

PROJECTS, TOPICS IN RESEARCH INITIATIVES BY ALUMNI OF THE SCIENCE AND TECHNOLOGY DEPARTMENT IAUPR PONCE CAMPUS

Alumni Student's	Degree	Graduation year	Graduate School	Mentor's
Miguel Barrera Díaz	Bs. Biotechnology	2019	PhD in Biochemistry Indiana University School of Medicine	Dr. Ramírez Domenech
Jean Madera	Bs. Biomedical Science	2019	UAG School of Medicine	Dra. Ferrer
Felix Rodríguez	Bs. Biomedical Science	2018	UAG School of Medicine	Dra. Ferrer
Cristian Santiago	Bs. Biomedical Science	2021	PhD in Biomedical Sciences - Tulane University School of Medicine	Dra. Álvarez
Janay Vélez León	Bs. Biomedical Science	2021	Veterinary School LSU	Dra. Ferrer
David Sánchez	Bs. Biomedical Science	2021	PhD in Biochemistry Indiana University School of Medicine	Dra. Álvarez
Mónica Badillo Vélez	Bs. Biomedical Science	2021	Pharm D in University of Arkansas for Medical Sciences College of Pharmacy, Little Rock, AR	NA
Emily Torres	Bs. Biomedical Science	2021	Ross University School of Medicine	NA
Ricardo Rivera Gueits	Bs. Biomedical Science	2021	Ross University School of Medicine	Dra. Álvarez
Yonellie González Torres	Bs. Biomedical Science	2021	UAG School of Medicine	NA
Carlos Cabrera López	Bs. Forensic Science	2019	UAG School of Medicine	Dra. Ferrer
José Torres Alicea	Bs. Biomedical Science	2021	School of Pharmacy Medical Sciences Campus	Dr. Ramírez Domenech
Sofia Santigo Torres	Bs. Biomedical Science	2022	PhD in Biochemistry Tulane University School of Medicine	Dra. Ferrer
Paola Garcia González	Bs. Forensic Science	2022	PhD in Toxicology University of Colorado, Denver	Dra. Ferrer
Alanis Rodríguez	Bs. Biomedical Science	2022	Pharm D in College of Pharmacy at Rockford, University of Illinois Chicago	Dra. Ferrer

Table 1. Projects, topics, and participants in UBG research initiatives

Project Title	Topics	Participants
Biosynthesis of nanoparticles.	<p>Biosynthesis and characterization of silver nanoparticles using extracts of <i>Leucaena leucocephala</i></p> <p>Optimization of biosynthesis of silver nanoparticles following green synthesis approach</p> <p>Green synthesis of silver nanoparticles using leaf extracts of legume plants, <i>Cajanus cajan</i> and <i>Delonix regia</i>, common in PR.</p>	<p>Wilfredo Betances Pérez</p> <p>Miguel Feliciano Vázquez</p> <p>Emily Torres González</p> <p>Cecilio Torres Soto</p> <p>Joan Delgado Irizarry</p> <p>Jean Rodríguez Ortiz</p> <p>Raúl Aleno Torres</p> <p>Dr. Celia Osorio</p> <p>Dr. Jose I Ramírez Domenech</p>
Strategies for bioremediation of heavy metals	<p>Studies on the accumulation of heavy metals in <i>L. leucocephala</i> in the Natural Reserve Laguna Salinas Sector Punta Cucharas in Ponce PR</p> <p>Impact of silver nanoparticles in growth of radish seeds exposed to lead and aluminum</p> <p>Effects of functionalization of silver nanoparticles with plant hormones growing under different concentrations of Pb and Al.</p> <p>Interactions of partially green double reduced gold nanoparticles with lead</p>	<p>Y. M. Malavé Cruz</p> <p>G. A. Rodríguez Burgos</p> <p>S Torres Rodríguez</p> <p>Bryan Collazo Rodríguez</p> <p>Mariel del R. Báez Miranda</p> <p>Anthony López Collazo</p> <p>Ángel Colón Santiago</p> <p>Arely Muñiz Dominicci</p> <p>Eulalia Medina</p> <p>Jesse Chabrier Rodríguez</p> <p>Jean Luna Martínez</p> <p>Agnes Cruz Torres</p> <p>Ricardo Noriega Rivera</p> <p>Braulio Acevedo Batista</p> <p>Dr. Celia Osorio</p> <p>Dr. Edmy Ferrer</p> <p>Dr. Jose I Ramirez Domenech</p>
Impact of nanoparticles on plant growth and development	<p>Interactions of gold and silver nanoparticles and lead in the rates of germination and root elongation</p> <p>Analysis of root elongation</p> <p>Biomimicry</p>	<p>Bryan Mercado Toro</p> <p>Ricardo Noriega Rivera</p> <p>Agnes Cruz Toro</p> <p>Eulalia Medina Pérez</p> <p>Mirelsa Mercado Ruiz</p> <p>Karelys Vázquez Ortiz</p> <p>Zulmaris Camacho Durán</p> <p>Yonellie González Torres</p> <p>Christian Velázquez Nieves</p>
Functionalization of silver nanoparticles	Functionalization with plant hormones and aspirins	<p>Gabriel Maldonado Vélez</p> <p>Miguel Barrera Diaz</p>
Development of digital resources for integrating and apply research	Integration of programming languages, plant biology and chemical resources for research design and management	<p>Cecilio Torres Soto</p> <p>Miguel Feliciano Vázquez</p> <p>Christian Nieves Velázquez</p>

