Pablo F. Argote

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Research Interests

Design and development of medical devices and biomedical wearables for diagnostics and human performance. Core technical methods include MRI-based electrical properties mapping, applied biomechanics, and creating human-centered systems for extreme environments like human spaceflight.

Education

08/2020-05/2025 Doctor of Philosophy in Mechanical Engineering, *NSF Graduate Research Fellow*
University of Colorado Boulder, College of Engineering & Applied Sciences, Boulder, Colorado

08/2021-05/2023 Master of Science in Aerospace Engineering Sciences
University of Colorado Boulder, College of Engineering & Applied Sciences, Boulder, Colorado

08/2013-05/2018 Bachelor of Science in Biomedical Engineering
Purdue University, College of Engineering, West Lafayette, Indiana

Professional Experience

08/2020-05/2025 Graduate Research Assistant, Focus: Soft tissue electromechanics by MR
Soft Tissue Bioengineering Laboratory, Advisor: Dr. Corey Neu
Paul M. Rady Mechanical Engineering Department, University of Colorado Boulder, Boulder, Colorado

10/2016-12/2019 Co-Founder, Manager, Chief Technology Officer
Predictive Wear LLC, West Lafayette, Indiana

01/2015-05/2015 Research Engineering Co-Op,
Research Engineering, Focus: biomaterials for medical devices, Mentor: Dr. Sean Chambers
Cook Medical (COOK Inc.), Bloomington, Indiana

11/2016-01/2018 Undergraduate Research Assistant, Focus: Wired/wireless power regulating PCBs
Center for Implantable Devices, Mentor: Dr. Pedro Irazoqui
Weldon School of Biomedical Engineering, Purdue University, West Lafayette, Indiana

08/2015-01/2016 Undergraduate Research Assistant, Focus: Benchtop chemostat for space biology
Aerospace Biomedical Science & Technology Competence Center, Mentor: Dr. Marcel Egli
School of Engineering & Architecture, Hochschule Luzern, Lucerne, Switzerland

09/2014-08/2019 Undergraduate Research Assistant, Focus: Articular cartilage injury biomechanics
Soft Tissue Bioengineering Laboratory, Mentor: Dr. Corey Neu
Weldon School of Biomedical Engineering, Purdue University, West Lafayette, Indiana

09/2013-02/2017 Undergraduate Research Assistant, Focus: Payload biology optimization & assembly
NASA SporeSat (SpaceX-3), Physiological Sensing Facility, Mentor: Dr. Jenna Rickus
Department of Agricultural & Biological Engineering, Purdue University, West Lafayette, Indiana

Peer Reviewed Journal Publications

1. Park, J., Salmi, M.L., Wan Salim, W.W.A., Rademacher, A., Wickizer, B., Schooley, A., Benton, J., Cantero, A., **Argote, P.F.**, Ren, M., Zhang, M., Porterfield, D.M., Ricco, A.J., Roux, S.J., Rickus, J.L., "An autonomous lab on a chip for space flight calibration of gravity-induced transcellular calcium polarization in single-cell fern spores", ***Lab on a Chip***, vol. 17, no. 6, pp. 1095-1103, **2017**. Available: 10.1039/c6lc01370h.
2. **Argote, P.F.,** Kaplan, J.T., Poon, A., Xu, X., Cai, L., Emery, N.C., Pierce, D.M., Neu, C.P., "Chondrocyte viability is lost during high-rate impact loading by transfer of amplified strain, but not stress, to pericellular and cellular regions", ***Osteoarthritis and Cartilage***, **2019**. Available: 10.1016/j.joca.2019.07.018
3. Miller, E.Y., Lowe, T., Lee, W., Zhu, H., **Argote, P. F.**, Dresdner, D., Kelly, J., Frank, R. M., McCarty, E., Bravman, J., Stokes, D., Emery, N. C., Neu, C. P., "Evolving cartilage strain with pain progression and gait: a longitudinal study post-ACL reconstruction at six and twelve months", ***medRxiv***, **2025**. [Pre-Print], Available: 10.1101/2024.09.08.24313289
4. Miller, E.Y., Lee, W., Lowe, T., Zhu, H., **Argote, P. F.**, Dresdner, D., Kelly, J., Frank, R. M., McCarty, E., Bravman, J., Stokes, D., Emery, N. C., Neu, C. P., "MRI-derived Articular Cartilage Strains Predict Patient-Reported Outcomes Six Months Post Anterior Cruciate Ligament Reconstruction", ***Scientific Reports***, vol. 15, no. 1, **2025**. Available: 10.1038/s41598-025-05306-4

