

# “I Taller de Fortalecimiento y Actualización en la Ingeniería Biomédica”

IEEE-EMBS PUPR  
Biomedical Engineering Faculty  
San Juan, PR  
March 11 & 12, 2025

<b>TABLE OF CONTENTS:</b>	
<b>EVENT CONTRIBUTORS:</b> .....	<b>3</b>
Faculty.....	3
Council Members IEEE-EMBS PUPR .....	4
<b>INTRODUCTION</b> .....	<b>5</b>
<b>OBJECTIVES</b> .....	<b>6</b>
<i>General Objective</i> .....	6
<i>Specific Objectives</i> .....	6
<b>GENERAL CONDITIONS</b> .....	<b>7</b>
<b>NECESITIES</b> .....	<b>9</b>
<b>EVENT SCHEDULE</b> .....	<b>10</b>
<i>Agenda</i> .....	10
<b>CONCLUSION</b> .....	<b>15</b>
<b>EVENT IMAGES</b> .....	<b>17</b>
First day.....	17
Second day .....	21
<b>WHERE TO FIND US</b> .....	<b>25</b>

## EVENT CONTRIBUTORS:

### Faculty

Vice-president de Academic Affairs & Dean of the School of Engineering  
and Applied Sciences

***Dr. Carlos González***

Co-Coordinator, Undergraduate Research Program for Honor and  
Outstanding Students (URP-HOS)

***Prof. Blanca Tallaj***

Co-Coordinaador URP-HOS

***Dr. Gustavo Pacheco***

Biomedical Engineering Department Director

IEEE-EMBS PUPR Mentor

***Prof. Ricardo Bravo***

IEEE-EMBS PUPR Mentor

***Dr. Jairo Rondón***

## **Council Members IEEE-EMBS PUPR**

***PRESIDENT***  
***Grace Stibie***

***VICEPRESIDENT***  
***Paola Colón***

***TREASURER***  
***Jahdiel Pérez***

***PUBLIC RELATIONS***  
***Abigail Santiago***

***IEEE-EMBS PUPR MEMBER***  
***Alexandra Vargas***

## INTRODUCTION

IEEE-EMBS PUPR is dedicated to strengthening the bond among biomedical engineers in Puerto Rico. Our mission is to foster professional growth, create development opportunities, and, above all, provide support to those who are part of this exciting field.

Academic preparation is a fundamental part of the student's overall development, but it's just one piece of the puzzle. Participation in extracurricular activities aligned with their field of study is key to enriching their educational experience. Through initiatives like the "***Taller de Fortalecimiento y Actualización en la Ingeniería Biomédica,***" students will have the opportunity to hear from distinguished professionals and explore poster exhibitions from fellow classmates that showcase significant advancements in the biomedical field. These opportunities allow students to connect theory with real-world applications and stay at the forefront of technological innovations that are revolutionizing healthcare.

## OBJECTIVES

The objectives for this event are the following:

### ***General Objective***

To enhance the academic and professional development of biomedical engineering students and faculty by providing a platform for knowledge exchange, networking, and exposure to cutting-edge advancements in the field. Through expert-led discussions and poster exhibitions, the “*Taller de Fortalecimiento y Actualización en la Ingeniería Biomédica,*” aims to bridge the gap between academic preparation and real-world applications, fostering innovation and continuous learning in the biomedical sector.

### ***Specific Objectives***

- Foster interaction between students and distinguished professionals in the biomedical engineering field, allowing them to gain insight into real-world experiences and practical applications of their area of study.
- Provide students with the opportunity to create and present their investigation posters while interacting with the biomedical community.
- Create a space for biomedical engineers to network and become part of a community.

## GENERAL CONDITIONS

Event participants were divided as shown in the following table:

Students	30
IEEE EMBS PUPR Council Members	5
Faculty	5
National Guest Speakers	6
Poster Presenters	7
<b>Total de participantes (aproximado)</b>	<b>53</b>

"I Taller de Fortalecimiento y Actualización en la Ingeniería Biomédica", was successfully held on March 11 and 12, 2025, in collaboration with the Engineering in Medicine and Biology Society (EMBS) of the IEEE (Institute of Electrical and Electronics Engineers) and the Department of Biomedical Engineering. The event relied on the invaluable collaboration of faculty, professionals, and students in the field of Biomedical Engineering. Their contributions were key to its success, as they participated in lectures, discussions, and poster presentations, enriching the experience for all attendees.

