

David A. Castilla-Casadiegos, Ph.D.

Department of Biomedical Engineering, The University of Miami
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[ORCID](#) - [Google Scholar](#)

EDUCATION AND TRAINING

Post-Doctoral Scholar , The University of Texas at Austin, Austin, TX <i>Advisor:</i> Adrienne Rosales, Ph.D. <i>Project:</i> Regulating the Immunomodulatory Potential of Stem Cells with Biophysical Cues	03/2021 - 12/2024
Advanced Teaching Certificate , The University of Texas at Austin, Austin, TX The University of Texas at Austin - Center for Teaching and Learning	01/2024 - 04/2024
Advanced Research Training Course , The University of Chicago, Woods Hole, MA <i>Program:</i> Frontiers in Stem Cells and Regeneration - Marine Biological Laboratory	10/2023 - 10/2023
Ph.D. in Chemical Engineering , University of Arkansas, Fayetteville, AR <i>Advisor:</i> Jorge Almodóvar, Ph.D. <i>Thesis:</i> Biopolymeric Materials for Tissue Regeneration, Cell Manufacturing, and Drug Delivery	08/2018 - 03/2021
Internship Student , Georgia Institute of Technology, Atlanta, GA <i>Advisor:</i> Andrés García, Ph.D. <i>Project:</i> Layer-by-layer Assemblies of Collagen/Heparin towards the Manufacturing of Human Mesenchymal Stem Cells	11/2017 - 05/2018
M.S. in Chemical Engineering , University of Puerto Rico, Mayaguez, PR <i>Advisor:</i> Jorge Almodóvar, Ph.D. <i>Thesis:</i> Characterization of 2D and 3D Biomaterials for the Presentation of Bioactive Surfaces	06/2013 - 06/2016
B.S. in Chemical Engineering , “Universidad del Atlántico”, Barranquilla, COL <i>Advisor:</i> Sigifredo Cervera, M.S. <i>Thesis:</i> Aloe Vera Drying through the Venturi Effect	06/2005 - 05/2011

PROFESSIONAL APPOINTMENTS

Assistant Professor Department of Biomedical Engineering, University of Miami, Miami, FL.	01/2025 - Present
Assistant Professor (Secondary Appointment) Department of Chemical, Environmental, and Materials Engineering, University of Miami, Miami, FL.	05/2026 - Present
Post-Doctoral Scholar McKetta Chemical Engineering Department, Rosales’s Lab, The University of Texas at Austin, Austin, TX.	03/2021 - 12/2024
Graduate Research Assistant Ralph E. Martin Chemical Engineering Department, Almodóvar’s Lab, University of Arkansas, Fayetteville, AR.	08/2018 - 03/2021
Internship Student Woodruff School of Mechanical Engineering Department, Garcia’s Lab, Georgia Institute of Technology, Atlanta, GA.	11/2017 - 05/2018

Last updated: June 9, 2026

Graduate Researcher Assistant

08/2013 - 05/2016

Chemical Engineering Department, Polymeric Biomaterials Laboratory,
University of Puerto Rico, Mayaguez, PR.

Research Project Manager

04/2012 - 06/2013

Chemical Engineering Department, "Universidad del Atlántico", Barranquilla, COL.

Project Manager

01/2011 - 12/2013

Environmental Management System Department, "Universidad del Atlántico", Barranquilla, COL.

Project Manager

09/2011 - 01/2012

Aquaterra Engineers S.A.S, Bolívar, COL.

