciplinary Approaches to Biological and Computational Systems Research. - Society for Advancement of Chicanos/Latinos and Native Americans (SACNAS).
- 2005-Mini-Sabbatical at Computational and System Biology initiative (CSBi). Massachusetts Institutes of Technology.

- 2001 – present, collaboration between Universidad del Este and the InterAmerican University faculty thru the Upward Bound Program to develop a novel educational systems to motivate students to do research...The Delta Cooperative Model.
- 2001 and 2004 NSF/DOE Faculty and Students Team Program (FaST), LBLN, Berkeley.

**Collaborators and Other Affiliations:**

*Collaborators and Co-Editors*—L. Casillas (U Puerto Rico); W. Ramirez (U Puerto Rico); E. Fazoli (U Puerto Rico), J. Perez-Jimenez (Turabo, Puerto Rico), S. Cantrel (Turabo, Puerto Rico), J. Handelsman (Yale), T. Torok (LBNL, Berkeley), T. Hazen (LBNL, Berkeley), M. Sasanfar (MIT), R. Robles (UNE, Puerto Rico), I. Baez (UIA, Puerto Rico), J. Acevedo (PCUPR, Puerto Rico), A. Santiago (PCUPR, Puerto Rico), M. Marvassi (PCUPR, Puerto Rico), P. Ortiz (U Puerto Rico), S. Hernandez (U. Puerto Rico), L. Williamson (UW-Madison), T. Donohue (UW-Madison), S. Borges (U Puerto Rico), T. Isenbarger (UW-Madison), P. Ren, (Wadsworth Center, Albany), A. Ruiz (U Puerto Rico), V. Chaturvedi (Wadsworth Center, Albany), L. Garriga (U. Puerto Rico), J Schellekens (U. Puerto Rico), J. Ramirez Vick (U. Puerto Rico), W. Frey (U. Puerto Rico), J. Garcia-Arraras (U. Puerto Rico).

*Graduate and Postdoctoral Advisors*—C. Betancourt U Puerto Rico); T. Donohue (UW-Madison); S. Leppla (NIH).

**Research and Educational support:**

1. MARC U-STAR Program, University of Puerto Rico-Mayaguez  
NIH-MARC (5T34GM008419-25)  
06/01/2016 – 05/31/2021  
Role on Project: MPD-PI 1.0 summer  
Research training grant for undergraduate students in the field of biomedical sciences.
2. MARC U-STAR Program, University of Puerto Rico-Mayaguez  
NIH-MARC (5T34GM008419-25)  
06/01/2015 – 05/31/2016  
Role on Project: PI (due to request change in program director due to retirement\*)  
1.0 summer  
Research training grant for undergraduate students in the field of biomedical sciences.
3. Bridge to the Doctoral Degree: University of Puerto Rico to University of Medicine and Dentistry of New Jersey.  
NIH – (R25 GM058389-15)  
06/01/2015 – 05/31/2016  
Role on Project: Co-PI (due to request change in program director for one year due to sabbatical of the Pi) , 1.0 summer  
To increase the number of participating UPR-M students, and to increase the number who transition to Ph.D. programs, specifically at UMDNJ.

4. NIH: RISE Enhancing Biomedical Sciences and Biomedical Engineering in Science and Technology (RISE2BEST). 5.1 M. (Role: CoPI).
5. 0455620: NSF Microbial Observatories (MO) Program. Cabo Rojo Salterns \$1,339,000; 02/01/05 to 02/01/10. Microbial Observatory (Role: Co-PI).

Main focus in understanding the Geomicrobiology and Geochemistry of Microbial Mats at the Cabo Rojo Salterns

6. *USDA-CSREES: Geomicrobiological and Metagenomic Studies (GeMS) of Puerto Rican Soils.* \$275,000; 01/09/08 – 31/08/09. (Role:PI). This grant is running for one more year as a non-cost extension.

Generation of Metagenomic libraries from Rainy and Dry Forests, determine Diversity, and searching for new activities with medical and Biotechnological Applications.

7. 0629377: NSF Graduate Education in Research Ethics for Scientist and Engineers. \$214,038; 01/01/07 to 01/01/08. (Role:Co-PI).

Working with faculty in the Humanities, Engineering and Biology we have Developed strategies to teach research ethics to faculty, graduate and Undergraduate students and secondary school students as part of the outreach Program.

