

DARRYL A. DICKERSON, PHD

Assistant Professor, Mechanical and Materials Engineering, College of Engineering and Computing
Florida International University
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RESEARCH INTERESTS

- Mechanical characterization of biological interfaces
- Design of bioinspired materials
- Continuum mixture modeling of biological materials
- Diversity engineering program structures
- Natural biopolymer-metal complexation
- Model-informed *in vivo* bioreactor biomaterial design
- Biophysical control of induced pluripotent cells
- Quality improvement and design thinking applied to engineering education

EDUCATION



Ph.D., Biomedical Engineering, Purdue University

2009

- **Dissertation: “Biotemplate Mediated Regeneration of Orthopaedic Interfaces”**
- Overview: Design of novel biomaterials for musculoskeletal injury treatment
- Primary Advisor: Eric Nauman
- Committee Members: Ozan Akkus, Gert J. Breur, Hiroki Yokota



B.S.E., Biomedical Engineering, Tulane University

2003

- **Thesis: “Use of Cytokine Diffusion Gradient to Produce Graded Phenotypic Differentiation”**
- Overview: Identification of biomolecule type and dosage for region-specific stem cell differentiation

FULL-TIME ACADEMIC EXPERIENCE



Assistant Professor, Mechanical and Materials Engineering, College of Engineering and Computing

August 2019 – present

OTHER PROFESSIONAL EXPERIENCE



Minority Engineering Program, Purdue University

- *Associate Director (2013 – 2019)*
- *Outreach and Development Administrator (2012 – 2013)*



Advanced Regenerative Tech (ART)

- *Founder and Chief Executive Officer (2010 – present)*

PEER REVIEWED PUBLICATIONS

- Deva D. Chan, Luyao Cai, Kent D. Butz, Eric A. Nauman, Darryl A. Dickerson, Ilse Jonkers, and Corey P. Neu. "Functional MRI can detect changes in intratissue strains in a full thickness and critical sized ovine cartilage defect model", *Journal of Biomechanics*, 2018.
- Darryl A. Dickerson, Tarik N. Misk, David C. Van Sickle, Gert J. Breur and Eric A. Nauman, "In vitro and in vivo evaluation of orthopedic interface repair using a tissue scaffold with a continuous hard tissue-soft tissue transition", *Journal of Orthopaedic Surgery and Repair*, 2013.
- Gert J. Breur, Darryl A. Dickerson, R.L. Johnson, Paul W. Snyder, and Eric A. Nauman. "Osteochondral defect repair using a novel naturally derived biomaterial scaffold", *Osteoarthritis and Cartilage*, 2012.
- Darryl Athos Dickerson, Edward A. Sander, and Eric A. Nauman, "Modeling the mechanical consequences of vibratory loading in the vertebral body: microscale effects", *Biomech Model Mechanobiol*, 2007.
- Eileen Gentleman, Andrea N. Lay, Darryl A. Dickerson, Eric A. Nauman, Glen A. Livesay and Kay C. Dee, "Mechanical characterization of collagen fibers and scaffolds for tissue engineering", *Biomaterials*, Volume 24, Issue 21, September 2003, Pages 3805-3813.
- Darryl Athos Dickerson, Kay C Dee, Glen A. Livesay. "Baseline Creep Characterization of Collagen Fiber Scaffolds." *Journal of Young Investigators*, Volume 8, Issue 1, August 2003.

CONFERENCE PROCEEDINGS

- Darryl A. Dickerson and Tasha K. Zephirin. "Exploring the Association of a Cultural Engineering Student Organization Chapter with Student Success", *Proceedings of the 2017 ASEE Annual Conference & Exposition*, 2017. <https://peer.asee.org/28335>
- DeLean Tolbert, Morgan Hynes, Darryl A. Dickerson and Monica Cardella, "Transitioning students navigating engineering identities," *2015 IEEE Frontiers in Education Conference (FIE)*, El Paso, TX, 2015, pp. 1-5.
- Carol S. Stwalley, Tasha K. Zephirin, Darryl A. Dickerson, and Virginia L. Booth Womack. "A Description of the Statistics Behind Analyzing Performance Data: A Five-year Study of a Summer Bridge Program for Incoming URM Freshmen" *Proceedings of the 2015 ASEE Annual Conference & Exposition*, 2015.
- Tasha K. Zephirin, DeLean Tolbert, Freddy G. Solis, and Darryl A. Dickerson, "Development of Non-Cognitive Skills in Minority Engineering Outreach Programs", *Proceedings of the 2014 Frontiers in Education Conference*, 2014.
- Darryl A. Dickerson, Freddy G. Solis, Virginia Booth Womack, Tasha K. Zephirin, and Carol S. Stwalley, "Can an Engineering Summer Bridge Program Effectively Transition Underrepresented Minority Students Leading to Increased Student Success?", *Proceedings of the 2014 ASEE Annual Conference*, 2014.
- Deva D. Chan, Kent D. Butz, Eric A. Nauman, Darryl A. Dickerson, and Corey P Neu, "Altered Internal Strain Distributions in Adult Ovine Cartilage Before and After Full-Thickness Cartilage Defect", *Proceedings of the ASME 2012 Summer Bioengineering Conference*, 2012.
- Darryl A. Dickerson, Alexander Proctor, Davis Brimer, Eric A. Nauman, Donna M. Ebenstein. "Elucidation of the Functional Relevance of Orthopaedic Interface Heterogeneity Using Mixture Theory", *Proceedings of the Biomedical Engineering Society Annual Meeting*, 2009.