GRANTSMANSHIP**NIH NIGMS K99/R00 Pathway to Independence Award**

07/2023 - 07/2028

*Project: Regulating the Quality and Potency of Stem Cells with Biophysical
Cues from Dynamic Nanofibrous Hydrogels for Therapeutic Purposes
(awarded, \$ 996,696.00 over 5 years, PI: David Castilla-Casadiegos)*

AIChE Foundation 2024 First Cycle

01/2024 - 12/2024

*Project: LatinX Voices in Chemical Engineering
(awarded, \$ 24,090.00 over 1 year, Financial Liaison: David Castilla-Casadiegos)*

**Young Researcher and Innovator of the Colombian Institute for the Development
of Science and Technology Francisco Jose de Caldas – COLCIENCIAS**

04/2012 - 06/2013

*Project: Obtaining docosahexaenoic acid (DHA) from different species of saltworks microalgae
(awarded, \$ 10,909.09 over 1 year, PI: David Castilla-Casadiegos)*

AWARDS AND HONORS

- 2026 **Highly Cited Paper Recognition**, for the review article "Hydrogel Network Architecture Design Space: Impact on Mechanical and Viscoelastic Properties." Gels (MDPI).
- 2025 **Outstanding Author in Annals of Translational Medicine**, AME Publishing Company
- 2025 **Cells Tissues Organs Young Investigators Award**, Editorial Office 'Cells Tissues Organs' - Karger Publishers, Basel, Switzerland
- 2025 **Distinguished Alumnus Award**, in the category of "Academic Excellence and the Development of New Generation", College of Engineering, "Universidad del Atlántico", Colombia
- 2024 **Sigma Xi**, The Scientific Research Honor Society - Full Membership
- 2023 **NIH K99/R00 Pathway to Independence Award**, National Institute of General Medical Sciences
- 2023 **IDEAL Star Award**, American Institute of Chemical Engineers (AIChE)
- 2023 **Rising Star in Engineering and Health**, Cornell University's Meinig School of Biomedical Engineering, Columbia University's Department of Biomedical Engineering, and the Johns Hopkins Department of Biomedical Engineering
- 2023 **Provost's Early Career Fellow**, The University of Texas at Austin
- 2023 **Scholarship Award**, to attend the Frontiers in Stem Cells and Regeneration Program at the University of Chicago, Marine Biological Laboratory, National Institutes of Health
- 2022 **Postdoctoral Young Investigator Award**: In recognition of Strong Contributions to the Field of Surface Characterization and Modifications, The Society for Biomaterials
- 2021 **Latin Merit**: In recognition of demonstrating Strong Academic Success, Transformational Student Leadership, and Community Engagement, Latino Alumni Society (LAS), The University of Arkansas at Fayetteville
- 2020 **Outstanding Graduate Student in Chemical Engineering**, The University of Arkansas at Fayetteville
- 2015 **Travel Award**, Society of Hispanic Professional Engineers (SHPE), Maryland

- 2013 **Scholar of the Convocation for Institutional Support of the “Universidad del Atlántico”, for Masters and Doctorate Studies**, “Universidad del Atlántico”, Colombia
- 2013 **1st Place Oral Presentation**, Algal Biotechnology Section, in the 3rd Latin-American Congress of SOLABIAA: “La Sociedad Latinoamericana de Bio-Tecnología Ambiental y Algal”, Republic of Panama
- 2011 **Young Researcher and Innovator of the Colombian Institute for the Development of Science and Technology Francisco Jose de Caldas - COLCIENCIAS**, selected in the national call No. 525 - 2011 program of young researchers and innovators “Virginia Gutiérrez de Pineda”, Colombia
- 2011 **Top Three Professional Ranking in Chemical Engineering**, Chemical Engineering Department at the “Universidad del Atlántico”, Colombia
- 2010 **Winner of 9 Scholarships for the Best Grade Point Average (GPA)**, Chemical Engineering Department at the “Universidad del Atlántico”, Colombia, 2005 - 2010

LANGUAGES

Fluent in oral and written Spanish and English

RESEARCH INTERESTS

Polymeric Biomaterials, Cell-Material Interactions, Cell-based Sensors, Growth Factor Presentation, Biomimetic Materials, Electrospinning, Layer-by-Layer Films, Biomaterial Surface Modification, Polysaccharide-Based Biomaterials, Collagen-Based Biomaterials, Cell and Tissue Engineering, Regenerative Medicine, Cell Manufacturing, Drug Delivery.