Theses, Presentations and Abstracts

1. **P.F. Argote**, J.H Park, W.W.A. Wan Salim, D.M. Porterfield, and J.L. Rickus. "Optimized Environmental Conditions for Germination of C. Richardii Spores in Space", Institute of Biological Engineering Annual Meeting, Lexington, KY. March **2014**. [Poster Presentation]
2. **P.F. Argote,** A. Poon, X. Xu, C. P. Neu, "Indentation Probing of In Vitro Bovine Articular Cartilage: Effects on Chondrocyte Viability and Tissue Biomechanics," *The Summer Undergraduate Research Fellowship (SURF) Symposium*. Paper 65, August **2015**. [Abstract]. Available: https://docs.lib.purdue.edu/surf/2015/presentations/65
3. **P.F. Argote,** "Adaptive evolution of *Saccharomyces cerevisiae* in microgravity conditions: a preliminary chemostat study," Lucerne University of Applied Sciences and Arts, Adviser: Dr. Dominika Kauss, Horw, Lucerne, Switzerland, **2015**. [Practicum Thesis]
4. **P.F. Argote**, A. Poon, X. Xu, J.T. Kaplan, D.M. Pierce, C.P. Neu, "Image-Based Modeling to Assess the Role of Impact Loading in Cartilage Damage and Chondrocyte Viability", presented at WCCM XII & APCOM VI, Seoul, Korea, **2016**. [Oral Presentation]
5. **P.F. Argote**, W. Lee, T. Lowe, H. Zhu, E. Miller, C.P. Neu, "Cartilage Electromechanics by Magnetic Resonance Electrical Properties Tomography (MR-EPT) and displacement under applied loading MRI (dualMRI)", presented at Colorado Program for Musculoskeletal Research: T32 Work-in-Progress Meeting, University of Colorado Anschutz Medical Campus, Aurora, Colorado, **2023**. [Oral Presentation]
6. **P.F. Argote**, E.Y. Miller, H. Zhu, W. Lee, T. Lowe, C.P. Neu, "In vivo measurement of tibiofemoral knee articular cartilage electrical conductivity in a healthy patient cohort by magnetic resonance electrical properties tomography", presented at EMTP Chile, 2024 Joint Workshop on MR Phase, Magnetic Susceptibility and Electrical Properties Mapping, Santiago, Chile, September **2024**. [Oral Presentation]
7. **P.F. Argote,** E.Y. Miller, H. Zhu, W. Lee, T. Lowe, C.P. Neu, "Cartilage Quantitative Conductivity Mapping: Towards An Electromechanical Biomarker of Knee Joint Health", presented at 2024 BMES Annual Meeting, Baltimore, Maryland, October **2024**. [Poster Presentation]