8. NASA Detection, Isolation, and Characterization of Metal and Radiation Resistant Geo-Microbes (MaRRS-GeMs) from Extreme Environments. \$29,922; 05/01/07-04/30/08. (Role:PI).

6. Novel magnetic Bio-nano-composite for removal of toxic species from water. (Role:Co-PI).– BioSEI interdisciplinary proposals. \$90,000.

7. Biotechnology for Educational Training in Teams through Research and Interdisciplinary Centers Summer`Camp. (Role-Pi)- Funding from Alianza para el Aprendizaje de las Ciencias y las Matemáticas (AlACiMa) \$11,000 (2006), \$15,000 (2007), The following Summer camp have been developed by proposals to other sponsors: \$24,725 (2008), (2009), \$26,400 (2011), \$ \$26,400 (2012).

The BETTeR-IC summer camp from 2011 – present, known as BETTeR-IC + because it incorporates Science, Technology, Community Service and Environment.  
<http://cohemis.uprm.edu/summercamp/>.

8. Novel Molecular Interaction Proteins with the Antrax Letal Factor (LF) PI-MBRS-SCORE. 2005 – 2006. 10,000.

## **RESEARCH PRESENTATIONS: POSTERS**

June 2020 - Carlos Rios-Velazquez. Story-Telling as an Lecture Engagement, Service, and Science Communication Tool in a Microbial Physiology Course. June 2020, On-line due to COVID-19.

Presenter: Session: Virtual 477 - POM01 Microbiology Education  
**four students from the lab presented posters.**

June 2018. Carlos Rios-Velazquez and Patricia Ortiz Bermudez. Promoting Actively Learning Engagement of Basic Principles of Biotechnology as a Team. ASM Annual Meeting 2018. San Francisco California.

**four students from the lab presented posters.**

June 2017 - Carlos Rios-Velazquez, Reynaldo Robles-Suarez and Ivan Baez-Santos. Engaging Communities Actively in Learning About Microbes in Action. ASM Microbe, June 2017; New Orleans, USA.

**nine students from the lab presented posters, three were also selected for oral, and one was selected as one of the outstanding abstract in the meeting.**

April 2016 – Tercer Simposio: Simposio Entre Islas y Continentes: Transformación Universitaria desde la Perspectivas de las Comunidades. UPR-Ponce. **Ciencia, Tecnología y Arte en las Comunidades: un proyecto de acción y transformación Universidad-Comunidad.**

March 2016 – **Soluciones científicas para el mundo en el suelo Boricua: La Bioprospección en Puerto Rico.** 10mo Aniversario Ciencia Puerto Rico. Museo d Vida Silvestre. San Juan, Puerto Rico.

March 2016 - Ninth Symposium Frontiers in Environmental Microbiology: Tropical Bioprospecting Venture.

**Six students from the lab presented posters.**

May 2015 - **Biotechnology for Everybody: an Opportunity to have a Taste of a Main Player in the Knowledge-Based Economy.** American Society for Microbiology 115th General Meeting. New Orleans, Louisiana. (**Carlos Ríos-Velázquez**)

**Also, 13 students from my lab. presented posters.**

May 2015 - **BIND 5006: A pilot capstone course to integrate industry and academia in the Industrial Biotechnology Program curriculum at the UPR-Mayagüez.** American Society for Microbiology 115th General Meeting. New Orleans, Louisiana. (Patricia Ortiz-Bermúdez, and **Carlos Ríos-Velázquez**)

May 2015 - **An Introductory Biotechnology course for secondary school.** American Society for Microbiology 115th General Meeting. New Orleans, Louisiana. (C. Ramos Álvarez, A. Rodriguez Rivera, B.M. Cabrera. **C. Rios-**