SCIENTIFIC PUBLICATIONS (Peer-reviewed)

U.S. Patents

1. Almodovar, J., Wickramasinghe, R., Chiao, Y-H., and **Castilla-Casadiegos, D. A.** (2023). Bilayer Electrospun Membranes for Treating Fracking Wastewater via Membrane Distillation. U.S. Patent No. 11,628,408.
2. Almodovar, J., Greenlee, L., Powell, J., and **Castilla-Casadiegos, D. A.** (2022). Biodegradable Chitosan Microneedle Patch for Transdermal Delivery. U.S. Provisional Pat. Ser. No. 17/496,515.

Research Papers (*Indicates equal first author contribution)

1. Pickett M. R., Kamra M., **Castilla-Casadiegos D. A.**, Noori S., Matsui W., Rosales A. M., Zoldan J., Parekh S. H. (2025) Collagen nanofiber alignment attenuates leader-follower energetic and metabolic differences during collective migration in pancreatic cancer. *Acta Biomaterialia*, 183-193.
2. Rey-Sanchez M. J., Miranda-Muñoz K. A., Morton L. D., Rodriguez-Rivera G. J., **Castilla-Casadiegos D. A.** (2025). Lyophilised Drug Reservoir-Integrated Hydrogel-Forming Microarray Patches for Transdermal Delivery of Isoniazid and Pyridoxine Hydrochloride as a Strategy to Treat Latent Tuberculosis, *Annals of Translational Medicine*, 51.
3. Gutierrez-Rivera J. A., Roca-Arroyo A. F., **Castilla-Casadiegos D. A.**, Albis A. (2025). Development of a low-cost electrospinning system with a bidirectional collector for uniform nanofibrous membranes *HardwareX*, e00704.
4. **Castilla-Casadiegos, D.***, Pineda-Hernandez, A.*, Morton, L. D.*, Giordano-Nguyen, S., Halwachs, K., & Rosales, A. (2025). Tunable hydrogel networks by varying secondary structures of hydrophilic peptoids provide viable 3D cell culture platforms for hMSCs. *Biomaterials Science*, 3380-3394.
5. **Castilla-Casadiegos D. A.***, Morton Logan D.*, Chavda Ajay P., Loh Darren H., Garcia Francis, and Rosales Adrienne M. (2024). Peptoid Crosslinked Hydrogel Stiffness Modulates Human Mesenchymal Stromal Cells Immunoregulatory Potential in the Presence of Interferon-gamma. *Macromolecular Bioscience*, 2400111.
6. Morton Logan D., **Castilla-Casadiegos, D. A.**, Palmer Ajay C., and Rosales Adrienne M. (2023). Crosslinker Structure Modulates Bulk Mechanical Properties and Dictates hMSC Behavior on Hyaluronic Acid Hydrogels. *Acta Biomaterialia*, 155, 258-270.
7. **Castilla-Casadiegos, D. A.**, Miranda-Muñoz, K. A., Roberts, J. L., Crowell, A. D., Gonzalez-Nino, D., Choudhury, D., Aparicio-Solis, F. O., Servoss, S. L., Rosales, A. M., Prinz, G., Zou, M., Zhang, Y.,

