Lakiesha N. Williams, Ph.D.

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PROFESSIONAL RECORD

PROFESSIONAL EXPERIENCE

August 2018 -Present	Associate Professor, Biomedical Engineering, University of Florida
August 2016-August 2018	Associate Professor, Biological Engineering, Mississippi State University *Director: Institutional Diversity Faculty Recruitment and Retention Initiatives*
August 2014-August 2016	Associate Professor, Biological Engineering, Mississippi State University
August 2008-August 2014	Assistant Professor, Biological Engineering, Mississippi State University
August 2006-August 2008	Research Assistant Professor, Department of Agricultural and Biological Engineering, Mississippi State University

Research Areas: Traumatic Brain Injury, Soft Tissue Mechanics, Damage Mechanisms of Tissues and Organs, Materials Characterization, and Bio-inspired Design

EDUCATION

Doctorate of Philosophy, Biomedical Engineering
Mississippi State University, December 2006
Dissertation: Williams, L. N., "Multiscale Structure-Function Relations of the Tendon"
Advisors: Steven H. Elder and Mark F. Horstemeyer

Master of Science, Biological Engineering
Concentration: Biomechanics
Louisiana State University (Research-LSU Health Sciences Center), May 2003
Thesis: Claude, L. N., "Biomechanical Effects of Cyclic Loading on the Lower Back"
Advisors: Marybeth Lima, Moshe Solomonow

Bachelor of Science, Biological Engineering
Minor: Occupational Health and Safety
Louisiana State University, May 2001

SCHOLARLY ACTIVITY

PEER REVIEWED MANUSCRIPTS

1. Joseph Chen, Sourav S. Patnaik, R. K. Prabhu, Lauren B. Priddy, Jean-Luc Bouvard[1], Esteban Marin, M. F. Horstemeyer, Jun Liao, and **Lakiesha N. Williams.** Mechanical Response of Porcine Liver Tissue under High Strain Rate Compression, Bioengineering. 2019, 6(2), 49; doi:10.3390/bioengineering6020049

2. R. K. Prabhu, M. T. Begonia, W. R. Whittington, M. A. Murphy, Y. Mao, J. Liao, **L. N. Williams** , M. F. Horstemeyer, J. Sheng . Compressive Mechanical Properties of Porcine Brain: Experimentation and Modeling of the Tissue Hydration Effects, Bioengineering. 2019, 6(2), 40; doi:10.3390/bioengineering6020040

3. Chen, J., Bryn, B. Prabhu, R., Patnaik, S.S., Bertucci, R., Rhee, H., Horstemeyer, M.F., Hong, Y., **Williams, L. N.,** Liao, J. Quantitative Analysis of Tissue Damage Evolution in Porcine Liver With Interrupted Mechanical Testing

Under Tension, Compression, and Shear, Journal of Biomechanical Engineering. 2018, DOI: 10.1115/1.4039825.

4. Murphy, M.A., Sungkwang, M., Horstemyer, M., Baskes, M., Bakhtiarydavijani, A., Laplaca, M.C., Gwaltney, S., **Williams, L.N.,** Prabhu, R. Molecular dynamics simulations showing 1-palmitoyl-2-oleoyl-phosphatidylcholine (POPC) membrane mechanoporation damage under different strain paths, Journal of Biomolecular Structure & Dynamics. 2018, DOI: 10.1080/07391102.2018.1453376

5. Lee, N., **Williams, L. N.,** Mun, S., Rhee, H., Prabhu, R; Bhattarai, K., Horstemeyer, M. "Stress wave mitigation at suture interfaces. Biomedical Physics and Engineering Express." 2017, DOI: 10.1088/2057-1976/aa777e

6. Rush, G. Alston, Prabhu, R., Rush, Gus A. III, **Williams, L.N**., Horstemeyer, M.F., **"**A Modified Drop Test for American Football Helmets," Journal of Visualized Experiments, 2017, DOI:10.3791/53929 2017.

7. Deang, J., Allison, P.G., Prabhu, R**., Williams, L.N**., Rhee, H., Whittington, W.R., Perkins, E.J., Bruce, S.M., Horstemeyer, M.F. Constitutive behaviour of paddlefish (Polyodon spathula) cartilage. Bioinspired, Biomimetic and Nanobiomaterials. 2017, DOI: 10.1680/jbibn.16.00046

8. Prabhu, R., Whittington, Wilburn., Jones, Michael David, Darwall, Dan, Liao, Jun, **Williams, L.N.** Dynamic compressive mechanical properties of the porcine immature brain. Brain Injury. 30, 2016:674

9. Lee, Nayeon, Horstemeyer, M.F, Prabhu, R., Liao, J., Rhee, H., Hammi, Y., Moser, Robert D., **Williams, L.N** The geometric effects of a woodpecker's hyoid apparatus for stress wave mitigation. Bioinspiration & Biomimetics. 11, 2016, DOI:10.1088/1748-3190/11/6/066004

10. Prabhu, R., Kovach, A. D., Nguyen, V., Gambino, J., Zachary, F., Bulla, S., Liao, J., **Williams, L. N.** Prospective preliminary in vitro investigation of a magnetic iron oxide nanoparticle conjugated with ligand CD80 and VEGF antibody as a targeted drug delivery system for the induction of cell death in rodent osteosarcoma cells. Bioresearch Open Access.5, 2016:299-307

11. Murphy, M.A., Horstemeyer, M.F., Gwaltney, S., Stone, T., Laplaca, Michelle, Liao, J., **Williams, L.N.,** Prabhu, R. Nanomechanics of phospholipid bilayer failure under strip biaxial stretching using molecular dynamics. Modelling and Simulation in Materials Science and Engineering. 24, 2016: 055008

12. Wheatley, B. B., Pietsch, R. B., Donahue, T.L.H., **Williams, L.N.** Fully non-linear hyper-viscoelastic modeling of skeletal muscle in compression. Computer Methods in Biomechanics and Biomedical Engineering. 2015: DOI:10.1080/10255842.2015.1118468

13. Weed, B., Patnaik, S., Rougeau-Browning, M., Brazile, B., Liao, J., Prabhu, R., **Williams, L.N.** Experimental Evidence of Mechanical Isotropy in Porcine Lung Parenchyma. Materials. 8, 2015:2454-2466

14. Li, F., Yang, J., Liao, Jiali, Li, S., Liao, Jun, Prabhu, R., **Williams, L.N.,** Tang, Y., Tang, J., Liu, N. Direct synthesis of carbon-based microtubes by hydrothermal carbonization of microorganism cells. Chemical Engineering Journal. 276, 2015:322-330

15. Prabhu, R., Horstemeyer, M., Mao, M., Whittington, W., Patnaik, S., Begonia, M., **Williams, L.N**., Liao, J. A Coupled Experiment-Finite Element Modeling Methodology for Assessing High Strain Rate Mechanical Response of Soft Biomaterials, Journal of Visualized Experiments. 2015

16. Brazile, B., B. Wang, G. Wang, R. Bertucci, R. Prabhu, S.S. Patnaik, J.R. Butler, A.K. Claude, E. Brinkman-Ferguson, **L.N. Williams**, and J. Liao. On the Bending Properties of Porcine Mitral, Tricuspid, Aortic, and Pulmonary Valve Leaflets. Journal of Long-Term Effects of Medical Implants 25 2015:1-14.

17. Begonia, M.T., Prabhu, R., Liao, J., Whittington, W.R., Claude, A., Willeford, B., Wardlaw, J., Wu, R., Zhang, S., **Williams, L.N.** Quantitative Analysis of Brain Microstructure Following Blunt and Blast Trauma, Journal of Biomechanics. 47, 2014: 3704-3711.

18. Pietsch, R., Wheatley, B.B., Donahue, T.L.H., Gilbrech, R., Prabhu, R., Liao, J., **Williams, L.N.** Anisotropic Compressive Properties of Passive Porcine Muscle Tissue, Journal of Biomechanical Engineering. 136 (11), 2014: DOI: 10.1115/1.4028088

19. Lee, N., Horstemeyer, M., Rhee, H. Nabors, B., Liao, J., **Williams, L.N.** Hierarchical Multiscale Structure-Property Relationships of the Red-bellied Woodpecker, Journal of the Royal Society Interface**.** 11, 2014: 1-12. DOI: 10.1098/rsif.2014.0274

20. Johnson, Kyle, Trim, W.M., Horstemeyer, M.F., Lee, N., **Williams, L.N.**, Liao, J., Rhee, H., Prabhu, R., Geometric Effects on Stress Wave Propagation, Journal of Biomechanical Engineering. 12, 2013: DOI:10.1115/1.402632

21. Bo Wang, Guangjun Wang, Filip To, J. Ryan Butler, Andrew Claude, Ronald M. McLaughlin, **L. N. Williams**, Amy L. de Jongh Curry, and Jun Liao. Myocardial Scaffold-based Cardiac Tissue Engineering: Application of Coordinated Mechanical and Electrical Stimulations. Langmuir 29, 2013: 11109-11117

22. Weed B.C., Borazjani, A., Patnaik, S.S., Prabhu, R., Horstemeyer, M.F., Ryan, P.L., Franz, T., **Williams, L. N.**, Liao, J. Stress State and Strain Rate Dependence of the Human Placenta, Annals of Biomedical Engineering. 40(10), 2012: 2255-65.