Darryl A. Dickerson, Alexander Proctor, Davis Brimer, Eric A. Nauman, Donna M. Ebenstein. Mechanical Properties of Sheep Shoulder Joint Tissues Measured by a Handheld Indenter. *Proceedings of the Biomedical Engineering Society Annual Meeting*, 2009.

INVITED LECTURES

Darryl A. Dickerson and Stephen D. Secules. “Exemplifying the Scientific Enterprise through Diversity, Equity, and Inclusion”, Carnegie Institute of Science, 2019.

Darryl A. Dickerson. “Grassroots Approaches”, Diversity in the Minerals, Metals, and Materials Professions Conference, 2018.

Darryl A. Dickerson. “Race and Ethnicity”, Diversity in the Minerals, Metals, and Materials Professions Conference, 2018.

Darryl A. Dickerson. “National Network for Cultivating Diversity, Equity, and Inclusion”, NAE Workshop on Engineering Societies’ Activities in Promoting Diversity and Inclusion, 2018.

Darryl A. Dickerson. “Entrepreneurship and Graduate Engineering Education”, Graduate Success Symposium, Purdue University, 2018.

Darryl A. Dickerson. “Excellence in Leadership”, Engineering Projects in Community Service Leadership Track, 2017.

Darryl A. Dickerson. “From Research Project to Commercial Product – Interdisciplinary Research and Entrepreneurship”, Integrative Graduate Education and Research Traineeship in Magnetic and Nanostructured Materials (**IGERT-MNM**) Interdisciplinary Research Meeting, 2015.

RESEARCH AND PROGRAM GRANT SUPPORT

(Principal Investigator) Algebra by 7th Grade Program Pilot – **Chevron Foundation (\$230,000)** 12/15/2017 – present.

(Co-Principal Investigator) Rising Scholars: Web of Support used as an Indicator of Success in Engineering – **National Science Foundation – Division of Undergraduate Education (\$973,500)** 10/1/2016 – present.

(Co-Investigator) Strengthening the Purdue Pipeline for Underrepresented Minority Student Matriculation: Addressing Financial Constraints, Improving Retention, and Assessing Student Experiences, Diversity Transformation Award – **Purdue University Office of the Provost (\$100,000)** 12/1/2015 – present.

(Principal Investigator) Allosource - Early Phase Validation of Allograft Biomaterials for Tissue Regeneration – **AlloSource (\$20,000)** 7/2/2014 – 6/30/2015.

(Co-Principal Investigator) Concept Generation - Allograft Biomaterials for Tissue Regeneration – **AlloSource (\$20,000)** 3/31/2014 – 7/2/2014.

(Principal Investigator) Pre-Clinical Development of Tissue-Engineered Orthopaedic Interfaces – **Alfred Mann Institute for Biomedical Development (\$322,000)** 10/1/2010 – 11/1/2012.

(Principal Investigator) Biomaterials for Complex Tissue Repair and Regeneration – **Indiana Economic Development Corporation (\$100,000)** 4/15/2010 – 4/15/2011.

(Principal Investigator) Novel Biomaterials for Complex Tissue Repair and Reconstructive Surgery of Traumatic Injuries – **US Army Medical Research and Materiel Command** (\$100,000) 4/15/2010 – 11/15/2010.

(Principal Investigator) Continuation of Development of Tissue-Engineered Orthopaedic Interfaces – **Alfred Mann Institute for Biomedical Development** (\$301,000) 6/1/2009 – 10/1/2010.

(Co-Investigator) Development of Tissue-Engineered Orthopaedic Interfaces – **Alfred Mann Institute for Biomedical Development** (\$120,000) 8/1/2008 – 7/31/2009.

GRANTED PATENTS

Eric A. Nauman, Darryl A. Dickerson. “Deminerlized cancellous bone scaffolds” (US Patent No. 9,364,584) Issued June 14, 2016.

Eric A. Nauman, Darryl A. Dickerson, Jocelyn T. Dunn “Compositions and methods for repair or regeneration of soft tissue” (US Patent No. 9,155,607) Issued October 13, 2015.

Eric A. Nauman, Darryl A. Dickerson. “Deminerlized cancellous bone scaffolds” (US Patent No. 8,702,809) Issued April 22, 2014.

SERVICE

Purdue University

Purdue University School of Aeronautics and Astronautics Diversity and Inclusion Committee (2017 – present)

Purdue University School of Mechanical Engineering Transforming Engineering Culture to Advance Inclusion and Diversity (TECAID) Extended Committee (2015 – present)

Advisory Committee to the Provost on Diversity and Inclusion (2015 – present)

Diversity Action Committee (2014 – present)

Search Advisory Committee for the Dean of the College of Engineering (2016 – 2017)

College of Engineering Strategic Staff Hiring Oversight Committee (2014 – 2017)

National Society of Black Engineers (NSBE)

Purdue University Chapter Advisor (2012 – present)

Region IV Advisor (2015 – present)

National Association of Multicultural Program Advocates (NAMEPA)

President and Executive Director (2018 – present)

President-Elect (2017 – 2018)

Treasurer (2014 – 2017)

HONORS AND AWARDS

Purdue University Council for Manager Development (2017 - 2018)

Purdue Realization and Entrepreneurship Postdoctoral Award

National Science Foundation Graduate Research Fellowship

Whitaker Biomedical Engineering Foundation Fellowship

Samuel L. Sullivan Student Award for Service and Scholarship

Ford Foundation Pre-Doctoral Fellowship (Declined)

Howard Hughes Medical Institute Predoctoral Fellowship (Declined)

National Defense Science and Engineering Graduate Fellowship (Declined)