8. Coetzee, J. F., Greenlee, L. F., Powell, J., and Almodovar, J. (2022). Biodegradable Microneedle Patch for Delivery of Meloxicam for Managing Pain in Cattle. *PLoS one*, 17, e0272169.
9. Haseli M.*, **Castilla-Casadiegos, D. A.***, Pinzon-Herrera, L. C., Hillsley, A., Miranda-Muñoz, K. A., Sivaraman, S., Rosales, A. M., Rghavendra-Rao, R., and Almodovar, J. (2022). Immunomodulatory Functions of Human Mesenchymal Stromal Cells are Enhanced when Cultured on HEP/COL Multilayers Supplemented with Interferon-Gamma. *Materials Today Bio*, 13, 100194.
10. **Castilla-Casadiegos, D. A.**, Carlton, H., Gonzalez-Nino, D., Miranda-Muñoz, K. A., Daneshpour, R., Huitink, D., Prinz, G., Powell, J., Greenlee, L., and Almodovar, J. (2020). Design, Characterization, and Modeling of a Chitosan Microneedle Patch for Transdermal Delivery of Meloxicam as a Pain Management Strategy for Use in Cattle. *Materials Science and Engineering C*, 118, 111544.
11. **Castilla-Casadiegos, D. A.**, Timsina, H., Haseli, M., Pinzon-Herrera, L. C., Chiao, Y., Wickramasinghe, S. R., and Almodovar, J. (2020). Methods for the Assembly and Characterization of Polyelectrolyte Multilayers as Microenvironments to Modulate Human Mesenchymal Stromal Cell Response. *ACS Biomaterials Science & Engineering*, 6, 6626-6651.
12. Chiao, Y., Chen, S., Yap-Ang, M. B. M., Patra, T., **Castilla-Casadiegos, D. A.**, Fan, R., Almodovar, J., Hung, W., and Wickramasinghe, S. (2020) High-Performance Polyacrylic Acid-Grafted PVDF Nanofiltration Membrane with Good Antifouling Property for Dye Desalination. *Polymers*, 12, 2443.
13. Pinzon-Herrera, L. C., Mendez, J., Mulero, A., **Castilla-Casadiegos, D. A.**, and Almodovar, J. (2020). Real-Time Monitoring of Human Schwann Cells on Heparin-Collagen Coating Reveals Enhanced Adhesion and Growth Factor Response. *Journal of Materials Chemistry B*, 8, 8809-8819.
14. Cifuentes, S. J., Priyadarshani, P., **Castilla-Casadiegos, D. A.**, Mortensen, L. J., Almodovar, J., and Domenech, M. (2020). Heparin/Collagen Surface Coatings Modulate the Growth, Secretome and Morphology of Human Mesenchymal Stromal Cell Response to Interferon-Gamma. *Journal of Biomedical Materials Research Part A*, 109, 951-965.
15. **Castilla-Casadiegos, D. A.**, García, J. R., García, A. J., and Almodovar, J., (2019). Heparin/Collagen Coatings Improve Human Mesenchymal Stromal Cell Response to Interferon Gamma. *ACS Biomaterials Science & Engineering*, 5, 2793-2803.
16. **Castilla-Casadiegos, D. A.**, Pinzon-Herrera, L. C., Perez-Perez, M., Quiñones-Colón, B. A., Suleiman, D., and Almodovar, J. (2018). Simultaneous Characterization of Physical, Chemical, and Thermal Properties of Synthetic and Natural Polymeric Multilayers Using Infrared Spectroscopic Ellipsometry. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 553, 155-168.
17. Vega-Figueroa, K., Santillán, J., Ortiz-Gómez, V., Ortiz-Quiles, E. O., Quiñones-Colón, B. A., **Castilla-Casadiegos, D. A.**, Almodovar, J., Bayro, M., Rodriguez-Martinez, J., and Nicolau, E. (2018). Aptamer-Based Impedimetric Assay of Arsenite in Water: Interfacial Properties and Performance. *ACS Omega*, 3, 1437.
18. **Castilla-Casadiegos, D. A.**, Ramos-Avilez, H. V., Herrera-Posada, S., Calcagno, B., Loyo, L., Shipmon, J., Aldo, A., and Almodovar, J. (2016). Engineering of a Stable Collagen Nanofibrous Scaffold with Tunable Fiber Diameter, Alignment, and Mechanical Properties. *Macromolecular Materials and Engineering*, 301, 1064-1075.
19. **Castilla-Casadiegos, D. A.**, Maldonado, M., Sundaram, P., and Almodovar, J. (2016). "Green" Electrospinning of a Collagen/Hydroxyapatite Composite Nanofibrous Scaffold. *MRS Communications*, 6, 402-407.
20. **Castilla-Casadiegos, D. A.**, Albis-Arrieta, A. R., Angulo-Mercado, E. R., Cervera-Cahuana, S. J., Baquero-Noriega, K. S., Suárez-Escobar, A. F., and Morales-Avenidaño, E. D. (2016). Evaluation of Culture Conditions to Obtain Fatty Acids from Saline Microalgae Species: *Dunaliella salina*, *Sinecosyfis* sp., and *Chroomonas* sp. *BioMed Research International*, 2016.