23. Wang, B., Tedder, M.E., Perez, C.E., Wang, G., Curry, A.L., To, F., Elder, S. H., **Williams, L. N**., Simionescu, D. T., Liao, J. Structural and Biomechanical Characterizations of Porcine Myocardial Extracellular Matrix, Journal of Materials Science: Materials in Medicine. 23(8), 2012: 1835-1847

24. Liao, J., Joyce, E.M., Merryman, D.W., Jones, H.L., Tahai, M., Horstemeyer, M.F., **Williams, L.N.,** Hopkins, R.A., Sacks, M.S. The Intrinsic Fatigue Mechanism of the Porcine Aortic Valve Extracellular Matrix, Cardiovascular Engineering and Technology. 3(1), 2012: 62-72

25. Bertucci, R., Gilbrech, R., Mao, M., Prabhu, R., Horstemeyer, M.F., Liao, J., **Williams, L.N.** Development of a Lower Extremity Model at Blast Conditions HFM-207, NATO Symposium on Blast Injury. No. 17, 2011.

26. Trim, M.W., Horstemeyer, M.F., Rhee, H., Liao, J., **Williams, L.N.** The effects of water and microstructure on the mechanical properties of bighorn sheep (Ovis canadensis) horn keratin, Acta Biomaterialia. 7(3), 2011:1228-1240

27. Prabhu, R., Horstemeyer, M., Marin, E., Bouvard, J-L., Tucker, M., Sherburn, J., Liao, J., **Williams, L.N.**, Coupled Experiment / Finite Element Analysis on the Mechanical Response of Porcine Brain under High Strain Rates, Journal of Mechanical Behavior of Biological Materials. 4(7), 2011: 1067-1080 doi:10.1016/j.jmbbm.2011.03.015, 2011

28. Begonia, M., Liao, J., Horstemeyer, M., **Williams, L.N.**, Structure-Property Relations of Porcine Brain Tissue: Strain Rate and Stress-State Dependence, Annals of Biomedical Engineering. 38(10), 2010:3043-57

29. Clemmer, J., Liao, J., Davis, D., Horstemeyer, M., **Williams, L.N.**, A Mechanistic Study for Strain Rate Sensitivity of Rabbit Patellar Tendon, Journal of Biomechanics. 43, 2010: 2785-2791.

30. Subramanian, S., Elder, S. H., Horstemeyer, M.F., **Williams, L.N.** Experimental Investigation of Anisotropic Shear Properties of Rabbit Patellar Tendon, Biological Engineering. 1, 2008: 255-264.

31. **Williams, L.N.,** Elder, S. H., Bouvard, J.L., Horstemeyer, M.F., The Anisotropic Compressive Mechanical Properties of the Rabbit Patellar Tendon, Biorheology. 45, 2008:577-586.

32. **Williams, L.N.**, Elder, S.H., Harbarger, D., Horstemeyer, M.F., Variation of diameter distribution, number density, and area fraction of fibrils within five areas of the Rabbit Patellar Tendon, Annals of Anatomy. 190, 2008: 442-451.

33. **Claude, L.N.**, Solomonow, M., Zhou, B., Baratta R.V., Zhu, M. Neuromuscular Disorder Elicited by Cyclic Lumbar Flexion. Muscle and Nerve 27, 2003: 348-358.

34. Foreman, J.M., **Claude, L.N.**, Albright, A.M., Lima, M. The Design of Enriched Animal Habitats from a Biological Engineering Perspective. Transactions of the ASAE 44, 2001: 1363-1371.

BOOK CHAPTERS

1. Bo Wang, **Lakiesha Williams**, Amy L. de Jongh Curry, Jun Liao. Chapter Title: Preparation of Acellular Myocardial Scaffolds with Well-preserved Cardiomyocyte Lacunae, and Method for Applying Mechanical and Electrical Simulation to Tissue Construct. Book Title: Cardiac Tissue Engineering Methods and Protocols. Editors: Milica Radisic and Lauren Black; Springer Science (2014)

PEER REVIEWED CONFERENCE PROCEEDINGS

1. H. Johnson, J. Miller, W.R. Wilburn, A.K. Olivier, J. Liao, M.D. Jones, R. Prabhu, **L.N. Williams**. "Interrupted High-Rate Compression of Porcine Brain Tissue Utilizing the Split-Hopkinson Pressure Bar Method," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 19-24, 2017, Tucson, AZ.

2. C. White, J. Liao, M.J. Beasley, M.D. Jones, R. Prabhu, **L.N. Williams**. "The Influence of Compressive Strain Rate Dependency on the Structure-Property Relations of Fetal Porcine Brain," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 19-24, 2017, Tucson, AZ.

3. M. Murphy, R. Prabhu, M. F. Horstemeyer, **L.N. Williams**, S. Mun, M. Baskes. "Molecular Dynamics Simulations of Neuronal Membrane Mechanoporation Damage," ASME IMECE, 2016, Pheonix, AZ.

4. X. Shi, B. Brazile, S. Patnaik, J. Cooley, R. Prabhu**, L.N. Williams**, S. Zhang, J. Liao, "Elastin Fiber Network in Porcine Epicardium: 3D Visualization and Quantification," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 2016, National Harbor, MD.

5. **L.N. Williams**, N. Lee, R. Prabhu, M. Horstemeyer, H. Rhee, "Do Woodpeckers Get Concussions?" Summer Biomechanics, Bioengineering, and Biotransport Conference, June 2016, National Harbor, MD.

6. Teresa Cutright, Judit Puskas (UA), Linda Coats, **L.N. Williams (**MSU), Debora Rodrigues, F Claydon (UH), "Easing the Tortuous Road that Under-represented Minorities Travel to become Engineering Faculty" American Society for Engineering Education, Women in Engineering Poster Session, June 2015, Seattle, WA.

7. B. Brazile, R. Prabhu, **L. N. Williams**, J. Liao, (Jun 2015) "Biomechanical Characterization of Porcine Skeletal Muscle Extracellular Matrix," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 17-20, 2015, Snowbird, Utah, USA.

8. B. Brazile, R. Prabhu, **L. N. Williams**, J. Liao, (Jun 2015) "Biomechanical Characterizations of Scar ECM during the Acute to Chronic Stages of Myocardial Infarction," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 17-20, 2015, Snowbird, Utah, USA.

9. A. Bakhtiarydavijani, J. Liao, **L. N. Williams**, M. LaPlaca, R. Prabhu, (Jun 2015) "Strain Rate Dependency of the Intracellular Calcium Ion Concentration during Neuronal Membrane Mechanoporation," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 17-20, 2015, Snowbird, Utah, USA.

10. A. C. Lamont, R. Bertucci, J. Liao, **L. N. Williams**, H. Rhee, R. Prabhu, (Jun 2015) "Biomechanics of Human Tibia and Fibula Fracture Caused by a Mixed Martial Arts Kick," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 17-20, 2015, Snowbird, Utah, USA.

11. M. A. Murphy, S. Mun, J. Liao, **L. N. Williams**, M. LaPlaca, R. Prabhu, (Jun 2015) "Constructing Rudimentary Limit Curves For Neuronal Phospholipid Bilayer Failure And Theoretical Calcium Penetration," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 17-20, 2015, Snowbird, Utah, USA.

12. M. A. Murphy, S. Mun, J. Liao, **L. N. Williams**, M. LaPlaca, R. Prabhu, (Jun 2015) "The Effects Of Stress State On The Mechanical Response And Failure Of The Neuronal Phospholipid Bilayer: A Molecular Dynamics Study," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 17-20, 2015, Snowbird, Utah, USA.

13. M. A. Murphy, S. Mun, J. Liao, **L. N. Williams**, M. LaPlaca, R. Prabhu, (Jun 2015) "Validation Of High Rate Strip Biaxial Tension Deformations Of The Neuronal Phospholipid Bilayer Using Empirical Data," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 17-20, 2015, Snowbird, Utah, USA.

14. R. Bertucci, J. Liao, R. Prabhu, **L. N. Williams**, (Jun 2015) "Finite Element Analysis of Lower Extremity Military Boot Protection at Blast Conditions," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 17-20, 2015, Snowbird, Utah, USA.