**Velazquez.**

- May 2014 - **A perfect partner: A basic metagenomics laboratory for Undergraduate and graduate students. American Society for Microbiology 114th General Meeting. Boston, Massachusetts. Also, 10 students from my lab. presented posters.**
- May 2013 - **8 students from my lab. presented posters.**
- May 2012 - **The Nomads Information Centers: Bringing the Colors of Biotechnology Actively to the University Community. American Society for Microbiology 112th General Meeting. San Francisco, California. Also, 3 students from my lab. presented posters.**
- May 2011 – **Unraveling the Ecological Molecular and Biotechnological Potential of the Microbial Mats Thru GeoMicrobiology and Metagenomics: A Short Course for Undergraduates. American Society for Microbiology 111th General Meeting. New Orleans. Also, 7 students from my lab presented posters.**
- May 2010 – **GeMS of Puerto Rican Forrest 2: Engaging Students Actively in Analyzing Metagenomic libraries for Diversity and Functionality. American Society for Microbiology 110th General Meeting. San Diego, California. Also, 3 students from my lab presented posters.**
- May 2009 – **Biol 4994: A New Metagenomic Course for Undergraduate Students. American Society for Microbiology 109th General Meeting. Philadelphia, Pennsylvania. Also, 7 students from my lab presented posters.**
- May 2008 – **Engaging Students Actively in Metagenomics Studies of Puerto Rican Forests Soils. American Society for Microbiology 108th General Meeting. Boston Massachusetts. Also, 6 students from my lab presented posters**
- May 2007 – **BETTeR-IC: Teaching and Learning Biotechnology Actively and as a team. American Society for Microbiology 107th General Meeting. Toronto Canada. Also, 3 students from my lab presented posters.**
- May 2006 – **Delta Cooperative Model team Structure Variants: Design for the students and re-designed by them. American Society for Microbiology 106th General Meeting Orlando, Florida. Also, 3 students from my lab presented posters.**
- September 2006 – **Third Latin American and Caribbean Biotechnology Congress. Mayagüez Resort, Mayagüez, P.R.**
- May 2005 - **American Society for Microbiology 105th General Meeting Atlanta, Georgia.**

March 2005 – **Western Alliance to Expand Student Opportunities Research Conference.** Temple, Arizona.

September 2005 – **Second Latin American and Caribbean Biotechnology Congress.** Mayagüez Resort, Mayagüez, P.R.

December 2004 - **American Society of Cell Biology.** San Francisco. CA.

May 2004 - **American Society for Microbiology 104th General Meeting** New Orleans, Louisiana.

December 2003 – **American Society of Cell Biology.** San Francisco. CA.

May 2003 - **Molecular Display: The chemistry set for Proteins and small molecules,** Cambridge, MA.

March 2003 – **Western Alliance to Expand Student Opportunities Research Conference.** Temple, Arizona.

November 2002 – **First Latin American & Caribbean Biotechnology Congress.** Mayagüez Resort, Mayagüez, P.R.

August 2000, 1999, 1998, 1997, 1996 - **Kenneth B. Raper symposium,** University of Wisconsin-Madison

May 2000 - **American Society for Microbiology 100th General Meeting** Los Angeles, California

August 1999 - **Molecular Genetics of Bacteria and Phage Meeting** University of Wisconsin-Madison

May 1999 - **American Society for Microbiology 99th General Meeting** Chicago, Illinois

March and April 1999 - **Department of Microbiology Recruitment Weekend** University of Wisconsin-Madison

April 1999 - **MANRRS Annual Conference,** Virginia

May 1998 - **American Society for Microbiology 98th General Meeting** Atlanta, Georgia

July 1998 - **Research Poster Fair,** University of Wisconsin-Madison

## **SPECIAL SEMINARS AND WORKSHOPS OFFERED:**

June 2020 Second Synthetic Biology Summer Camp.SynBio 101: *Viaje panorámico a través de la Biología Sintética, para el rediseño de la maquinaria de la vida en la solución de problemas.... Taller En línea debido a COVCID-19.*

Jan 2020 (Team work). Taller trabajo en equipo en como parte de las actividades  
August 2020 para el Seminario Estrategias para el Desarrollo de las comunidades. (as part of the UPR-M - University Institute of Community Development.

Jan 2019 (Team work). Taller trabajo en equipo en como parte de las actividades  
August 2019 para el Seminario Estrategias para el Desarrollo de las comunidades. (as part of the UPR-M - University Institute of Community Development.

Feb. 2020 Charla BBB. Un Viaje Panorámico de Beta a Beta...Una invitación a momentos no tecnológicos, descubriendo los retos del futuro...

Oct. 2019. Responsible Conduct of Research, RCR) offered to the undergraduate student from the UPR Mayaguez RISE-E-BASE program.

April 2019. ROTARAC y ALPHA HELIX. Investigación 101: A look inside Biology Research.

