Andrew B. Robbins

Assistant Professor / University of Texas at Tyler
Department of Mechanical Engineering,
Tyler, TX
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Biography

Dr. Robbins is an assistant professor at the University of Texas at Tyler in the department of Mechanical Engineering. His research focuses on orthopedic and whole-body biomechanics, tissue biomechanics, and medical device design and entrepreneurship. Recent research projects have included the development of an ovine motion capture model for evaluating orthopedic diseases and devices, testing and evaluation of a novel surgical navigation system, mechanical analysis of a novel biological MCL repair, evaluation of bicep tendon repair surgical techniques, and others. Dr. Robbins also works with academic and industry partners to design and evaluate medical devices, including performing testing for regulatory clearance, and has worked with CorInnova Inc., 4Web Medical, CAIRA Surgical Inc., Embody Inc., StrideLink Inc., and others. He has taught orthopedic biomechanics, medical device design, mechanical measurements, experimental measurements and techniques, and introduction to innovation in engineering and medicine. Prior to coming to UT Tyler, he taught in the departments of multidisciplinary engineering, mechanical engineering, and biomedical engineering at Texas A&M, as well as the School of Engineering Medicine EnMed program at Texas A&M.

Education

Doctor of Philosophy in Biomedical Engineering
Texas A&M University, College Station, TX, August 2013 – May 2018
Dissertation: *"Mechanical Analysis of Injury and Repair: An Experimental Approach"*
Committee Chair: Dr. Michael Moreno

Bachelor of Science in Biomedical Engineering
Texas A&M University, College Station, TX, August 2009 – May 2013

Faculty Appointments and Work History

Assistant Professor, UT Tyler, Tyler TX
Department of Mechanical Engineering, September 2024

Research Assistant Professor, Texas A&M University, College Station, TX
Multidisciplinary Engineering (Primary Appointment) January 2019 – August 2024
Mechanical Engineering (Courtesy Faculty Appointment), January 2019 – August 2024
School of Engineering Medicine (Joint Faculty Appointment), September 2020 – August 2024
Translational Medicine (Courtesy Faculty Appointment), August 2020 – August 2024

Acting Director of Admissions, Texas A&M University, EnMed Program, January 2020 – August 2024

Adjunct Assistant Professor of Biomedical Engineering, Methodist Research Institute, Houston TX
Department of Cardiovascular Sciences August 2019 – August 2024

Visiting Assistant Professor and Lecturer, Texas A&M University, College Station, TX
Mechanical Engineering (Primary Appointment), September 2018 – December 2018
ENMED Program, Engineering Academic Student Affairs (Secondary Appointment)

Lecturer, Texas A&M University, College Station, TX
Department of Biomedical Engineering, January 2018 – May 2018

TEES Research Associate II, Texas A&M University, College Station, TX
Department of Mechanical Engineering, September 2017 – September 2018