15. Bertucci, R., Prabhu, R., Horstemeyer, M.F., Sheng, J., Liao, J., **Williams, L.N.** "Validation of Lower Extremity Model Using Drop Tower Testing" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Sunriver, OR 2013

16. Patnaik, S. Weed, B., Begonia, M., Bertucci, Wang, B**., Williams, L.N.**, Liao, J. "Biomechanical Charaterization of Sheep Vaginal Wall Tissue: A Potential Application in Human Pelvic Floor Disorders" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Fajardo, Puerto Rico 2012

17. Bertucci, R., Liao, J., **Williams, L.N**. "Development of a Lower Extremity Model for Finite Element Analysis at Blast Condition" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Farmington, PA 2011

18. Ryland, S., Patnaik, S, Prabhu, R., Horstemeyer, M.F., Liao, J, **Williams, L.N.**, "Development of a Finite Element Model for Porcine Scalp" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Farmington, PA 2011

19. Prabhu, R., Steele, W. Glenn , Ryland, S., Colebeck, E.E., Whittington, W.R., M.F., Liao, J., **Williams, L.N.**, "Uncertainty Analysis of the Mechanical Response of Porcine Brain at High Strain Rate Compression" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Farmington, PA 2011

20. Weed, B., Franz, T., Borazjani, A., Horstemeyer, M.F., Patnaik, S., Prabhu, R., **Williams, L. N.**, Jun Liao, "Stress State Dependence of Human Placenta Mechanical Behavior" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Farmington, PA 2011

21. Wang, B., McCallum, D., **Williams, L.N.**, Liao, J. "Evaluation of Acellular Mitral Valve Scaffolds: Anterior Leaflet, Posterior Leaflet, and Chordae Tendineae" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Farmington, PA 2011

22. Chen, J., Priddy, L., Brazile, B., wang, B., Horstemeyer, M.F., **Williams, L.N.**, Liao, J., "Quantitative Analysis of Damage Evolution in Porcine Liver Tissues." ASME Summer Bioengineering Conference, Farmington, PA 2011

23. Patnaik, S.S., Weed, B., Young, T.C., Liao, J., **Williams, L.N.**, "Dynamic Viscoelastic Properties of Porcine Patellar Tendon: Study of Frequency, Loading, and Regional Dependency." ASME Summer Bioengineering Conference, Farmington, PA 2011

24. Trim, M.W., Horstemeyer, M.F., Rhee, H., Liao, J**., Williams, L.N**., "Energy Absorbent Materials Design: Lessons from Nature" 27th Army Science Conference, Orlando, FL. 2010

25. Prabhu, R., Horstemeyer, M., Marin, E., Liao, J., Bouvard, J-L., Sherburn, J., McCollum, M., Whittington, W., **Williams, L.N.,** "Traumatic Brain Injury: Coupled Experiment/Finite Element Simulation on High Rate Mechanical
Response of Porcine Brain" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Naples, FL. 2010

26. Chen, J., **Williams, L.N.**, Liao, J., "A Novel Trilayered Polymer Scaffold Mimicking Native Aortic Valve Leaflet" ASME Summer Bioengineering Conference, Naples, FL. 2010

27. Prabhu, R., Horstemeyer, M., Marin, E., Liao, J., Tucker, M., **Williams, L.N.**, "Traumatic Brain INJURY: Mechanical Response of Porcine Brain under High Strain Rate Tests" ASME Summer Bioengineering Conference, Lake Tahoe, CA. 2009

28. Chen, J., Priddy, L.B., Prabhu, R., Marin, E., **Williams, L.N.**, Horstemeyer, M.F., Liao, J., "Traumatic Injury: Mechanical Response of Porcine Liver Tissue under High Strain Rate Compression Testing" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Lake Tahoe, CA. 2009

29. Begonia, M, Liao, J., Horstemeyer, M.F.,**Williams, L.N.**, "Strain Rate Dependence in the Structure-Property Relationship of Porcine Brain" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Lake Tahoe, CA. 2009

30. Davis, D., Clemmer, J., Liao, J., Horstemeyer, M.F., **Williams, L.N.**, "Strain Rate Effects on Structure-Property Relationship in the Rabbit Patellar Tendon" Proceedings of ASME Summer Bioengineering Conference. ASME Summer Bioengineering Conference, Lake Tahoe, CA. 2009

PROFESSIONAL CONFERENCE PRESENTATIONS

1. **Invited Talk Williams, L.N.,** ASME International Mechanical Engineering Congress and Exposition. "Structure-property Relationships of Porcine Brain Under High Strain Rates: An Interruption Test," November 11-14, 2019. Salt Lake City, UT.

2. A. Sharma, H. Nannapaneni, **L.N.Williams,** "Structure-property Relationships of Native and Decellularized Dura mater." BMES 2019 Annual Meeting, Oct 16-19, 2019 Philadelphia, Pa.

3. A. Knapp, M. Begonia, R. Prabhu**, L.N. Williams** "On Developing an Anisotropic Continuum-Damage Model for Brain Tissue." BMES 2019 Annual Meeting, Oct 16-19, 2019 Philadelphia, Pa.

4. Gordon Research Conference. Tissue Microstructure Imaging. "Structure-property relationships of porcine brain under high strain rates," July 7-12, 2019. South Hadley, MA.

5. **Invited Talk Williams, L. N.**, Prairie View A&M Perry College of Engineering Seminar Series, "From Biological Structure and Function to Engineered Designs," November 13, 2017, Prairie View, Texas.

6. P. Berthelson, R. Prabhu, G. Liao, J. Liao, **L. N. Williams**, H. Rhee, X. Deng, M. Horstemeyer, "A Study on the Human Head during Single-Collision Car Crashes using Finite Element Analysis," Summer Biomechanics, Bioengineering, and Biotransport Conference, June 2016, National Harbor, MD.

7. V. Nguyen, A. Kovach, J. Gambino, J. Liao, **L. N. Williams**, J. Liao, R. Prabhu (Oct 2016)" Drug Delivery Treatment for Canine Osteosarcoma," BMES 2016 Annual Meeting, Oct 11-14, 2016 Minneapolis, MN.

8. S. Lin, K. Copeland, B. Brazile, H. Baskin, R. Prabhu**, L. N. Williams**, G. Zhang, J. Liao. " Investigating the Viscoelastic Properties of Tricuspid Valve Leaflets and Chordae Tendineae." BMES 2016 Annual Meeting, Oct 11-14, 2016 Minneapolis, MN.

9. K. A. Brown, A. Desai, Y. Mao, M. F. Horstemeyer, J. Liao, **L. N. Williams**, H. Rhee, R. Prabhu, "An In-Silico Investigation of Soccer-Related Traumatic Brain Injury," BMES 2015 Annual Meeting, Oct 7-10, 2015, Tampa, Florida.

10. M. A. Murphy, M. F. Horstemeyer, S. Gwaltney, T. Stone, M. LaPlaca, J. Liao, **L. N. Williams** and R. Prabhu, (Oct 2015) "Phospholipid Deformation Size Effects during Tensile Molecular Dynamics Simulations," BMES 2015 Annual Meeting, Oct 7-10, 2015, Tampa, Florida.

11. B. Brazile, S. Patnaik, S. Lin, X. Shi, S. Liao, R. Prabhu, H. Rhee, **L. N. Williams**, J. Liao, (Oct 2015) "Biomechanical Characterization of Porcine Skeletal Muscle Extracellular Matrix," BMES 2015 Annual Meeting, Oct 7-10, 2015, Tampa, Florida.

12. X. Shi, D. Lee, B. Brazile, S. Patnaik, J. Cooley, R. Prabhu, H. Rhee**, L. N. Williams**, S. Zhang and J. Liao, (Oct 2015) "Elastin Fiber Network in Porcine Epicardium: 3D Visualization and Quantification," BMES 2015 Annual Meeting, Oct 7-10, 2015, Tampa, Florida.

13. **Invited Talk Williams, L.N**. Effect of Frequency and Loading Dependency on the Dynamic Viscoelastic Properties of Porcine Patellar Tissues. 7th World Congress of Biomechanics, Boston, MA 2014

14. Bertucci, R., Prabhu, R., Horstemeyer, M.F., Sheng, J., Liao, J., **Williams, L.N.**, "Finite Element Modeling of Human Lower Extremity Subjected to Underbelly Blast Loading. 7th World Congress of Biomechanics, Boston, MA 2014

15. B. Brazile, J. Butler, S. Patnaik, Y. Xu, A. Claude, R. Prabhu, **L. N. Williams**, G. Zhang, J. Guan, J. Liao. "Biomechanical Characterizations of Scar ECM During the Acute to Chronic Stages of Myocardial Infarction" Biomedical Engineering Society, San Antonio, TX 2014

16. B. Brazile, B. Wang, G. Wang, R. Bertucci, R. Prabhu, S. Patnaik, J. Butler, A. Claude, E. Brinkman-Ferguson, **L. N. Williams**, J. Liao. "Bending Properties of Porcine Mitral, Tricuspid, Aortic and Pulmonary Valve Leaflets" Biomedical Engineering Society, San Antonio, TX 2014

17. R. Bertucci, R. Prabhu, S. Clark, M. Horstemeyer, J. Liao, **L. N. Williams**. "Computational Method for Analyzing Military Boot Designs at Blast Conditions" Biomedical Engineering Society, San Antonio, TX 2014