June 2019 Synthetic biology Summer Camp. UPR-Mayaguez.

Workshop-Talk 1: Unraveling Synthetic Biology: A panoramic view in ways to redesign the life machinery in order to solve problems...

Workshop-Talk 2: Teamwork

Second Semester 2018-2019: STEM workshops for K-12 students as part of the B-STR3EAM project, focused on the Aguada Municipality.

1. Workshop 1: Ciencia y Arte en acción: Desde la herencia hasta la vida microscópica...  
Feb.16, March 2, April 6  
Schools: Esc. Juana Rosario, Esc. Aquilino Cabán
2. Workshop 2: Ciencia y Arte en acción: Descubriendo la vida microscópica  
Schools: Esc. Juana Rosario, Esc. Aquilino Cabán  
Feb.23, March 9, April 6
3. Workshop 3: Ciencia y Arte en acción. Estamos hechos por células...Resolviendo retos a nivel celular  
Schools: Esc. Juana Rosario, Esc. Aquilino Cabán  
March 30, April 13

4. Workshop 4: Ciencia y Arte en acción: Ciencias emergentes y en equipo...  
Tema 4: Astrobiología y Geomicrobiología  
Schools: Esc. Juana Rosario, Esc. Aquilino Cabán  
March 16, April 23
5. Workshop 5: Investigando a través de la ingeniería genética.  
Schools: Esc. Juana Rosario, Esc. Aquilino Cabán  
April 27
6. Workshop 6 - 7: For parents, May 4 2009, Ciencia y Arte en Acción: La vida, la herencia y los microbios...
7. Workshop 7: For elementary school students: Ciencia y Arte en Acción:  
School: Ligia meléndez  
La vida y la herencia and Los microbios y yo.

June 2019 Synthetic biology Summer Camp. UPR-Mayaguez.  
Workshop-Talk 1: Unraveling Synthetic Biology: A panoramic view in ways to redesign the life machinery in order to solve problems...  
Workshop-Talk 2: Teamwork

October 2019. Synthetic biology Caribbean Talk. UPR-M Business administration Auditorium.  
Talk 1: *Viaje panorámico a través de la Biología Sintética.*  
Talk 2: *Develando la Biología Sintética - Rediseñando la maquinaria de la vida para la solución de problemas...*

October 2019. Workshop in Synthetic Biology for High school teachers. Synthetic Biology Week. UPR-Mayaguez.  
Talk: *Redesigning the teaching-learning process through Synthetic Biology.*

October 2019. High School Training in Molecular Biology Laboratory Techniques. UPR-M Biology Department.

June 2016 and 2017 Worskshop: “Ciencias y Microbios en Acción” (Science and Microbes in Action). Community Summer Camp Eduvertido. Caín Bajo Community in San Germán.

March 2016 and 2017. Se diseñaron y coordinaron talleres junto con mis estudiantes graduados y el programa de Biotecnología Industrial en el tercer: Puerto Rico STEM’s Up to the Challenge. La misma se presentaron actividades sobre nuestras áreas de investigación en el laboratorio a maestros y estudiantes de todo Puerto Rico. Centro de Convenciones Dr. Pedro Roselló en Miramar, PR. Un total de ocho de mis estudiantes participaron del mismo.

April 2016 and 2017 - Se diseñó y presentó junto a mis estudiantes del laboratorio un taller en Plaza Las Américas como parte del EcoExploratorio Museo de Ciencias de Puerto Rico: Feria Planeta Digital. Participaron 12 estudiantes del lab. entre estudiantes graduados y subgraduados.

April 2016 - April 2016 – Tercer Simposio: Simposio Entre Islas y Continentes: Transformación Universitaria desde la Perspectivas de las Comunidades. UPR-Ponce. Panel “Proyectos Emblemáticos: arte, infraestructura, agricultura y cultura en la autogestión comunitaria”. Charla: **Ciencia Tecnología y Arte en las Comunidades...**

March 2016 - Ninth Symposium Frontiers in Environmental Microbiology: Tropical Bioprospecting Venture. Integrated Boricua's Bioprospecting models: One Bioprospects, various answers and much more questions...

September 2015 – co-coordinator of co-author of the proposal to develop a short course in Biotechnology to personnel of Lilly del Caribe, Guayama, P.R. Also offered the workshop named: Biotechnology Basics.