Microbiological applications	Bacterial responses to exposure to nanoparticles	Raul Aleno Anthony Lopez Marco Miranda Keishla Rodriguez Graciani Mentorship: Prof. Lourdes Diaz
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Integration and multidisciplinary approach are key to the success of the research initiatives of the bioresearch group. The research collaborators during 2010 - 2023 are listed below including their contributions.

Table 2. Research collaborators for the Bioresearch group from 2010 to 2022.

Name	Field of study/Contribution
Dr. Celia Osorio Cantillo	Nanotechnology, Analytical Chemistry
Dr. Edmy Ferrer Torres	Toxicology, Nanotechnology
Dr. Raquel Lugo Vecchini	Computer Sciences
Prof. Lourdes Díaz	Microbiology
Prof. Humberto del Canto (deceased)	Analytical Chemistry, Photography
Jessica Orta García	Research Assistant, Laboratory material and equipment
Sherryl Oliveras Villaronga (2012-2021)	Research Assistant, Laboratory material and equipment
Eulalia Medina Pérez (2012-2014)	Research Assistant, Laboratory material and equipment

Years	Projects Investigations	Student 's & Mentor's	Publications
2013	Preliminary evaluation of the impact of silver nanoparticles on the germination and growth of radish seeds exposed to lead and aluminum	Jesse Chabrier Rodríguez Braulio Acevedo Batista Eulalia Medina Dr. Edmy Ferrer Torres Dr. José I Ramírez Domenech	Abstract Published. Poster presentations: 36 th American Chemical Society (ACS) Senior Technical Meeting. Ponce, PR. 245 th ACS National Meeting and Exposition. New Orleans, LA. Presenter: Jesse Chabrier Rodriguez
2013 2014	Responses to functionalization of silver nanoparticles with plant hormones growing under different Pb and Al concentrations	Bryan Collazo Rodríguez Eulalia Medina Pérez Dr. Edmy Ferrer Torres Dr. José I Ramírez Domenech	Abstract Published. Poster presentation: 37 th ACS Senior Technical Meeting. Aguadilla, PR. Oral presentation: 247 th ACS National Meeting and Exposition. Dallas, TX. Presenter: Bryan Collazo Rodríguez.
2014	Integration of nanotechnology and bioremediation: A strategy for the environmental sustainability of soils in the south of PR	Ángel Colon Santiago Gabriel Maldonado Dr. José I Ramírez Domenech	Abstract Published. Poster presentation: 18 th Annual Green Chemistry and Engineering Conference. Washington, DC. Presenter: Dr. Jose I Ramirez Domenech
2015	Comparative study of the antimicrobial effect of different antibiotics mixed with CuO, MgO and ZnO nanoparticles in <i>Staphylococcus aureus</i> , <i>Pseudomonas aeruginosa</i> and <i>Escherichia coli</i> cultures.	Raúl Aleno Gilberto Báez Mariel Báez Eulalia Medina Prof. Humberto del Canto Prof. Lourdes Diaz	Research mentorship under Prof. Lourdes Diaz. First peer review publication from a microbiology student participant in the UBG.