Products

1. R. Swenson, S. Li, S. H. Soon, **P.F. Argote**, "EsthesioTouch: An Electronic Esthesiometer for Accurate Measurement of Tactile Sensitivity in Neuropathy," Senior Design Project, 2017. Available: https://engineering.purdue.edu/BME/Academics/Undergraduate/SeniorDesign/Projects/2017#T6
2. S. Kuhns, **P. F. Argote**, et al., "Purdue ExoMIND Glove: A Stroke Rehabilitation Device Used to Generate Biofeedback for Physical Therapists and Patients," Hackster.io, 2017. Available: https://www.hackster.io/purdue-mind/purdue-exomind-glove-1b32dc
3. M. Albaugh, **P. Argote**, N. Patel, R. Patel, S. Boppana, A. Ocken, et al, "Matter of manufacture of compression legging system and associated uses cross-reference to related applications," WO Patent WO/2020/180919A1, filed [April 3, 2020]
4. M. Albaugh, **P. Argote**, N. Patel, R. Patel, S. Boppana, A. Ocken, et al., "Matter of manufacture of compression legging system and associated uses," US Patent 11,672,288, filed [August 26, 2020].

Outreach Teaching Experience

2017, 18	Workshop lecture, "Purdue Enactus & Purdue MIND: So you want to become an entrepreneur?"
2017, 18	Workshop lecture, "Purdue MIND: Autodesk Eagle PCB Workshop "Noninvasive EMG PCB Design"
2019, 20	Guest lecture, "MedTech in a Global Setting," Bionanotechnology course, International Islamic University Malaysia

Other Experiences and Professional Memberships

2013	Disciple, Nanotechnology Discovery Academy, Indiana University-Purdue University at Indianapolis (IUPUI)
2013-14	Member, Society of Hispanic Professional Engineers (SHPE)
2014-15	Member, Institute of Biological Engineering (IBE)
2015	Study Abroad, Lucerne University of Applied Sciences and Arts (Hochschule Luzern), Lucerne, Switzerland
2015-18.	Team Member, Entrepreneurship Teacher, Purdue Enactus, West Lafayette, Indiana
2015-18	Founder, Team Member, President, Senior Mentor, Purdue Medical Innovation, Networking, and Design (MIND)
2018, 19	Startup School Graduate, Y Combinator
2017-19	Accelerated Beginning French Teacher, International Center of West Lafayette, West Lafayette Indiana
2020	Creative Technology Resident, Loomia Technologies, Inc.
2014-21	Member, Biomedical Engineering Society (BMES)
2021-23	Investment Associate, Director, Deming Center Venture Fund (DCVF), Boulder, Colorado

Awards, Honors, Fellowships and Scholarships

2013, 14, 16	Dean's List & Semester Honors, Purdue University, College of Engineering
2015	Purdue Moves Semester Study Abroad Scholarship, Purdue University
2016	Finalist, BMES Student Design Competition, Biomedical Engineering Society (BMES)
2016	Purdue Moves Summer Term Study Abroad Scholarship, Purdue University
2017	Finalist, Big Sell Business Competition, Purdue University
2017	3rd Place Prize, 2017 China-US Young Maker Competition, Intel and Hackster.io
2017	Semi-Finalist, Burton D. Morgan Entrepreneurship Competition, Purdue University
2017	Finalist, BMES Student Design Competition, Biomedical Engineering Society (BMES)
2017	Regional Champions, Enactus Regional Competition, Enactus United States
2018	3rd Place, Social Innovation, Burton D. Morgan Business Model Competition, Purdue University
2018	Semi-finalist, The Final Four Business Pitch, DePaul University's Entrepreneurship Center
2018	Finalist, 2018 China-US Young Maker Competition, Google and Hackster.io
2018	Finalist, New Venture Competition, Indiana Life Science Summit and BioCrossroads
2018	1st Place, Southwest Indiana Pitch Competition, Elevate Ventures
2018	zWORKS FullStack Coworking Scholarship
2018	Black Award, Elevate Purdue Foundry Fund
2019	Double Down Experiment Accelerator Cohort
2020, 21	Dean's Graduate Fellowship
2020, 21	Chair's Graduate Assistantship
2021-26	National Science Foundation Graduate Research Fellowship

Foreign Languages

- English, Spanish and French (Fluent)
- Portuguese, Italian and German (Conversational)
- Mandarin Chinese and Russian (Notions)

Hobbies

- Music production/performing
- Foreign languages
- Chess