2014 - Talk and workshop entitled: "Science and Biotechnology: discovering the world through a different glass ..." at the Inter-American University, Aguadilla, PR.

October 2014 - Ponencia lo fue: Three stories, three vinculations, three action and transformation projects: School, University, Community”. Second Latin American Congress in Research in Education. Focus on: Leadership with Human Quality in the Education. EDP University San Juan.

September 2014 – Participation in the panel: The transition from college to the University. In the BioSciences week sponsor by AMGEN in the activity: “Science...the legacy for future scientific generations...” for precollege teachers in Puerto Rico.

April 2014 - Mentor and student’s expectations, mentoring strategies, and both, mentor and student’s responsibilities. Undergraduate Research Education and Training Program (URGREAT), funded by NIH-MBRS-RISE and institutional funds from Universidad del Este.

April 2013 - Unraveling Activities and Diversity through Metagenomics as an Emergent Science...InterAmerican University at Arecibo Campus.

April 2013 - Ciencias emergentes: el mundo a través de un cristal distinto....Primer Cientec : Mujeres en la Ciencia. Universidad InterAmericana en Ponce.

May 2012 - Macro to Micro: Unraveling Our Island from a Microbiologist Perspective... Casa Olímpica, Viejo San Juan. ASM-Puerto Rico.

April 2012 - Metagenomica: Ciencias emergentes: Perspectivas tecnológicas y retos para el futuro... Noveno CIENTEC 2012. Universidad Interamericana, Recinto de Ponce.

April 2012 - Bioprospectos y Biología Sintética: Ciencias emergentes: Perspectivas tecnológicas y retos para el futuro.... Noveno CIENTEC 2012, Universidad Interamericana, Recinto de Ponce.

March 2012 - Exploring peer review and conflict of interest: case discussion/analysis and online resources. Offered by Carlos Rios Velazquez and William Frey.

October 2011 – 26th Annual Conference AAAS. LOS GENES Y EL MEDIO AMBIENTE. Develando genes con actividades de impacto ambiental y social usando metagenómica. UPR-M.

October 2011– Coordinator and organizer of the concurrent educational session of the 26th Annual Conference AAAS.

**Topics:**

For teachers: *Taller sobre (¿genes y el medio ambiente? para maestro/as y futuros/as maestros/as de escuela superior*

For elementary school: *Pescando Genes de diversos ambientes en Puerto Rico: descubriendo actividades que ayudan a la sociedad.*

For intermediate school students: *Bioinformática - genes - salud: Descubriendo y relacionando genes in silico.*

For high school students: *Biología Sintética: Usando genes como partes para construir prototipos que resuelvan problemas ambientales.*

September 2011 – **Research ethics: Light in a world of grey situations.** UPR-M to AMP students.

August – 2011 Unraveling Activities with Applications in Biotechnology Thru Metagenomics. 43rd World Chemistry Congress IUPAC 2011IUPaC. (Class-workshop).

April 2011 - 11<sup>mo</sup> Simposio de investigación subgraduada. **La Ética en la investigación científica: luz en un mundo de situaciones grises.** UPR-Aguadilla.

April 2011 – RISE2BEST program participants. **La Ética en la investigación científica: luz en un mundo de situaciones grises.** UPR-Mayaguez.

March 2011 – Doing Research Responsively: An introduction to RCR via case analysis.

UPR-Mayaguez.

March 2010 - VII Congreso Educativo de **Tecnología Médica. Tecnologías emergentes en genómica y proteómica funcional: accedando nuevos grupos microbianos y nuevas funciones con aplicaciones biomédicas y biotecnológicas**

July de 2007, 2008, 2009. 2011. Campamento de verano CoHemis **BeTTER-IC** and **BeTTER-IC+**. Seminars and workshops in:

- i. How to prepare a poster presentation**
- ii. Team work**
- iii. Emerging Disciplines**
- iv. What Biotechnology is about?**

September 2009. NSF-ATE Tropical Biotechnology Forum semana de las Biociencias. Turabo University - CETA

June 2007, 2008, 2009, 2011 summer workshops: **Genetic engineering technology applied in molecular microbiology**. UPR-M

First and Second semester 2007, 2008, 2009, 2010, 2011. **Workshop in team working. Strategies for the Community Development**. Institute for the Community Development. UPR-Mayagüez.