Years	Projects Investigations	Student 's & Mentor's	Publications
		Dr. Edmy Ferrer Torres Dr. José I Ramírez Domenech	
2015 2016	Comparative interactions of gold and silver nanoparticles and lead in the rates of germination and root elongation of radish plants	Ricardo Noriega Rivera Agnes Cruz Torres Bryan Mercado Toro Eulalia Medina Pérez Dr. Celia Osorio Cantillo Dr. Edmy Ferrer Torres Dr. José I Ramírez Domenech	Abstract Published. Poster presentation: 249 th ACS National Meeting and Exposition. Denver, CO. 251 st ACS National Meeting and Exhibition. San Diego, CA. Presenter: Ricardo Noriega Rivera was awarded the best presentation in environmental chemistry.
2015	Antimicrobial effect of improved combined with Ni and semi-green Ag nanoparticles in <i>Klebsiella pneumoniae</i>	Keishla Rodriguez Graciani Raúl Aleno Marco Miranda Belandria Joan Delgado Irizarry Eulalia Medina Pérez Prof. Lourdes Diaz Dr. Edmy Ferrer Dr. José I Ramírez Domenech	Abstract Published. Research under the mentorship of Prof. Lourdes Diaz in microbiology. Poster presentation: 249 th ACS National Meeting and Exposition. Denver, CO. Presenter: Keishla Rodriguez Graciani
2015 2016	Interactions of partially green double reduced gold nanoparticles with lead	Agnes Cruz Torres Ricardo Noriega Bryan Mercado Toro Eulalia Medina Pérez Dr. Edmy Ferrer Torres Dr. Celia Osorio Cantillo Dr. José I Ramírez Domenech	Abstract Published. Poster presentation: 249 th ACS National Meeting and Exposition. Denver, CO. Oral presentation: 251 st ACS National Meeting and Exposition. San Diego, CA. Presenter: Agnes Cruz Torres
2015	Functionalization of indole-3-acetic acid with gold nanoparticles synthesized through a double reduction reaction using leaflets' extracts of <i>Leucaena leucocephala</i> (Lam.) de Witt.	Gabriel Maldonado Vélez Eulalia Medina Pérez Dr. Celia Osorio Cantillo Dr. Edmy Ferrer Torres Dr. José I Ramírez Domenech	Abstract Published. Poster presentation: 249 th ACS national Meeting and Exposition. Denver, CO. Paper published in Revista 360 Vol. 10.
2015	Green synthesis of silver nanoparticles using extracts from <i>Leucaena leucocephala</i> (Lam.) de Witt. leaflets	Joan Delgado Irizarry Jean Rodríguez Ortiz Raúl Aleno Torres Eulalia Medina Pérez Dr. Celia Osorio Cantillo Dr. Edmy Ferrer Torres Dr. José I Ramírez Domenech	Abstract Published. Poster presentation: 249 th ACS National Meeting and Exposition. Denver, CO. Presenter: Joan Delgado Irizarry

Years	Projects Investigations	Student 's & Mentor's	Publications
2015	Water analysis and description assessment of Laguna Las Salinas, Ponce, PR.	Jimmy Capiello Raúl Aleno Anthony López Collazo	Abstract Published. Oral Presentation: 50 th ACS Junior Technical Meeting. San Juan, PR.
2017	Effects of common food preservatives, butylated hydroxytoluene (BHT) and sodium benzoate, on the survival rate and behavior of <i>Daphnia magna</i> .	Rafael Valedón Arce Lorraine Narváz Mejías Miguel Barrera Diaz Dr. José I Ramírez Domenech	Abstract Published. Poster presentation: 253 rd ACS National Meeting and Exposition, San Francisco, CA. Presenter: Miguel Barrera Diaz
2018 2019	Biosynthesis and characterization of silver nanoparticles using extracts of <i>Leucaena leucocephala</i> leaves	Wilfredo Betances Pérez Cecilio Torres Soto Dr. Celia Osorio Cantillo Dr. José I Ramírez Domenech	Abstract Published. Poster Presentations: 2018 – Hispanic Serving Institution Conference. Mayaguez, PR. 2019 ACS Spring National Meeting. Orlando, Fla. Presenter: Wilfredo Betances Pérez
2018	Effects on the behavior and survival rate of <i>Daphnia magna</i> exposed to silver nanoparticles functionalized with acetylsalicylic acid.	Miguel Barrera Diaz Yeraidin Santos Vázquez Anthony Homs Ortiz Dr. José I Ramírez Domenech	Abstract Published. Poster presentation: ACS 255 th National Meeting and Exposition. New Orleans, LA.
2020	Interaction of programming languages, plant biology, and chemical resources for design and management	Cecilio Torres Soto Miguel Feliciano Vázquez Christian Velázquez Nieves Paulette González Colón Dr. Raquel Lugo Vecchini Dr. José I Ramírez Domenech	Abstract Published. ACS Spring 2020 National Meeting and Exposition. Philadelphia, PA. Accepted for presentation but meeting not attended due to COVID. Students could not present on-line.
2020	Analysis of primary root elongation from radish seeds exposed to green and chemically synthesized silver nanoparticles	Mirelsa Mercado Ruiz Karelys M Vázquez Ortiz Zulmaris Camacho Duran Yonelies González Torres Dr. José I Ramírez Domenech	Abstract Published. ACS Spring 2020 National Meeting and Exposition. Philadelphia, PA. Online Presenter: Mirelsa Mercado Ruiz.
2022	Integration and application of nanotechnology to develop sustainable research strategies.	Dr. José I Ramírez Dr. Celia Osorio Dr. Edmy Ferrer	Abstract Published. ACS Spring 2022 Meeting. San Diego, CA. Presenter: Dr José I Ramírez Domenech
2023	Exploratory studies on the impact of silver nanoparticles in evolutionary reproductive processes among living organisms	Melvin Torres Serrano Darianis Ramos Nieves Angela Colón Perez Maria Serrano López de Victoria Jessica Orta García Dr. José I Ramírez Domenech	Abstract submitted for presentation at ACS Spring 2023 Meeting in Indianapolis, IN.