## TECHNICAL POSTER REVIEW COMMITTEE

During the poster exhibition session held on March 11 and 12, 2025, as part of the "First Workshop on Strengthening and Updating in Biomedical Engineering," a highly qualified technical review committee participated. This committee was composed of distinguished professionals from the academic and scientific community, responsible for providing critical and constructive evaluation of the research projects presented by students. Technical Review Committee Members:

- Dr. Ángel González-Lizardo
- Dr. Juan Varela
- Dr. Irela Pérez

The committee evaluated the posters presented by students from both the IEEE-EMBS PUPR chapter and the URP-HOS program. Their work was essential in ensuring a high academic standard, offering detailed feedback to participants, and recognizing excellence in student research.

## NECESITIES

### Required Materials for This Event

#### Non-Food Materials

Quantity	Material
60	PUPR Folders for certificates
60	Certificates
1	Coffee maker
2 packs	Napkins
80	Cups

#### Food & Refreshments

Quantity	Item
2 bags 1 lb	Coffee
3 pints	Milk
2 gallons	Water
2 packs	8oz water bottles (40 a pack)
4 bottles	1-liter sodas
1 pack	Assortment of cheeses
1 box	Crackers
1 pack	Grapes
1 pack	Croissants
2 packs	Cookies
1 pack	Brown Sugar
4 boxes	Pizza
2 packs	Ice

## EVENT SCHEDULE

### "I Taller de Fortalecimiento y Actualización en Ingeniería Biomédica"

**Location: Room L-203 PUPR**

**Date: March 11 & 12, 2025**

**Time: 9:00am-4:00pm**

### *Agenda*

**March 11, 2025**

9:00am-12:00: Guest Speakers

- 9:00am-9:15am Welcoming
- 9:15am-10:00am First Guest Speaker:  
**Dr. Jairo Rondón** - *"Materials in BME PUPR: Technical and Bioethical Aspects"*
- 10:00am-10:15am Changing Period
- 10:15am-11:00am Second Guest Speaker:  
**Dr. Angel Gonzalez** - *"Sterilization of Bacteria with Low-Pressure Low-Temperature Plasma Discharge"*
- 11:00am-11:15am Changing Period
- 11:15am-12:00pm Third Guest Speaker  
**Dr. Irela Pérez** - *"BME: Sistema Cardiovascular"*
- (12:00pm-1:00pm lunch break)

1:00pm-4:00pm: Poster Exhibition

## Presenters Under IEEE-EMBS PUPR

“Applications of Extracorporeal Carbon Dioxide Removal (ECCO<sub>2</sub>R) Devices: A Brief Review”

Paola A. Colón Robles, Alexandra V. Vargas Rivera

Dr. Jairo Rondón Contreras

<https://hdl.handle.net/20.500.12475/2994>

## WINNER: Best Poster Award

“Extracorporeal Membrane Oxygenation (ECMO): A Brief Review”

Ginger S. Urrutia Molina

Dr. Jairo Rondón Contreras

<https://hdl.handle.net/20.500.12475/2992>

“The Artificial Pancreas: A Story in the Present”

Jahdiel Pérez Salvá, Renán A. Arocho Vargas

Dr. Jairo Rondón Contreras

<https://hdl.handle.net/20.500.12475/2993>

“Biomaterials for Skeletal Rehabilitation”

Emilio M. Figueroa Torres

Dr. Jairo Rondón Contreras

<https://hdl.handle.net/20.500.12475/2991>

“Natural Polymers for Conductive Hydrogels: A Review”

Paola A. Colón, Grace P. Stibie-Cook

Prof. Ricardo Bravo; Dr. Jairo Rondón Contreras

<https://hdl.handle.net/20.500.12475/2995>

## “Implantable Artificial Kidney: An Introduction”

Grace P. Stibie-Cook

<https://hdl.handle.net/20.500.12475/3012>

### Presenters Under URP-HOS

## “Optimization and Characterization of 3D-Printed Solid Oral Dosage Forms”

Yariana N. Bengochea Bonilla

Dr. Miguel Florián

<https://hdl.handle.net/20.500.12475/2719>

## “Development of Conductive Gels for Biomedical Applications”

Andrea N. García Arroyo

Dr. Jairo Rondón Contreras

<https://hdl.handle.net/20.500.12475/2713>

### March 12, 2025

9:00am-12:00: Guest Speakers

- 9:00am-9:15am Welcoming
- 9:15am-10:00am First Guest Speaker:  
**Prof. Maria Garriga** - *“Bioteología Molecular: Aplicaciones a la Ingeniería Biomédica”*
- 10:00am-10:15am Changing Period
- 10:15am-11:00am Second Guest Speaker:  
**Prof. Ricardo Bravo**- *“BIOFEEDBACK: Fundamentos e Instrumentación”*
- 11:00am-11:15am Changing Period