Septiembre 2008 – Team Work. Society of Hispanic Professionals Engineers.

June 2008- team Working. División de Educación Continua y Estudios Profesionales. UPR-RP. (Workshop)

May, 2008 – Metagenomics. Estudiantes y Maestros de la Esc. Luis Muñoz Marín en Yauco Club Quantum.

April 2008 – Biology Department Seminar: Microbial Biotechnology and Biodiscoveries at B-266 Searching for the seen and unseen in the microbial world. UPR-Mayaguez.

March 2008 – Taller Ética en La Investigación. CROEM. UPR-Mayagüez.

February 2008 – Pedagogical Demonstration: Priming the Pump Empowering Engineering and Business Faculty and Graduate Students to teach Ethics in their Classes. Association for practical and profesional ethics Estudiantes y profesionales del área.

January 2008 – ¿Cómo preparar poster científico?. BBB Zeta Alpha Chapter. UPR-M.

January 2008 – Plantas carnívoras: Hermosas y delicadas plantas para nuestro jardín, una atracción fatal. Sociedad de Horticultura del Oeste.

June 2007 – Unraveling Bioprospects with Applications in Microbial Biotechnology ASM-PR. Looking back and the future: The next 50 years.

2007 – “Sampling and Testing for Fecal Coliform and Enterococci in Fresh and Sea Waters”. Organizer and speaker.

December 2007 – Segundo Residencial Académico: Pescando Genes en Los Bosques de Puerto Rico. Alianza en Matemáticas y Ciencias Maestros de Escuelas de PR.

October 2007 – Generation of Biological Prototypes and Implementing Synthetic Biology in the Classroom. UPR-M.

September 2007 – La biotecnología en nuestro diario vivir. UPR-Humacao, AMGEN, El nuevo día educador, BioAlliance Maestros de escuela.

September 2007 – Searching Professional Success through Academic Decision. SACNAS UPRM.

September 2007 – Pescando genes en los bosques de PR First Team Meeting for Geomicrobiology and Metagenomic Studies of Puerto Rican Soils. USDA-CSREES Estudiantes UPR-M y Humacao.

September 2007 – Compartiendo experiencias de mentoría efectiva: El proceso de desarrollar a nuestros mentoreados. URGREAT-MBRS-RISE Estudiantes subgraduados y mentores del programa (Workshop).

June 2007 – Ética en las Ciencias e Ingeniería. Upward Bound Program Science and Math and Regular at UIA Ponce.

June 2007 – Preparation of a scientific poster. Programa de Biotecnología Industrial, AMGEN .Estudiantes escuelas secundarias.

June 2007 – Team Building Skills. Programa de Biotecnología Industrial, AMGEN. Estudiantes escuelas secundarias.

November 2006 – Using data Bases in the Research Laboratory. PUCPR.

October 2006 – Where to Start doing research in Computational and Systems Biology: an educational prism. SACNAS UPR-M.

July 2006 – Charla sobre ética y clonación: **¿Dónde estamos y quiénes somos?, ¿qué es bueno o malo?** en Iglesia Pentecostal en Cidra.

June 2006 – Uso de Herramientas en Genómica y Proteómica Funcional para el Desarrollo de Biomarcadores y el Descubrimiento d Nuevos Agentes Quimioterapéuticos. MBRS-RISE Universidad del Este en Carolina.

May 2006 – Desarrollando destrezas en investigación mediante el innovador modelo cooperativo delta. Asociación Caribeña de Programas TRIO.

April 2006 – Dos jardines, dos tiempos, dos historias. Sociedad de Horticultores del Oeste.

April 2006 – Astrobiología: Modelos microbianos. UIA-Ponce.

Winter 2006 – *Origen, Evolución y desarrollo de la Química, Ingeniería y Biotecnología industrial. Biotecnología: Unfuturo prometedor.* Iniciación Estudiantes: Asociación Estudiantil: Common Horinzons of Engineering & Science Students.

October 2005 – *La Biotecnología y sus Aplicaciones Interdisciplinarias.* K-12 teachers, ALACiMa

September 2005 – *Conociendo la Biotecnología a través de...Open House to Secondary Schools. Biotechnology Week UPRM.*

July 2005 – **Discussion Panel: Professional Development Seminar Series on Academic Careers.** Massachusetts Institute of Technology. Cambridge, MA.