Review Papers

1. Roca-Arroyo, A. F., Gutierrez-Rivera, J. A., Mejia-Rosales, L. M., Morton, L. D., and **Castilla-Casadiegos, D. A.** (2026). Nanofibrous-Composite Hydrogels for Modulating Stem Cell Behavior. *Cells Tissues Organs*.
2. Deihl, A. C., Odibo, A. O., Gutierrez-Rivera, J. A., Roca-Arroyo, A. F., Maduka, C. V., **Castilla-Casadiegos, D. A.**, and Rodriguez Rivera, G. J. (2026). The Impact of Biomaterial Charge on Cells' Bioelectrical Signaling. *Cells Tissues Organs*.

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3. Roca-Arroyo A. F., Gutierrez-Rivera J. A., Morton L. D., and **Castilla-Casadiegos, D. A.** (2025). Hydrogel Network Architecture Design Space: Impact on Mechanical and Viscoelastic Properties. *Gels*, 11, 588.
4. **Castilla-Casadiegos, D. A.**, Loh D. H., Pineda-Hernandez A., and Rosales A. M. (2024). Stimuli-Responsive Substrates to Control the Immunomodulatory Potential of Stromal Cells. *Biomacromolecules*.
5. **Castilla-Casadiegos, D. A.**, Reyes-Ramos, A. M., Domenech, M., and Almodovar J., (2020). Effects of Physical, Chemical, and Biological Stimulus on h-MSC Expansion and Their Functional Characteristics. *Annals of Biomedical Engineering*, 48, 519-535.

Book Chapters

1. **Castilla-Casadiegos, D. A.**, Rivera-Martinez, C., Quiñones-Colón, B. A., and Almodovar, J. Electrospun Collagen Scaffolds: Electrospun Biomaterials and Related Technologies, ISBN: 978-3-319-70049-6, ed. *Springer*. 2017.
2. Ramos-Avilez, H. V., **Castilla-Casadiegos, D. A.**, Vega-Avilez, A. L., Perales-Perez, O. J., and Almodovar, J., "Chapter 15: Production of Chitosan Coatings on Metal and Ceramic Biomaterials", Chitosan Coatings: United States, ISBN: 978-0-08-100230-8 ed. *Elsevier*, 2016.
3. Almodovar, J., **Castilla-Casadiegos, D. A.**, and Ramos-Avilez, H. V., "Chapter 9: Polysaccharide-based biomaterials for cell-material interface", Cell and Material Interface: Advances in Tissue Engineering, Biosensor, Implant, and Imaging Technologies: United States ISBN: 9781482256123, ed. *CRC Taylor Francis Group*, 2015.