18. C. Mahaffey, B. Weed, S. Patnaik, J. Liao, R. Prabhu, **L. N. Williams**. "Stress State and Strain Rate Dependency in Porcine Lung Parenchyma" Biomedical Engineering Society, San Antonio, TX 2014

19. S. Clark, R. Bertucci, J. Liao, R. Prabhu, **L. N. Williams**. "The Effect of Acoustic Pollution on Marine Mammals" Biomedical Engineering Society, San Antonio, TX 2014

20. M. Murphy, M. Horstemeyer, S. Gwaltney, J. Liao, **L. N. Williams**, R. Prabhu. "POPC Phospholipid Bilayer Failure Under Strip Biaxial Stretching Using Molecular Dynamics" Biomedical Engineering Society, San Antonio, TX 2014

21. T. Szasz, A. Kovach, S. Bulla, J. Liao, **L. N. Williams**, C. Bulla, R. Prabhu. "Drug Delivery via Magnetic Nanoparticles: Pioneering Treatment of Osteosacroma" Biomedical Engineering Society, San Antonio, TX 2014

22. P. Parajuli, S. Patnaik, B. Brazile, R. Prabhu, H. Rhee, **L. N. Williams**, J. Liao "Characterization of the Viscoelastic Property of Mitral Valve Leaflets" Biomedical Engineering Society, San Antonio, TX 2014

23. Weed, B., Patnaik, S.S., Brazile, B., Nguyen, V., Connell, K.A., Prabhu, R., **Williams, L.N.**, Liao, J. "Biaxial Puncture Behavior and Sub-Rupture Damage Pattern of the Sheep" American Urogynecologic Society (AUGS), Washington, DC 2014.

24. Patnaik, S. S., Chen. J., Prabhu, R., Horstemeyer, M. F., **Williams, L.N.**, Liao, J. "Multiscale Computational Modeling of the Dynamic Compressive Behavior of Porcine Liver Tissue" Biomedical Engineering Society Annual Conference, Seattle, WA 2013.

25. Robbin Bertucci, R. Prabhu, M. Horstemeyer, James Sheng, Jun Liao, **Williams, L.N.**,. "Finite Element Analysis of the Lower Extremity Due to Anti-Vehicle Blasts" Biomedical Engineering Society Annual Conference, Seattle, WA 2013.

26. Weed B.C., Borazjani, A., Patnaik, S.S., **Williams, L. N.**, Liao, J. "Comparison of Longitudinal and Transverse Biomechanical Response of Sheep Vaginal Tissues" Proceedings of American Urogynecologic Society (AUGS) Annual Scientific Meeting, Chicago, IL, 2012.

27. Patnaik, S., Weed, B., Borazjani, A., Wang, B., Brazile, B., **Williams, L.N.**, Damaser, M., and Liao, J. "Characterization of Nonlinear Anisotropic Mechanical Properties of Sheep Vaginal Wall Tissue." Biomedical Engineering Society Annual Conference, Atlanta, Georgia, October 24 - 27, 2012

28. R. Prabhu, M. F. Horstemeyer, Y. Mao, E. B. Marin, **L. N. Williams**, and J. Liao. "Novel Simulation-Based Analysis of the Biomechanics of Blast-Related Traumatic Brain Injury." Biomedical Engineering Society Annual Conference, Atlanta, Georgia, October 24 - 27, 2012

29. O. Oyeka, S. Patnaik, H. Grewal, O. Asafa, J. Schneider, J. Liao, and **L. N. Williams**. "Role of Bone Mineral in Physical and Microstructural Characteristics of Cortical Bone." Biomedical Engineering Society Annual Conference, Atlanta, Georgia, October 24 - 27, 2012

30. R. Bertucci, Y. Mao, R. Gilbrech, R. Prabhu, J. Sheng, M. F. Horstemeyer, J. Liao, and **L. N. Williams**. "Finite Element Analysis of Lower Extremity at Blast Conditions." Biomedical Engineering Society Annual Conference, Atlanta, Georgia, October 24 - 27, 2012

31. B. Wang, R. Bertucci, Z. Li, **L. N. Williams**, J. Guan and J. Liao. "Effect of Thermosensitive Hydrogel Injection on Mechanical and Ultrastructural Properties of Porcine Myocardium." Biomedical Engineering Society Annual Conference, October 12-15, Hartford Convention Center, Hartford, Connecticut, 2011.

32. B. Wang, B. Brazile, D. McCallum, **L. N. Williams**, J. Liao. "Biomechanical Characterizations of Acellular Mitral Valve Scaffolds." Biomedical Engineering Society Annual Conference, October 12-15, Hartford Convention Center, Hartford, Connecticut, 2011.

33. A.O. Oje, N. Lee, S. Patnaik, J. Liao and **L. N. Williams**. "The Effects of Water Content on the Mechanics and Microstructure of Bone." Biomedical Engineering Society Annual Conference, October 12-15, Hartford Convention Center, Hartford, Connecticut, 2011.

34. M. Rougeau, S. Patnaik, R. Gilbrech, C. Young, R. Prabhu, J. Liao, **L. N. Williams**. "Influence of Water Content on Quasi-static Compressive Properties of Porcine Lungs Tissue." Biomedical Engineering Society Annual Conference, October 12-15, Hartford Convention Center, Hartford, Connecticut, 2011.

35. D. Koback, A. Borazani, S. Patnaik, K. King, B. Wang, **L.N. Williams**. "Biomechanical Properties of Decellularized Human Amnion." Biomedical Engineering Society Annual Conference, October 12-15, Hartford Convention Center, Hartford, Connecticut, 2011.

36. M.T. Begonia, R. Prabhu, M.F. Horstemeyer, J. Liao, **L. N. Williams**. "Quantitative Analysis of Porcine Brain Microstructure via Interruption Testing." Biomedical Engineering Society Annual Conference, October 12-15, Hartford Convention Center, Hartford, Connecticut, 2011.

37. S.S. Patnaik, B. Weed, T.C. Young, J. Liao and **L.N. Williams**. "Dynamic Viscoelastic Properties of Porcine Patellar Tendon: Study of Frequency, Loading, and Regional Dependency." Biomedical Engineering Society Annual Conference, October 12-15, Hartford Convention Center, Hartford, Connecticut, 2011.

38. **Invited Talk Williams, L.N.**, Bertucci, R., Mao, M., Prabhu, R., Liao, J. "Development of a Lower Extremity Model for Finite Element Analysis at Blast Condition" NATO: A Survey of Blast Injury Across the Full Landscape of Military Science, Halifax, Canada. 2011

39. **Invited Talk Williams, L.N.** "Experimental Investigations of Tissues and Organs" Engineering Research and Development Center, Vicksburg, MS. 2011

40. Trim, M.W., Horstemeyer, M.F., Rhee, H., Liao, J., **Williams, L.N.**, "Energy Absorbent Materials Design: Lessons from Nature" 27th Army Science Conference, Orlando, FL. 2010

41. Ryland, S., Horstemeyer, M. F., Liao, J., **Williams, L.N.**, "On the Development of a Multilayered Finite Element Model of Scalp." BMES 2010 Annual Meeting. October 6–9, Austin Convention Center, Austin, Texas, 2010

42. Benjamin Weed, Ali Borazjani, Sourav Patnaik, Raj Prabhu, Mark F. Horstemeyer, **Williams, L.N.**, and Jun. Liao. "The Stress-State and Strain-Rate Dependency of Human Placenta Tissue." BMES 2010 Annual Meeting. October 6–9, Austin Convention Center, Austin, Texas, 2010

43. Joseph Chen, Bryn Brazile, Lauren Priddy, Mark F. Horstemeyer, **Williams, L.N.**, and Jun Liao. "Quantitative Analysis of Damage Evolution in Porcine Liver via Interruption Testing Approach." BMES 2010 Annual Meeting. October 6–9, Austin Convention Center, Austin, Texas, 2010

44. John Clemmer, Joseph Chen, Jun Liao, **Williams, L.N.** , Lauren Priddy, Raj Prabhu, and Mark F. Horstemeyer. "High Rate Stress-strain Behavior: A Comparative Study of Brain, Liver, and Tendon." BMES 2010 Annual Meeting. October 6–9, Austin Convention Center, Austin, Texas, 2010

45. Bo Wang, Dustin McCallum, Mary E Tedder, Dan T. Simionescu, Filip To, Amy L. Curry, **Williams, L.N**. and Jun Liao. "The Structural and Biomechanical Properties of Porcine Myocardial Extracellular Matrix." BMES 2010 Annual Meeting. October 6–9, Austin Convention Center, Austin, Texas, 2010

46. **Invited Talk Williams, L.N.**, "An Evaluation of the Structure-Function Relations of the Patellar Tendon." 6th World Congress on Biomechanics, Singapore, 2010.