June 2005 – **Workshop: How to prepare a Scientific Poster?.** First Biotechnology Summer Camp in Puerto Rico. UPR-Mayagüez.

June 2005 – **Workshop: Team work.** First Biotechnology Summer Camp in Puerto Rico. UPR-Mayagüez.

May, 2005 – **Workshop: Genetic Engineering Techniques Applied in Molecular Microbiology.** UPR-Mayagüez.

May 2003, 2004 and 2005 – **Workshop: Scientific method.** Upward Bound Science and Math program. Inter American University at Ponce.

March 2005 – Integrando Investigación y Educacion en Microbiologia. Biology Department Seminar Series. UPRM

June 2004 – **Visiting the invisible universe: from a pin head...**High School Teachers from the GLOBE program: UPR-Mayagüez.

June 2004 – **The DNA as the genetic material: Human genome and the use of bioinformatics databases.** UPR-Mayagüez.

April 2004 – **Workshop: The DNA as the genetic material, and the use of molecular tools in forensic sciences.** 6<sup>th</sup> Symposium of Scientific Research. Guayanilla.

April 2004 – **Breaking the barriers of imaginable: Discovering the universe of invisibles inhabitants.** 6<sup>th</sup> Symposium of Scientific Research. Guayanilla.

April 2004 – **Development of de biomarkers and novel antimicrobial agents using functional genomics technology.** UPR-Mayagüez.

December 2003 – **Workshop in DNA isolation and manipulation.** Faculty of the Inter American University at Arecibo Puerto Rico.

December 2003 – **Future of the biological research in plants?** Sociedad de Horticultores del Oeste.

December 2003 – **General concepts, methods, and strategies to clone DNA fragments.** UPR-Mayagüez.

November 2003 – **Molecular Technology Against Bioterrorism.** Ortho Biologics.

November 2003 – **Workshop: Basic concepts, applications and isolation of DNA.** Educational Center Science on Wheels. UPR-Mayagüez.

September 2003 – **Development of environmental libraries and their used in diversity studies.** Science and Technology School. Turabo University of Puerto Rico.

September 2003 – **What to consider at the moment to choose a graduate school, and a research Project.** Industrial Biotechnology Student Society Seminar Series.

August 2003 – **The use of Phage display as a technique to develop biomarkers.** Pontifical Catholic University of Puerto Rico.

May 2003 – **Development of biomarkers for toxins or toxin-producing microorganism by using T7 phage display.** Seed Money Resear4ch Symposium. UPR-Mayagüez.

April 2003 – **Microbiology as a biological weapon, and a tool of peace.** 5<sup>th</sup> Symposium of Scientific Research. Guayanilla.

March 2003 – **Development of environmental libraries and their used in diversity studies.** Ponce School of Medicine.

February 2003 – **The use of “Phage Display” as a proteomic and combinatorial chemistry for the designing of biomarkers.** UPR-Mayagüez, UPR-Humacao.

January 2003 – **Assessment as Instrument for an Effective Learning.** Inter American University of Puerto Rico at Ponce Campus.

June 2002 – **Designing New Alternatives (DNA) for the new generations: Bringing Biotechnology to the classroom.** UPR-Mayagüez.

May 2002 – **Biotechnology at a Glance.** INDUNIV: Forum for Innovation

May 2002 – **The use of functional proteomics for the development of biomarkers.** Cuarto Congreso de Tecnología Médica

May 2002 – **Biotechnology (Bios'02).** UPR-Mayagüez

April 2002 – **Biotechnology and Science in the XXI Century.** 4<sup>th</sup> Symposium of Scientific Research. Guayanilla.

April 2002 – **The Pleiades of the Microbial Universe.** Industrial Microbiology Student Society Initiation Ceremony.

April 2002 – **Biotechnology as a tool in a changing world.** UI-Ponce First CIENTEC symposium.

April 2002 – **Disciplines in science and technology that are revolutionized the way of solving problems and formulating new questions.** 49th Tri-Beta Convention. UPR-Mayagüez.

March 2002 – **Biotechnology: Science and technology for problem solving and generation of important questions.** Workshop Upward Bound Science and Math Program (UI-San Germán).

March 2002 – **Biotechnology as a tool in different disciplines.** Sociedad de Horticultores del Oeste.