INTERNATIONAL AND NATIONAL PRESENTATIONS

- Rey-Sanchez M. J., **Castilla-Casadiegos D. A.** "Polymeric Microneedle Tattoo patch for Stress-free animal identification, Performance Tracking and Real-time Health Monitoring" Poster presented at the College of Engineering Annual Graduate Student Symposium in Miami, FL, USA. December 2025.
- Roca-Arroyo, A. F., Gutierrez-Rivera, J. A., **Castilla-Casadiegos, D. A.** Engineering Nanofibrous Hydrogels for Human Mesenchymal Stem Cell Manufacturing. Poster Presentation at the Annual College of Engineering Research Symposium of the University of Miami. October 2025.
- **Castilla-Casadiegos, D. A.**, Morton L., Rosales A. M. Enhancing Immunoregulatory Functions of Human Mesenchymal Stromal Cells when Cultured on Peptoid Crosslinked Hydrogel Supplemented with Interferon-Gamma. Oral presentation at the SACNAS conference. November 2024.
- **Castilla-Casadiegos, D. A.**, Morton L., Rosales A. M. Enhancing Immunoregulatory Functions of Human Mesenchymal Stromal Cells when Cultured on Peptoid Crosslinked Hydrogel Supplemented with Interferon-Gamma. Poster presentation at the BMES conference. October 2024.
- **Castilla-Casadiegos, D. A.**, Morton L., Rosales A. M. Biomimetic peptoids as a strategy to alter hydrogel matrix mechanics and cell behavior. Oral presentation at the SACNAS conference. October 2022.
- **Castilla-Casadiegos, D. A.** Biopolymeric Materials for Cell Manufacturing, Drug Delivery, Tissue Regeneration, and Biosensing. Meet the Faculty Candidate Poster presentation at the BMES Annual Meeting. October 2022.
- **Castilla-Casadiegos, D. A.**, Morton L., Haseli M., Almodovar J., Rosales A. M. Functional Biomaterials to Control the Immunosuppressive Capacity of Human Mesenchymal Stromal Cells. Poster presentation at the Society of Biomaterials. April 2022.
- **Castilla-Casadiegos, D. A.**, Miranda-Muñoz, K. A., Powell, J., Greenlee, L., Almodovar, J. Construction and Characterization of Biodegradable Chitosan Microneedle Patch for Transdermal Delivery of Meloxicam as a Pain Management Drug Approach for Use in Cattle. Oral presentation at the AIChE Annual Meeting (Virtual). November 2020.
- **Castilla-Casadiegos, D. A.**, Garcia, J. R., Lam, W., Garcia, A.J., Almodovar, J. "Heparin/Collagen Coatings Improve Human Mesenchymal Stromal Cell Response to Interferon Gamma" Poster presented at the International Society for Cell & Gene Therapy North America Region Annual Meeting in Madison, WI. September 2019.