- 11:15am-12:00pm Third Guest Speaker  
**Dr. Miguel Florián-** *“Biopolymers and their Applications in Biomedical Engineering”*
- (12:00pm-1:00pm lunch break)

1:00pm-4:00pm: Poster Exhibition

- 2:30pm-3:00pm – Certificate Award Ceremony and Formal
- Photos

<p><b>Certificate of Participation</b></p> <p><i>Abigail Santiago Vázquez</i></p> <p>HAS SUCCESSFULLY ACQUIRED KNOWLEDGE in Various Disciplines in the Biomedical Engineering Field at <b>"I Taller de Fortalecimiento y Actualización en la Ingeniería Biomédica"</b></p> <p>March 11 &amp; 12, 2025</p> <p> </p> <p><i>Angel Gonzalez</i> Mentor IEEE <i>Genove Siles</i> Presidente, IEEE EMBS PUPR EMBS-25-03-T-P-A-0018</p>	<p><b>Certificate of Recognition</b></p> <p><i>Paola A. Colón Robles</i></p> <p>HAS SUCCESSFULLY COMPLETED Their Investigational Poster Exposition <b>"Applications of Extracorporeal Carbon Dioxide Removal (ECCO<sub>2</sub>R) Devices: A Brief Review"</b> at <b>"I Taller de Fortalecimiento y Actualización en la Ingeniería Biomédica"</b></p> <p>March 11 &amp; 12, 2025</p> <p> </p> <p><i>Angel Gonzalez</i> Mentor IEEE <i>Genove Siles</i> Presidente, IEEE EMBS PUPR EMBS-25-03-T-PO-A-0001</p>
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**Certificate of Recognition**

*Dr. Jairo Rondón Contreras*

HAS SUCCESSFULLY COMPLETED  
Their Presentation on:  
**"Materiales en BME PUPR: Aspectos Técnicos y Bioéticos"**  
Presented at:  
**"I Taller de Fortalecimiento y Actualización en la Ingeniería Biomédica"**

March 11, 2025

*Angel Gonzalez*  
Dr. Angel Gonzalez  
Mentor IEEE  
*Genove Siles*  
Presidente, IEEE EMBS PUPR  
EMBS-25-03-T-PON-A-0001

EMBS-25-03-T-PON-A-0000

Association-Year-Month-Taller-Poster-(Certificate #)

## CONCLUSION

The “First Workshop on Strengthening and Updating in Biomedical Engineering” proved to be a resounding success, fulfilling its objectives of academic enrichment, professional networking, and technological exploration. The event featured six distinguished guest speakers—three per day—who offered valuable insights into diverse areas of biomedical engineering, ranging from bioethical considerations to advances in cardiovascular and polymer applications.

A total of seven research posters were exhibited, with five presented by IEEE-EMBS PUPR student members and two by participants from the URP-HOS program. These exhibitions not only showcased the students' research capabilities but also promoted peer-to-peer learning and critical evaluation through interaction with an expert technical jury. The winners of the WINNER: Best Poster Award were the students: Paola A. Colón Robles, Alexandra V. Vargas Rivera

Over 35 students actively engaged in lectures, poster sessions, and networking activities, creating a vibrant academic environment conducive to innovation and growth. The event fostered meaningful connections between students, faculty, and professionals, reinforcing the bridge between theoretical learning and real-world biomedical applications.

The overwhelmingly positive feedback received from both participants and guests highlights the importance and relevance of this type of initiative. It sets a solid foundation for future editions, with the potential to continue expanding the impact of biomedical engineering education at PUPR and beyond.

## EVENT IMAGES

First day



Images 3 & 4: Dr. Jairo Rondón Contreras

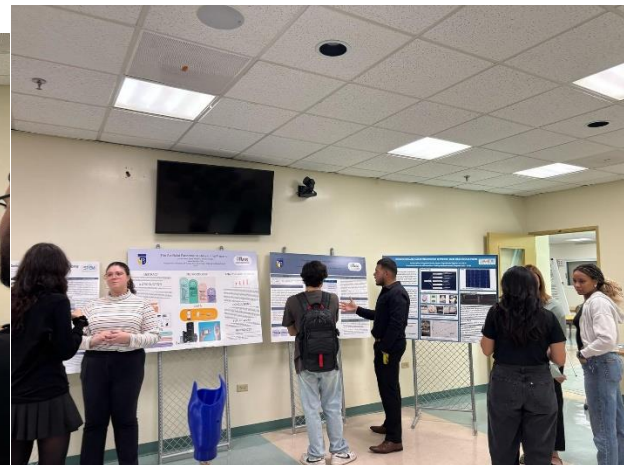
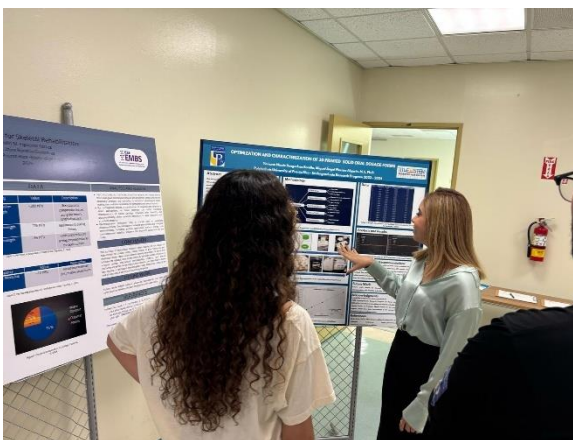