January 2002 – **Entrepreneur opportunities in Biotechnology.** UPR-Mayagüez

January 2002 – **“Phage Display” as a combinatorial chemistry (functional genomic) technique for the drug development.** UPR-Mayagüez

December 2001 – **Panel: The use of Microbiology as a biological weapon.** UPR-Arecibo.

December 2001 – **Biotechnology: Diverse routes, the same goal...** First Primer Industrial Biotechnology Faculty retreat.

November 2001 – Bioterrorism: **The incorrect use of Microbiology. The use of Microbiology as a biological weapon.** Science Club Induction Ceremony Guest Speaker Colegio CESO.

November 2001 – **“Phage display” as a biotechnological tool in the discipline of functional proteomics for the detection of protein-protein interactions.** Microbiology Symposium: Biotec 2001. UPR-Arecibo

November 2001 – **Anthrax: weapon of war, tool of peace. Inter American University at Ponce:** Cientec Symposium.

September 2001 – **Biotechnology.** New Industrial Biotechnology incoming student seminal series.

September 2001 – **What to consider at the moment to choose a graduate school, and a research Project.** Industrial Biotechnology Student Society Seminar Series.

September 2001 – **“Proteomics”:** **“phage display” as a technique to detect protein – protein interactions.** Industrial Biotechnology Association Seminar series.

September 2001 – **Technology at the service of Biology: What to ask, and how to answer?** Biotechnology day. University of Puerto Rico at Mayaguez. Mayagüez, Puerto Rico.

September 2000 – **Characterization and topological analysis of the *Rhodobacter sphaeroides* cytochrome *c*- maturation proteins, CcmF and CcmH.** National Institute of Health, Maryland.

July 2000 – Topological studies of CcmF y CcmH in *Rhodobacter sphaeroides* and their function in *c* type cytochrome maturation. University of Puerto Rico at Mayaguez. Mayagüez, Puerto Rico.

March 2000 – **Role of Ccm proteins in *c*-type cytochrome maturation.** University of Wisconsin-Madison. Madison, Wisconsin.

October 1999 – ***Rhodobacter sphaeroides* cytochromes: CcmF y CcmH as maturation factors.** University of Puerto Rico at Mayaguez. Mayagüez, Puerto Rico.

October 1999 – **From the University to the research project: how to choose a place and a project to obtain a graduate degree.** University of Puerto Rico at Mayaguez. Mayagüez, Puerto Rico

April 1999 – **Host factors and amino acid sequence that contribute to covalent heme attachment in *c*-type cytochromes.** University of Wisconsin-Madison. Madison, Wisconsin.

April 1998 – **Properties of *Rhodobacter sphaeroides* cytochrome *c* maturation proteins CcmF and CcmH.** University of Wisconsin-Madison. Madison, Wisconsin.

June 1994 – **Secretion of Intercellular of Proliferation Controllers in Bacteria. XVII Scientific Investigation Congress.** Interamerican University of Puerto Rico, San Juan, Puerto Rico.

### **MEMBER OF THE FOLLOWING ORGANIZATIONS**

**Association of Science Teachers of Puerto Rico (2004)**

**Horticulture Society of the West (2002-2011)**

**Support staff 2002 – 2004**

**Vice-president 2004, 2007, 2010**

**President 2008**

**Minorities in Agriculture Natural Resources and Related Sciences (MANRRS)**

**American Society for Microbiology (ASM; since 1985)**

**Association of Future Teachers (AFM; since 1992)**

**Honors Societies:**

**Beta Beta Beta** Advisor at Zeta Delta Chapter 1994-1995; Zeta Alpha since 2010-2014 and 2017-present.

Member of **Phi Kappa Phi** since 1987

**Sigma XI** - 2020

**Student Society of Microbiology (SEMI)**

= President (1986), vice-president (1986), founder member (1985)

**Society for the Advancement of Chicanos/Latinos and Native American ins Science**

(SACNAS).

= Member (2006)

= Founder, student chapter at UPR-Mayagüez (SACNAS-UPR-M)(2007-present).

= Advisor 2007 - 2012

**Goals Inspiration Values and Education (GIVE), UPR-Mayaguez, Advisor 2010**

**AEXO: Astrobiology and Exobiology Association**

= Advisor 2015 – present

**International Genetically Engineered Machine (iGEM-RUM)**

= Advisor 2017 – present