47. **Invited Talk Williams, L.N.**, "On the development of a high fidelity virtual human model." New Mexico State University, Las Cruces, NM. 2010

48. **Williams, L.N.**, "An Evaluation of Traumatic Brain Injury" The National Faculty Collaborative Research Competition, Cambridge, MA. 2010

49. Prabhu, R., Chen, J., Priddy, L.B., Tucker, M., Marin, E., **Williams, L.N.**, Horstemeyer, M.F., Liao, J., "Traumatic Injury: Mechanical Response of Porcine Brain and Liver Tissue under High Strain Rate Tests" Biomedical Engineering Society, Pittsburgh, PA. 2009.

50. Begonia, M, Liao, J., Horstemeyer, M.F., **Williams, L.N.**, "Structure-Property Relations in Porcine Brain Tissue: Strain Rate and Stress-State Dependence" Biomedical Engineering Society, Pittsburgh, PA. 2009.

51. Chen, J., Wang, F., **Williams, L.N.**, Guan, J., Liao, J., "A Novel Trilayered Polymer Scaffold Mimicking Native Aortic Valve Leaflet" Biomedical Engineering Society, Pittsburgh, PA. 2009.

52. Davis, D., Clemmer, J., Liao, J., Horstemeyer, M.F., **Williams, L.N.**, "A Mechanism Study on Strain Rate Dependency of Collagen Fibrils in Rabbit Patellar Tendon" Biomedical Engineering Society, Pittsburgh, PA. 2009.

53. Prabhu, R., Horstemeyer, M., Bouvard, J., Begonia M., Marin E., **Williams L.N.**, Liao J., Bammann D.,"TBI: Constitutive Modeling of the Porcine Brain under Large Deformation" TMS 2009, San Francisco, CA, 2009.

54. Williams, K., Pulakat, **L. N. Williams**, L.N., "Micromechanical Analysis of Cells from Hyperelastosis Cutis (HC) Affected and Carrier Horses" Biomedical Engineering Society, St. Louis, MO. 2008.

55. Chen, J., Prabhu, R., Begonia, M., Bouvard, J-L., Marin, E., Horstemeyer, H., **Williams, L.N.**, Liao, J. "Nonlinear Viscoelastic Mechanical Properites of Liver Tissue Determined from Compression, Tension and Shear Tests" Bioinspired Design Conference, Mississippi State University 2008.

56. Prabhu, R., Adams, D., Whittington, W., Tucker, M., Begonia, M., **Williams, L.N.**, Liao, J., Main, E., Horstemeyer, M., "Mechanical Response of Porcine Brain Tissue under High Strain Rate Tests" Bioinspired Design Conference, Mississippi State University 2008.

57. Davis, D., Liao, J., Elder, S., Horstemeyer, M., **Williams, L.N.**, "Strain Rate Effects on Structure Property Relationships in Rabbit Patellar Tendon" Bioinspired Design Conference, Mississippi State University 2008.

58. **Invited Talk** Begonia, M., **Williams, L.N.**, Liao, J., Prabhu, R. Horstemeyer, M. "Structure Property Relationships of Porcine Brain Tissue in Compression" First American Academy of Mechanics Conference, New Orleans, LA. 2008.

59. Williams, K.S., **Williams, L.N.**, "An Investigation of Horse Skin Fibroblast Structure via SEM, TEM, and Confocal Light Microscopy" Southeastern Microscopy Society Meeting, Pensacola, FL. 2008

60. Carpenter, J., **Williams, L.N.,** Superfine, R. "Cyclically Stretching Polarized Bronchial Epithelial Cultures at an Air-Liquid Interface" Biophysical Society, Long beach, CA. 2008.

61. Davis, D.D., **Williams, L.N.,** "Strain Rate Dependency of Rabbit Patellar Tendon Fascicles" Biomedical Engineering Society Annual Meeting, Los Angeles, CA. 2007

62. **Williams, L.N**., "Unconfined Compression on the Rabbit Patellar Tendon" Biomedical Engineering Society Annual Meeting, Chicago, IL. 2006

63. **Williams, L**. **N**., "A Hierarchical Examination of the Rabbit Patellar Tendon" 7th World Congress on Computational Mechanics, Los Angeles, CA. 2006

64. **Claude, L. N.,** "On the Development of a Soft Tissue Viscoelastic Continuum Model Using Internal State Variable Theory" Society for Biomaterials Conference, Memphis, TN. 2005

65. **Claude, L. N.,** "Biomechanical Effects of Cyclic Loading on the Lower Back, Future Faculty and Professionals Symposium (GEM), Las Vegas, NV. 2004

66. **Claude, L. N.,** "Low Back Pain" Louisiana State University Biological Engineering Graduate Colloquium, Baton Rouge, LA. 2002

67. **Claude, L. N.,** Lima, M., "Animal Habitat Design" Prescott Middle School, Baton Rouge, LA. 2002

68. **Claude, L. N.,** "Hydromulching Spartina Alterniflora" American Society of Agricultural Engineers Conference, 2001

69. **Claude, L. N.,** "The Effect of an Experimental Drug on Vero Cells" City College of New York, New York, NY. 1999

70. **Claude, L N.,** Albright, A., "The Design of Animal Habitats" American Society for Engineering Education Conference, New Orleans, LA. 1998

RESEARCH FUNDING

Department of Defense (ERDC)
Simulation and Characterization of Biologically Inspired Materials
Role: Co-PI, $420,000, 2007-2008

Mississippi State University
Special Research Initiative Grant
Multiscale Structure-Property Quantification of the Tendon
Role: PI, $24,883, 2007-2008

Department of Energy
Southern Regional Center for Lightweight Innovative Design (SRCLID): Bioinspired Design Phase III
Role: PI, $190,000, 2008-2010

Department of Defense (TARDEC)
Multiscale Human Body Simulation: Assessing Brain Damage at High Impact and Intense Vibrations
Role: PI, $200,005.02, 2008-2009

National Science Foundation
Major Research Instrumentation: Acquisition of an Atomic Force Microscopy System for Advanced Materials Research and Education
Role: Co-PI, $463,399, 2009-2012

Department of Energy
Southern Regional Center for Lightweight Innovative Design (SRCLID): Bioinspired Design Phase III
Role: PI, $208,000, 2009-2011

Mississippi State University: BCoE Herring Faculty Award
Role: PI, $10,000, 2010-2011

Department of Defense (TARDEC)
Simulation-Based Reliability and Safety Programs (SimBRS): Multiscale Human Body Simulation
Role: PI, $346,194.30, 2010-2012

Department of Health and Human Services
Tissue Engineering Research Center: Structure-Property Relationships of Tendon and Skin Tissues
Role: Co-PI, $150,000, 2010-2012

Mississippi State University
Bagley College of Engineering
Molecular Mechanics of Biological Materials Working Group
Role: PI, $500, 2011-2012

ARMY Engineering Research and Development Center (ERDC)
Structural-Mechanical Property Measurement for Biological Materials
Role: Co-PI, $200,000, 2011-2012

Department of Energy
Southern Regional Center for Lightweight Innovative Design (SRCLID): Bioinspired Design Phase IV
Role: PI, $200,000, 2011-2013

Zavation, LLC
BioMedical Assessment of Zavation Combined Magnetic Field (CMF) Device
Role: Co-PI, $70,500, 2013

Department of Defense
Computational Research for Engineering and Science- Ground Vehicles (CRES-GV): Virtual Soldier Model for Occupant Centric Design
Role: PI , $191,461, 2012-2013

Department of Defense
Computational Research for Engineering and Science- Ground Vehicles (CRES-GV): Virtual Soldier Model for Occupant Centric Design
Role: PI , $187,066, 2013-2017

National Science Foundation
Career Development: From Senior Undergraduate to Navigating Assistant Professorship
Role: PI (at MSU) –Collaborative Proposal with University of Akron and University of Houston
Full Proposal: $78,000 MSU: $26,101, 2014-2016

Department of Defense
Structural Differences of the Paddlefish (Polyodon spathula) Rostrum
$83,000, Role: PI , 2016-2018

National Science Foundation
Collaborative Research: Professional Preparation of Underrepresented Minority PhD's and Post-Docs for a Career in Engineering Academia
Role: PI--Collaborative Proposal with University of Akron and University of Houston
Full Proposal: $900,000 MSU: $217,429, 2017-2021

PROFESSIONAL DEVELOPMENT

2020 Training in Grantsmanship for Rehabilitation Research (TIGRR) Workshop for writing NIH Proposals
LEAD21: Leadership Institute for professionals in Land Grant Institutions, Class 13, summer 2017-spring 2018
Mississippi State's Academic Leadership Orientation Program. Selective process of approximately 15 faculty. Year-long program learning about administrative roles in the institution. August 2015-May 2016
IMPACT, Georgia Tech Mentoring Program. 2015- 2018