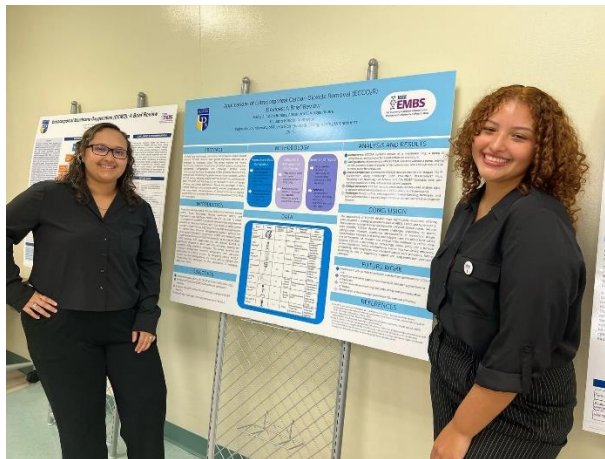
Images 5 & 6 Dr. Angel Gozález

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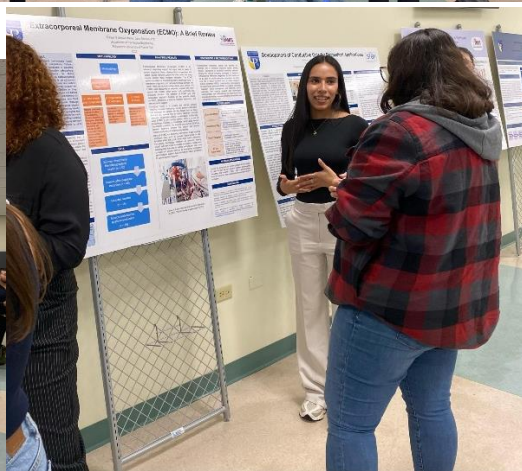


**Images 7 & 8: Dra. Irela Pérez**





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**IEEE-EMBS PUPR Council Members**

## Second day



**Images 1 & 2: Prof. María Garriga**



**Images 3 & 4: Prof. Ricardo Bravo**

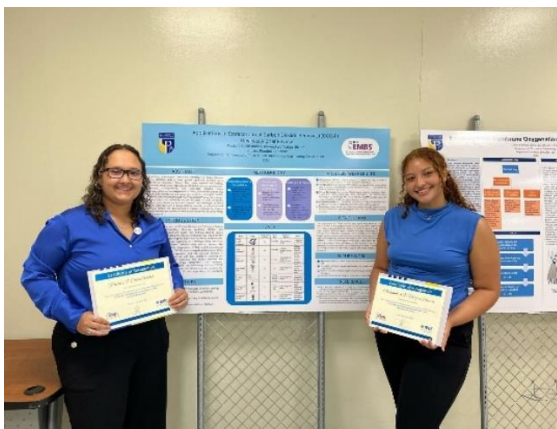
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Images 5 & 6: Dr. Miguel Florián



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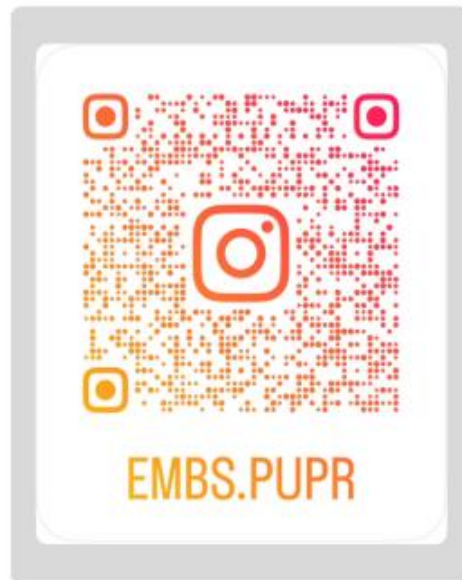


**Certificate Award Ceremony**

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## WHERE TO FIND US

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