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- DePaz, S., Chiao, Y.H., **Castilla-Casadiegos, D. A.**, Wickramasinghe, R., Almodovar, J.; “Electrospun Nanofiber Membranes for Hydraulic Fracturing Wastewater Remediation Via Membrane Distillation” Poster presented at the AIChE Mid-America Conference in Rolla, MO. April 2019.
- **Castilla-Casadiegos, D. A.**, Garcia, J. R., Lam, W., Garcia, A.J., Almodovar, J.; “Collagen/Heparin Coatings Improve Human Mesenchymal Stem Cells Response to Interferon Gamma” Paper presented at the AIChE Annual Meeting in Pittsburgh, PA. October 2018.
- **Castilla-Casadiegos, D. A.**, Garcia, J. R., Lam, W., Garcia, A.J., Almodovar, J.; “Layer-by-layer Assemblies of Collagen/Heparin towards the Manufacturing of Human Mesenchymal Stem Cells” Poster presented at the BMES Annual Meeting in Atlanta, GA. October 2018.
- Quiñones-Colón, B. A., **Castilla-Casadiegos, D. A.**, Almodovar, J., “Characterization of Polymeric Film Prepared by the Layer-by-layer Technique: An Infrared Variable Angle Spectroscopic Ellipsometry Study” Oral presentation at the Emerging Researchers Conference, Washington, DC, March 2017.
- **Castilla-Casadiegos, D. A.**, Almodovar, J., “Engineering Versatile and Stable Collagen Nanofibers from a Mild Solvent” Poster presented at the (BMES) Annual Meeting - Biomedical Engineering Society, in Minneapolis, Minnesota, October 2016.
- Quiñones-Colón, B. A., **Castilla-Casadiegos, D. A.**, Almodovar, J., “Engineering Biopolymeric Nanostructured Fibers and Films for Tissue Engineering Applications” Oral presentation at the 2016 Symposium on Biomaterials Science from the NJ Center for Biomaterials, New Jersey, October 2016.
- **Castilla-Casadiegos, D. A.**, Almodovar, J.; “Green Electrospinning of 3D Biomimetic Scaffolds of Bone Extracellular Matrix” Poster presented at the Forward Research & Innovation Summit in San Juan, PR. September 2016.
- Pinzon-Herrera, L. C., **Castilla-Casadiegos, D. A.**, Quiñones-Colón, B. A., Almodovar, J.; “Characterization of Polymeric Films Prepared by the Layer-by-Layer Technique: Evaluating the Rinsing Step” Poster presented at the Forward Research & Innovation Summit in San Juan, PR. September 2016.
- **Castilla-Casadiegos, D. A.**, Almodovar, J.; “Production of a Type I Collagen Nanofibrous Scaffold Via Electrospinning Using a Mild Solvent that Preserves its Chemical Structure” Poster presented at the Institute for Functional Nanomaterials Annual Meeting in Caguas, PR. April 2016.
- Almodovar, J., **Castilla-Casadiegos, D. A.**, “Engineering of a Collagen-Based Extracellular Matrix Mimetic Scaffold Via Electrospinning” Paper presented at the 10th World Biomaterials Congress in Montréal, Canada. May 2016.
- Quiñones-Colón, B. A., **Castilla-Casadiegos, D. A.**, Almodovar, J.; “Polysaccharide-Based Polyelectrolyte Multilayers: Physicochemical Characterization and In-Vitro Studies” Poster presented at the UPRM’s Department of Biology Annual Symposium in Mayaguez, PR. April 2016.
- Quiñones-Colón, B. A., **Castilla-Casadiegos, D. A.**, Almodovar, J.; “Polysaccharide-based Polyelectrolyte Multilayers: Physicochemical Characterization and In-Vitro Studies” Paper presented at the 6th Annual Research Symposium of the “Asociación de Estudiantes de Medicina de Puerto Rico” in San Juan, PR. April 2016.
- Burgos, E., Quiñones-Colón, B. A., **Castilla-Casadiegos, D. A.**, Almodovar, J.; “Evaluating the Effect of Degree of Crosslinking and RGD Peptide over Cellular Adhesion in Polymeric Bilayers” Paper presented at the 6th Annual Research Symposium of the Asociación de Estudiantes de Medicina de Puerto Rico in San Juan, PR. April 2016.
- Quiñones-Colón, B. A., **Castilla-Casadiegos, D. A.**, Almodovar, J.; “Polysaccharide-based polyelectrolyte multilayers: Physicochemical Characterization and In-Vitro Studies” Poster presented at the XXI Sigma Xi Poster Day at UPRM in Mayaguez, PR. April 2016.
- Quiñones-Colón, B. A., **Castilla-Casadiegos, D. A.**, Almodovar, J.; “Polysaccharide-based Polyelectrolyte Multilayers: Physicochemical Characterization and In-Vitro Studies” Paper presented at the 2016 Junior Technical Meeting (JTM) and the Puerto Rico Interdisciplinary Meeting (PRISM) in Ponce, PR. March 2016.
- **Castilla-Casadiegos, D. A.**, Almodovar, J., “Production of a Type I Collagen Nanofibrous Scaffold Via Electrospinning Using a Mild Solvent That Preserves its Chemical Structure” Poster presented at the Society of Hispanic Professional Engineers (SHPE), in Baltimore, Maryland, November 2015.
- **Castilla-Casadiegos, D. A.**, Almodovar, J., “Engineering Versatile and Stable Collagen Nanofibers from a Mild Solvent that Preserves its Secondary Structure” Poster Presented at The 39 Th Senior Technical

- Meeting American Chemical Society (ACS), Puerto Rico Local Section in Ponce, Puerto Rico, November 2015.
- Shipmon, J., **Castilla-Casadiegos, D. A.**, Almodovar, J., “Electrospinning of Collagen Nanofibers” Poster presented at the Reconfigurable and Multifunctional Soft Materials REU program, in Mayagüez, Puerto Rico, July 2015.
- **Castilla-Casadiegos, D. A.**, Almodovar, J., “Characterization of 2D and 3D Biomaterials for the Presentation of the Osteogenic Peptide GFOGER” Paper presented at the Graduate investigation symposium INQU, in Mayagüez, Puerto Rico, April 2015.
- **Castilla-Casadiegos, D. A.**, Albis, A. R., Angulo, E. R., Cervera, S. J., Baquero, K. S., Morales, E. D. “Obtaining of Fatty Acids Starting from Salinas Microalgae from Atlantic Coastline” Poster presented at the III Latin-American Congress of SOLABIAA. Algal Biotechnology at the Society Service, in D. A., Chiriquí Republic of Panamá, April 2013.