NSF, Minority Faculty Development Workshop, Georgia Tech, Atlanta, GA. March 2012
NSF, Minority Faculty Development Workshop, MIT, Boston, MA. March 2010
NSF, CAREER Workshop, Georgia Institute of Technology, Atlanta, GA. March 2010
NSF, Summer Institute on Nanoscale Mechanics, Bio-inspired Hierarchical Structures and Potential Applications, June 2006

PRIMARY ADVISOR MSU STUDENTS

Undergraduate (post graduate employment in parentheses)
David Harbarger, Bachelor of Science, Biological Engineering, 2007 (Dentist)
Kaleb Dulaney, Bachelor of Science, Biological Engineering, 2009 (Medical Doctor)
Ashley Williams, Bachelor of Science, Biological Engineering, 2010 (Pharmacy School)
Emily Smith Mengel, Bachelor of Science, Biological Engineering, 2011 (PhD NC State, US Government)
Erin Colebeck, Bachelor of Science, Biological Engineering, 2012 (MS Electrical Engr., Med Tech. Industry)
Mercedes Allen, Bachelor of Science, Business Information Systems, 2013 (Entrepreneur)
Nicholas Tilghman, Bachelor of Science, Biological Engineering, 2013 (Industry)
Thomas Cole Young, Bachelor of Science, Biological Engineering, 2012 (Medical Doctor)
Ryan Gilbrech, Bachelor of Science, Biological Engineering, 2012 (MSU Entrepreneurship Center)
Julialake Landrum, Bachelor of Science, Biological Engineering, 2014
Michael McCollum, Bachelor of Science, Industrial Engineering, 2010
Mary Rougeau, Bachelor of Science, Biological Engineering, 2012 (current PhD student, Univ. of GA)
Adesola Oje, Bachelor of Science, Biological Engineering, 2014 (Medical Student)
Me'Lanae Garrett, Bachelor of Science, Biological Engineering, 2016 (current MS Student)
Sammira Rais-Rohani,Bachelor of Science, Biological Engineering, 2019
Bradley Welch, Bachelor of Science, Biochemistry, 2018
Hemanth Nennapanneni, Bachelor of Science, Psychology and Biochemistry, 2019

Masters (Grad date, Project Title)
Deborah D. Davis (2008, Structure-Property Relationships of Tendon)
Mark T. Begonia (2009, Structure-Property Relationships of Brain)
John Clemmer (2010, Strain Rate Effects on Structure-Property Relationship in the Rabbit Patellar Tendon)
Kenyatta S. Williams (2011, Micromechanical Analysis of Cells from Hyperelastosis Cutis Affected and Carrier Horses)
Renee Pietsch (2012, Mechanical Properties of Porcine Muscle in Compression and Tension with Microstructural Analysis)
Onyema Oyeka (2012, Explicit Finite Element Comparison of the Lower Human Extremity under Blast Load)
Michael Murphy (2014, Atomistic Simulations of Neuron Structure)
Haden Johnson (2017, Interrupted high-rate compression of porcine brain tissue utilizing the split Hopkinson pressure bar method)
Courtney White (2017, The Structure-Property Relations of Fetal Porcine Brain Under Compressive and Tensile Loading)
Me'Lanae Garrett (fall 2018)

Doctorate of Philosophy (Grad date, Project Title)
Mark T. Begonia (2013, A Mechanical Model of Blast Effects on Brain Tissue)
Na Yeon Lee (2016, Bio-Inspired Design: Structure-Property Relationships of the Woodpecker Beak)
Michael Murphy (2016, Atomistic Simulations of Neuron Structure)
G. Alston Rush (2016, Design of an American football helmet liner for concussion mitigation)
Carla Danielle Grimes (fall 2019)
Stephanie Ryland (Mentored 2009-2014, ABD- A Constitutive Model of the Scalp/Skull/Brain)

MSU Scholarships for Science, Technology, Engineering and Mathematics (S-STEM) Mentees
Sunny Carlisle, Biological Engineering (fall 2009- spring 2011)
Amanda Thomas, Biological Engineering (spring 2010-spring 2013)

Student Awards
Mark Begonia (PhD student), Bagley College of Engineering Fellowship (fall 2010, fall 2011)
Stephanie Ryland (PhD student), Bagley College of Engineering Fellowship (fall 2010, fall 2011)
Stephanie Ryland (PhD student), Second Place, Alliance for Graduate Education in MS, Research Presentation
Emily Smith (Undergraduate Student Worker, National Science Foundation Graduate Research Fellowship)
Carla Danielle Grimes (PhD Student National Science Foundation Graduate Research Fellowship)

SECONDARY ADVISOR MSU STUDENTS (3 MASTERS, 7 PhD)

Masters (Grad date, Project Title)
Lauren Beatty Priddy (2010, Structure-Property Relationships of Healthy and Diseased Carotid Artery)
Joseph Chen (2010, A Structure-Property Evaluation of Porcine Liver)
Scott C. Tran (2010, Tissue Engineering Cartilage for Osteochondral Defects)
Vina Nguyen (2017)

PhD (Grad date, Project Title)
Rajkumar Prabhu (2011, Traumatic Brain Injury: Coupled Experiment/Finite Element Simulation on High Rate Mechanical Response of Porcine Brain)
Benjamin Weed (2012, A Finite Element Model of Maternal Injury in Car Crash)
Michael Wesley Trim (2012, Bio-Inspired Design: Structure-Property Relationships of the Ram Horn)
Sourav Patnaik (2013)
Aditya Samala (2013)
Robbin Bertucci (2015)
Kyle Johnson (2016)
Jeremiah Deang (2017)
John Wood (2019)
Sonja Jensen (2019)
Mark Mosher (2018)
Katherine Copeland (2019)

TECHNOLOGY TRANSFER

Predictive Design Technologies (PDT): Dr. Mark Horstemeyer Director
2.5% owner
--PDT is a consulting company that focuses on design analysis, finite element analysis, materials processing methods, and failure

PDT is a Mississippi University Research Authority (MURA) company that focuses on consulting in the arenas of design analysis, finite element analysis, materials processing methods, and failure analysis.

Rush Predictive Protection Systems (RPPS) (Company closed 2017)
17.5% owner

Rush Predictive Protection Systems (RPPS) is a joint venture between PDT and Rush Sport Medical that includes PDT personnel, and Dr. Sonny Rush and Alston Rush of Rush Sport Medical. RPPS exists to design, develop, and test certain processes and procedures for safety products and helmets of different types.

HONORS AND AWARDS

2019 Carl Storm Minority Fellowship to Attend Gordon Research Conference
2019 Training in Grantsmanship for Rehabilitation Research (TIGRR) Workshop Acceptance
2017 National Role Model Faculty Researcher Award, Minority Access Inc.
2017 Mississippi Business Journal Top in Technology
2015 Mississippi State Institutions of Higher Learning--Diversity Educator of the Year Nominee
2014 Mississippi's Top 21 Most Wanted in Technology –
http://msbusiness.com/blog/2014/08/22/tech-21-mississippis-wanted/
2013 Faculty Appreciation award, Delta Sigma Theta Sorority
2012 Faculty Appreciation award, National Society of Black Engineers
2011 Faculty Appreciation award, National Society of Black Engineers

2010 Hearin Faculty Excellence Award, Bagley College of Engineering, Mississippi State University
2010 State Pride Award, Bagley College of Engineering, Mississippi State University
2010 Trail Blazer Award, Delta Sigma Theta Sorority, Mississippi State University
2010 Rising Star Alumnus Award, Department of Bio & Ag Engineering, Louisiana State University
2010 Faculty Appreciation award, National Society of Black Engineers
2010 Nomination, Bagley College of Engineering's Academy of Distinguished Teaching
2009 STEM Women's Walk of Fame Honoree, American Association of University Women
2009 Faculty Appreciation Award, National Society of Black Engineers
2008 Technology Rising Star, Women of Color Magazine and IBM Corporation
2008 Champion of Diversity Award, Bagley College of Engineering, Mississippi State University

MEDIA COVERAGE

- 2017 "Mississippi Business Journal Top in Tech"
- http://www.msstate.edu/newsroom/article/2017/07/mbj-top-tech-list-includes-msu-engineering-professor-entrepreneurship/
- 2017 "Diverse Issues in Higher Education: Trailblazer in STEM"
- http://mydigimag.rrd.com/publication/?i=424419&ver=html5&p=22
- 2017 "National Research Mentoring Network: Transitioning from Career Minimums to Maximums: A Multiple Mentor Model"
- https://nrmnet.net/translations-of-minimums-to-maximums-a-celebration-of-dr-lakeisha-williams/?utm_source=July+2017+NRMN+Newsletter&utm_campaign=NRMNews20&utm_medium=email
- 2017 "Good Things in Mississippi". A radio interview by Supertalk Radio Mississippi
- http://www.supertalk.fm/audio-archives/good-things-on-demand/?recording_id=24128
- 2015 "NSF Career Development Workshop at Mississippi State University"

http://www.wtva.com/news/national/story/Career-Development-at-Mississippi-State/CclJIltKUUGdfSraBIi9tA.cspx