SERVICE AND LEADERSHIP EXPERIENCE

Grant Reviewer

U.S. Army Corps of Engineers’ Engineer Research and Development Center (ERDC)
W.M. Keck Foundation Research Program
U-LINK (University of Miami – Laboratory for Integrative Knowledge)

Invited Journal Reviewer

Advanced Materials, ACS Biomaterials Science & Engineering, Biosensors, Material Today Bio, Cellular and Molecular Bioengineering, ACS Applied Polymer Materials, Polymers, Regenerative Engineering and Translational Medicine, Acta Biomaterialia, Small Science, Scientific Reports, Journal of Functional Biomaterials, Journal of Advanced Research, Micromachines, Pharmaceuticals, Biotechnology Journal, Journal of Biological Engineering, FEBS Open Bio, Journal of Environmental Chemical Engineering, Fibers and Polymers, The Beilstein Journal of Nanotechnology.

Part of the LatinXinChE leadership team and serve as the financial liaison (2023 – 2024), I was a moderator for the 1st LatinXinChE Virtual Symposium (2023), Event Organizer – Technical Session: Latinx Voices in ChE Research (2024), and Abstract Reviewer – 2nd LatinXinChE Virtual Symposium (2024).

REU Mentor

05/2019 - 08/2019

Reconfigurable and Multifunctional Soft Materials (REU program),
Chemical Engineering Department, University of Arkansas, Fayetteville, AR.

REU Mentor

05/2015 - 08/2015

Reconfigurable and Multifunctional Soft Materials (REU program),
Chemical Engineering Department, University of Puerto Rico at Mayaguez, Mayaguez, PR.

MENTORING EXPERIENCE

University of Miami: 1 Postdoc, 3 PhD Students, 3 Master students, 12 Undergraduates
University of Texas at Austin: 3 PhD Students, 3 Undergraduates, 1 teacher from high school
University of Arkansas: 3 Undergraduates
University of Puerto Rico: 12 Undergraduates, 1 student and teacher from high school

TEACHING EXPERIENCE

University of Miami – Coral Gables

CET 350 – Chemical Reaction Engineering Kinetics (Spring 2026), Instructor
BME 336 – Living Systems Engineering (Fall 2025), Instructor

University of Arkansas – Fayetteville

CHEG 2133 Fluid Mechanics (Spring 2019, Fall 2019) and HEG 2113 – Introduction of Chemical Engineering I (Fall 2020), Department of Chemical Engineering, served as a grader.

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University of Puerto Rico – Mayaguez

INQU 4002 Mass Transfer Operations (Spring 2016, Fall 2016, Spring 2017) and INQU 4034 Chemical Engineering Lab I (Fall 2013), Department of Chemical Engineering, served as a grader.

Universidad del Atlántico – Colombia

General Chemistry I (Fall of 2010 and Spring of 2011), Department of Chemical Engineering. I served as a substitute lecturer for 40 students, as well as holding office hours to conference with them.

SKILLS

Excellent interpersonal relationships, leadership, and teamwork skills.

The ability to lead, organize, and analyze complex tasks.

Infrared Variable Angle Spectroscopic Ellipsometry (IRVASE)

Scanning Electron Microscopy (SEM)

Fourier Transform Infrared Spectroscopy (FTIR)

Cytokine Secretion by Magnetic Luminex Assay

Immunofluorescence Staining by Confocal Microscopy

Cell Culture: Human Mesenchymal Stem Cells, NIH-3T3, and Pre-osteoblast cell lines

Techniques: Electrospinning, Layer-by-Layer Assembly, Molding, Freeze Drying.

Software: COMSOL, MATLAB, HYSYS, AutoCAD, Igor Pro.

PROFESSIONAL REFERENCES

Post-Doctoral Advisor and K99/R00 Mentor

Adrienne Rosales, Ph.D.

Assistant Professor

The University of Texas at Austin

McKetta Department of Chemical Engineering

200 E. Dean Keeton St. Stop C0400 Austin, Texas 78712

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