- 2015" Infant Head Trauma Research brings Leading UK University to MSU"
- http://www.bagley.msstate.edu/news/infant-head-trauma-research-brings-leading-u-k-university-to-mississippi-state-university/
- 2014 "Mississippi's top 21 Most Wanted in Technology", Fall 2014,"
- http://msbusiness.com/blog/2014/08/22/tech-21-mississippis-wanted/
- 2014 "Woodpecker Beaks Divulge Shock Absorbing Properties", May 6, 2014, www.sciencenews.org
- 2013 "Gray Matters: Biological Engineers Help Change Understanding of Traumatic Injury", Mississippi State University College of Engineering Momentum Magazine, pp. 22-23
- 2011 "NATO Includes Research from MSU Engineering", October 5, 2011, Starkville Daily News
- 2010 "Southern Success at its Best", Spring 2010, Mississippi State University College of Engineering Momentum Magazine, pp. 46-47
- 2009 "Alumna Williams Receives National Attention", January 2009, Louisiana State University College of Engineering Website
- 2008 "Rising Star Lights the Way", Fall 2008, Mississippi State University College of Engineering Momentum Magazine, pp. 26-27
- 2008 "Lakiesha Williams of MSU getting national spotlight", August 2008, Mississippi State University's Website
- 2007 "NSBE LOVE: Devoted to God and Each Other", National Society of Black Engineers Magazine, pg 34, Sept-Oct. 2007

TEACHING

COURSES TAUGHT

Fall 2018-Spring 2019 (Associate Professor, Biomedical Engineering UF)
BME 4832—Engineering Design I (Senior Design I)
BME 4833—Engineering Design II (Senior Design II)

Fall 2010- Spring 2016 (Assistant and Associate Professor, Biological Engineering MSU)
ABE 4813— Principles of Engineering Design (Senior Design I)
ABE 4833— Practices of Engineering Design (Senior Design II)
ABE 1911—Engineering in the Life Sciences

Fall 2008-Spring 2011 (Assistant and Associate Professor, Biological Engineering MSU)
ABE 1911—Engineering in the Life Sciences
ABE 1921—Introduction to Engineering Design
ABE 1001—Health and Medical Professionals of the Future

Fall 2006-2008 (Assistant Research Professor)
ABE 1911--Engineering in the Life Sciences
ABE 3813--co-taught Biophyical Property of Materials

Spring 2006 (Graduate Student)
Teaching Assistant, ABE 3813--co-taught Biophysical Property of Materials

Spring 2004 (Graduate Student)
Academic Tutor, Mississippi State University Athletic Academics, Math and Biology

SUMMARIES OF COURSES TAUGHT

Fall 2008: ABE 1001 Healthcare and Medical Professionals of the Future

I developed a First Year Experience (FYE) seminar that was taught Fall 2009. This seminar was designed to expose students to various career paths in the healthcare field. Specifically, students interested in Medicine, Dentistry, Veterinary Medicine, Nursing, Physical Therapy, Occupational Therapy and Pharmacy were introduced to the realities of preparing for careers in each of these health professions. Students were provided with information on the specific entrance exams for their health profession's school of choice and gained insight on the specific tasks associated with these health professions. The course concluded with a tour of Oktibbeha County Hospital.

Fall 2008, 2009, 2010, 2011, 2012: ABE 1911 Engineering in Life Sciences

I revised this freshman-level course to include instruction of materials selection and design, as well as an introduction to MATLAB and AutoCad. The material selection software (CES) enabled the students to utilize engineering principles for designing everyday use materials (plastic forks, CD case, water bottles etc). The designs were based on the material's process ability, mechanical constraints, recyclability, and cost. Students were also given instruction and assignments on the basics of MATLAB. This course allows the students to further understand engineering principles, as well as to develop engineering design skills through software use. The focus of this change was to increase retention by helping prepare students for some of their upper-level engineering courses.

Spring 2009, 2010: ABE 1921 Intro to Engineering Design

The instruction in this course was focused on teaching the engineering design method, utilizing engineering tools such as CAD for creating 3-view engineering drawings and effectively using Microsoft Excel for data analysis. The tools learned were implemented into the final design project for the course.

Fall 2010, 2011, 2012, 2013, 2014: ABE 4813 Practices in Engineering Design

This course is a first semester of a two-semester senior capstone. I provide a detailed and systematic model for approaching engineering design. The focus of this course is on the conceptual aspect of design, project planning, and development with the goal of teaching the students the process and associated useful tools for effectively developing the product on paper before prototype development.

Spring 2011, 2012, 2013: ABE 4833 Practice of Engineering Design

This course is a second semester of the two-semester senior capstone for Biological Engineering students. In this course, student teams complete, construct, and test the design that they began in ABE 4813. Innovations in this course include the introduction of an entrepreneurial aspect into the course. Along with all design metrics, teams must also complete a detailed budget and marketing plan for all devices developed. Representatives from the Office of Entrepreneurship and Technology Transfer (OETT) regularly visit the classroom for updates from students. Since this relationship has been established, the OETT has continued to host a biomedical business plan competition for students within my course. Interested teams are invited to the competition, and the top three teams are awarded cash prizes. They are judged by entrepreneurs from around Mississippi.

TEACHING FUNDING

Project Title: NSF Engage Minigrant
Name of Grantor: Stevens Institute of Technology
Project Description: Introducing Research-Based Strategies to Retain Undergraduates in Engineering Programs
Grant Amount: $2000
Effective Dates: January 1, 2013-May 31, 2014
Role: Principal Investigator

GUEST LECTURER

- **BME 1008 spring 2020**
- **MAE fall 2019**
- **ABE 4911 and ABE 8911 U.Grad and Grad Sem.** *"Public Speaking and Networking"* 2010, 2011, 2012, 2013
- **WFA 4443 Ornithology** "*The Woodpecker—Excellent Energy Absorber"* 2012
- **MSU Studio School** *"Engineering Design"* 2013

TEACHING: PROFESSIONAL DEVELOPMENT

- MSU, Center for Teaching and Learning: Diversifying your Curriculum, fall 2017
- Center for Teaching and Learning: Meeting the Needs of Diverse Faculty, fall 2017
- MSU, Center for Teaching and Learning, Get Students to Focus on Learning Instead of Grades, Dr. Saundra McGuire, spring 2012
- MSU ITS Technology Bootcamp, May 2009
- Wiley Faculty Network, How to design a perfect introduction to engineering course seminar, Online, October 2007

SERVICE

PROFESSIONAL AFFILIATIONS

- Sigma Xi (induction April 2009)
- Society of Women Engineering (Advisor and Counselor)
- National Society of Black Engineers
- American Society of Mechanical Engineers
- Biomedical Engineering Society
- Phi Kappa Phi Honor Society (2017)

Study Section/Scholarly Review Panels

- National Institutes of Health: NINDS F32 Reviewer March 2020
- National Institutes of Health: NINDS F32 Reviewer October 2019
- National Institutes of Health: Musculoskeletal Tissue Engineering (MTE) February 2019
- American Society of Mechanical Engineers (ASME) Proceedings Reviewer for PhD Student Competition 2010-2018
- NSF Graduate Research Fellowship Program Panelist, January 2012
- NSF Biomechanics and Mechanobiology Panelist, December 2011
- NSF Graduate Research Fellowship Program Panelist, February 2011
- NSF Graduate Research Fellowship Program Panelist, February 2010
- NSF Graduate Research Fellowship Program Panelist, February 2009
- Mississippi State University, Excellence in Engagement Review Panelist, fall 2007
- NSF Engineering Research Experience for Undergraduates Panelist, October 2007
- NSF Biology Research Experience for Undergraduates Panelist, November 2006
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Editorial Boards

- **Guest Editor**: Journal of Mechanical Behavior of Biomedical Materials Special Issue of Cell and Tissue Biomechanics
- **Editorial Board**: Journal of Mechanical Behavior of Biomedical Materials (2018-present)

Diversity and Inclusion Initiatives

- Instituted Mississippi State University's Visiting Scholars Program for Recruiting Minority Scholars
- Chaired Mississippi State University Regional Diversity Conference (2017)
- Worked with Student Affairs and Academic Affairs on Developing Best Practices for Recruiting and Retaining Faculty of Color at Mississippi State
- Interviewed Associate Deans in eight Colleges to Study Best Practices on Mentoring Faculty of Color

STEM/Outreach

1. Black History Month Panel. University of Florida BME Department. February 2020
2. Talk Science with Her "Woodpeckers, Brains, and Eggs" Gainesville, FL. February 2020
3. National Biomechanics Day. University of Florida. April 2019
4. Airbus Helicopters, Inc. Pioneers in their field: Local women discuss their challenge-laden paths to success March 21, 2018 (Columbus, MS) http://www.cdispatch.com/news/article.asp?aid=64719
5. Federal Bureau of Prisons: Federal Women's Program "Nevertheless She Persisted" March 22, 2018 (Aliceville, Alabama)
6. Panel Moderator: "State of Black Affairs" Mississippi State Univ. Black Alumni Weekend. February 17, 2018.
7. Williams, L.N. and B. Williams, Prairie View A&M, "The Pursuit of Graduate School and the Professorate (AGEP)," November 13, 2017
8. Williams, L.N., "Future Faculty Forum: What is Assistant Professorship?" NSF Career Development Workshop, Akron, OH. 2014
9. Williams, L.N., "Panel on Work/life Policies for Faculty" Society of Women Engineering Annual Meeting, Los Angeles, CA. 2014
10. Williams, L.N., "NSF-GRFP Tips and Tricks for Applicants" Mississippi State University, Mississippi State University, Starkville, MS. 2013
11. Williams, L.N., "STEM and Biomedical Engineering" WE-LEAD Mississippi State University, Mississippi State University, Starkville, MS. 2013
12. Williams, L.N., "What is Engineering Design?" MSU At-Risk Youth Studio School Camp. Mississippi State University, Mississippi State University, Starkville, MS. 2013
13. Williams, L.N., "What is Biomedical Engineering?" I AM GIRL, Bagley College of Engineering-—Mississippi State University, Mississippi State University, Starkville, MS. 2013

14. Williams, L.N., "Thought Factor in Achievement" IDEAL Women, Mississippi State University Holmes Cultural Diversity Center, Starkville, MS. 2012.
15. Williams, L.N., "Seven Keys for Successful Leadership" Leaders State-—Mississippi State University, Mississippi State University, Starkville, MS. 2012
16. Williams, L.N., "The Road To..." Research Initiative for Scientific Enhancement (RISE)-- Xavier University of Louisiana, New Orleans, LA. 2011
17. Williams, L. N., "The Successful Student" Increasing Minority Access To Graduate Education (IMAGE) Summer Bridge Program—Mississippi State University, Mississippi State University, Starkville, MS. 2010.
18. Williams, L.N., "Value of a Diamond" IDEAL Women, Mississippi State University Holmes Cultural Diversity Center, Starkville, MS. 2009.
19. Williams, L. N., "The Successful Student" Increasing Minority Access To Graduate Education (IMAGE) Summer Bridge Program—Mississippi State University, Mississippi State University, Starkville, MS. 2008.
20. Williams, L. N., "Biomedical Engineering" University Familiarization Program for Minorities in Engineering (UFPME)—Mississippi State University, Starkville, MS. 2006
21. Claude, L. N., "Pursuing Purpose" Increasing Minority Access To Graduate Education (IMAGE) Summer Bridge Program—Mississippi State University, Mississippi State University, Starkville, MS. 2004.
22. Claude, L. N., "Higher Education—Science and Engineering" National Youth Sports Program (NYSP)—Mississippi State University, Mississippi State University, Starkville, MS. 2004
23. Claude, L. N., "What is Biomedical Engineering?" University Familiarization Program for Minorities in Engineering (UFPME)—Mississippi State University, Mississippi State University, Starkville, MS. 2004
24. Claude, L. N., "The Future?" East Oktibbeha County High School, Mississippi State University, Starkville, MS. 2004

PROFESSIONAL AFFILIATIONS

- Sigma Xi (induction April 2009)
- Society of Women Engineering (Advisor and Counselor)
- National Society of Black Engineers
- American Society of Mechanical Engineers
- Biomedical Engineering Society
- Phi Kappa Phi Honor Society (2017)

TECHNICAL REVIEWER

- Reviewer—Journal of Biomechanics
- Reviewer—Acta Biomaterialia
- Reviewer—Medical Engineering and Physics
- Reviewer—Journal of Mechanical Behavior of Biomedical Materials
- Reviewer—International Journal of Industrial Ergonomics
- Reviewer—Experimental Mechanics

UNDERREPRESENTED GROUPS INITIATIVES

- Co-Organizer of MSU's Region-wide Diversity Conference, spring 2017
- Co-Director: Biomedical Engineering URM Research and Mentoring Program, 2011-2018
- Director: Women of Color in Biological Engineering Roundtable 2010-2014
- Mentor: Scholarships for Science, Technology, Engineering and Mathematics (S-STEM), 2008-2018
- Group Facilitator: Women of Color in Engineering Monthly Roundtable Meetings, 2006-2009

LEADERSHIP ACTITIVITIES FOR WOMEN IN STEM

- Co-Organizer: Biomedical Engineering Society 2013 Annual Conference Women's Luncheon
- Counselor and Advisor for Society of Women Engineers, MSU Chapter

UNIVERSITY COMMITTEES AND OTHER SERVICE ACTIVITIES

- 2019 HWCOE-UF LAW Preeminent Joint Faculty Search Committee
- 2015-2017 Chair: President's Commission on the Status of Minorities
- 2015-2018 Member of MSU Athletics Advisory Council

Crafted Status Report on Athletic Academics (team of five):
Mississippi State University--2017 Athletic Academics and Other Student Athlete Support Programs Report

- 2014-2015 Member on MSU's College of Agriculture and Life Sciences Diversity Committee
- 2013-2017 Voting Member on MSU's President's Commission on the Status of Minorities
- 2013 Women of Color Summit—Panel Facilitator
- MSU, Division of Agricultural Forestry and Veterinary Medicine, Assoc. Vice Pres. Search Committee 2012
- *Invited Member*, MSU's Faculty Research Advisory Council, MSU, 2010-2011
- Minority Faculty Recruitment, Future Faculty Dinner Host at Biomedical Engineering Society Meeting, Hartford, CT. 2011
- National Science Foundation GRFP Tips; A panel for interested graduate students, Spring 2010, 2011
- Bagley College of Engineering SWOT Focus Group, Fall 2009
- Day One Action Team Mentor—Mississippi State University, Fall semester 2008
- MSU, Bagley College of Engineering, Dean Search Committee, 2007-2008
- MSU Chapter Biomedical Engineering Society Faculty Advisor, 2007-2008

DEPARTMENTAL SERVICE

- 2019-present UFBME Executive Committee
- 2018-2019 Biomedical Engineering Faculty Search Committee (UF)
- 2018- Present Graduate Programming Committee (UF)
- ABE Scholarship Committee 2008-2018
- Biological Engineering Undergraduate Curriculum Committee 2008-2017

PROFESSIONAL LEADERSHIP

- ASME, Bioengineering, Solids Committee, Summer 2009-present
- Louisiana State University, Advisory Council, Spring 2007-Present
- Biomedical Engineering Society Diversity Committee, Spring 2008-Spring 2015
- Society of Women Engineers MSU Chapter Counselor Fall 2013-Spring 2014, Fall 2015-Spring 2018
- Society of Women Engineers MSU Chapter Co-faculty Advisor Fall 2014-Spring 2015
- ASME Biological Engineering Division Diversity Committee 2014-2016

PROFESSIONAL SERVICE ACTIVITIES

- Guest Editor, Journal of Mechanical Behavior of Biomedical Materials, 2019-2020 Special Issue: Cell and Tissue Biomechanics
- Session Chair, BMES 2019, Cerebrospinal Biomechanics, Philadelphia, PA. 2019
- Ad-hoc Committee - JMBBM Early Career Researcher Award 2019
- Judge—M.S. Student Poster Competition Judge, Solids, Design and Rehabilitation Engineering Session, ASME Summer Bioengineering Conference, Sunriver, OR. 2013
- Session Chair, ASME Summer Bioengineering Conference, PhD Student Paper Competition, Orthopedics Biomechanics Session, Fajardo, Puerto Rico. 2012
- Session Panelist on Cultural and Gender Diversity, ASME Summer Bioengineering Conference, Development Strategies for Post Docs and Early Investigators, Farmington, PA. 2011
- Session Chair, ASME Summer Bioengineering Conference, PhD Student Paper Competition, Orthopedics Biomechanics Session, Farmington, PA. 2011
- Session Co-Chair, ASME Summer Bioengineering Conference, Mechanical Properties of Musculoskeletal Soft Tissues Session, Naples, FL. 2010
- Judge—Ph.D. Student Poster Competition Judge, Solids, Design and Rehabilitation Engineering Session, ASME Summer Bioengineering Conference, Naples, FL. 2010

- Session Co-Chair, 7th World Congress on Computational Mechanics, Symposium on Multiscale Nano-and Bio- mechanics and Materials, Los Angeles, CA. 2006

PHILANTHROPIC SERVICE

- Director of Transformation Rwanda, An outreach to widows, orphans and college students in Rwanda, 2010-2011
- Director of Engage Mississippi, An outreach to underprivileged families in Mississippi, Spring 2009-2011
- Facilitated and organized distribution of food and personal items to over 200 families in Mississippi, 2009
- Organized distribution for over 100 school supplies kits for kids in Rankin County Mississippi, 2009
- Facilitated and organized distribution of 500 turkeys to Mississippi residents, 2009