Inventions Disclosed

1. Dheeraj Reddy*, Nicholas Sears, **Andrew Robbins.** "Endoscope with Modifiable Rigidity via Electromagnetically Generated Tension". 6200TEES23 January 2023
2. Shannon N. Ingram*, Mandalyn Castleberry*, Michael Moreno, **Andrew B. Robbins**. "LVAD Outflow Graft Assistance Instrument." 6157TEES23 2023
3. **Andrew B. Robbins**, Michael R. Moreno, Joseph Guerra*, "Compliance Monitoring Sling" Disclosed to OTC Spring 2022
4. Michael R. Moreno, **Andrew B. Robbins**, Shannon N. Ingram*, Raghuveer Lalitha Sridhar*, Roderic I. Pettigrew, Masayoshi Takashima. Method and System for Negative Pressure Helmet. TAMUS 5505 May 1, 2020.
5. Raghuveer Lalitha Sridhar*, **Andrew B. Robbins**, Shannon N. Ingram*, Michael R. Moreno. Multi-Patient Metered Dose Inhaler Expansion System, TAMUS 5510 May 1, 2020.
6. **Andrew B. Robbins**, Michael R. Moreno, Raghuveer Lalitha Sridhar*, Shannon N. Ingram*, Nicholas A. Sears, Justin P. McMurray, Kara L. Moreno. Method and System for Patient Isolation and Ventilator Preparation Chamber. TAMUS 5488. April 9, 2020.
7. **Andrew B Robbins**, Robert Kempner*, Michael R. Moreno, "Methods and Designs for Producing Soft Tissue Analogues for Uniaxial Testing System Characterization" (Disclosed to TAMU MAY, 2018)
8. **Andrew B. Robbins**, Robert Kempner*, Shannon N. Ingram*, Michael R. Moreno, "Device for improving confined compression testing on biomaterials" (Disclosed to TAMU OTC, 2017, Provisional Patent filed May, 2018)
9. **Andrew B. Robbins**, Michael R. Moreno, "Osteogenic Device System for Regenerative Repair of Comminuted Fracture" (Disclosed to TAMU OTC, 2017)
10. **Andrew B Robbins**, Stacy Galaviz, Michael R. Moreno, Self-sealing endoscopic access port (Disclosed to TAMU OTC, 2016)
11. **Andrew B. Robbins**, Bradley S. Lambert, Michael R. Moreno, "Auto-scaling multi-device digital pain scale for clinical measurements" (Disclosed to TAMU OTC, 2016)
12. **Andrew B. Robbins**, Matthew Wilcox, Samantha Miller, Taraz Nosrat, "Device to Measure Biomarkers from Exhaled Air" (Sold to Young Living Essential Oils, 2013)
13. **Andrew B. Robbins**, Michael R. Moreno, "MRI Compatible Transparent Blast Tube for the Study of Blast-Induced Traumatic Brain Injury" (Disclosed to TAMU OTC, 2013)

Publications and Presentations

(h-index 8, i10-index 8, 1236 citations, as of August, 2024)
***Chaired Student, *Mentored Student*

Journal Publications

1. Lawson, Z. T., Hollenbeck, D. L., Silveira, C. J., Moreno, M. R., **Robbins, A. B**., & Saunders, W. B. (2024). Quasi-static mechanical evaluation of canine cementless total hip replacement broaches: effect of tooth design on broach and stem insertion. BMC Veterinary Research, 20(1). https://doi.org/10.1186/s12917-024-04075-y
2. Henry, A.**, Benner, C.*, Easwaran, A.*, Veerapalli, L.*, Gaddy, D., Suva, L. J., & **Robbins, A. B.** (2023). Predictive estimation of ovine hip joint centers: A regression approach. Journal of Biomechanics, 161, 111861. https://doi.org/10.1016/j.jbiomech.2023.111861
3. Michael Waters, Zachary Newell, Daniel Fisher, H. Gregory McDonald, Jiwan Han*, Michael Moreno, **Andrew Robbins**. Late Pleistocene osseous projectile point from the Manis site, Washington—Mastodon hunting in the Pacific Northwest 13,900 years ago. Science Advances. January 2023.
4. Joshua Bertels, Alyssa Falck, Jordan Ankersen*, Aaron Henry**, **Andrew Robbins**, Shannon Huggins, Michael Moreno, Charles Long, Sarah White, Larry Suva, Dana Gaddy. Muscle Weakness and Fiber Type Redistribution May Explain the Diminished Mobility and Compromised Kinematics in Hypophosphatasia. JOURNAL OF BONE AND MINERAL RESEARCH, Volume 37, 2022.
5. Michaela R Pfau, Felipe O Beltran, Lindsay N Woodard, Lauren K Dobson, Shelby B Gasson, **Andrew B Robbins**, Zachary T Lawson*, W Brian Saunders, Michael R Moreno, Melissa A Grunlan. Evaluation of a self-fitting, shape memory polymer scaffold in a rabbit calvarial defect model. Acta Biomaterialia, Volume 136, 2021, Pages 233-242, ISSN 1742-7061, https://doi.org/10.1016/j.actbio.2021.09.041.
6. Fernandez-Moure, J. S., Van Eps, J. L., Scherba, J. C., Yazdi, I. K., **Robbins, A.**, Cabrera, F., Vatsaas, C., Moreno, M., Weiner, B. K., & Tasciotti, E. (2021). Platelet-rich plasma enhances mechanical strength of strattice in rat model of ventral hernia repair. Journal of Tissue Engineering and Regenerative Medicine, 15(7), 634– 647. https://doi.org/10.1002/term.3200
7. Kyle R. Sochacki, Robert A. Jack II, Zachary T. Lawson*, David Dong, **Andrew B. Robbins**, Michael R. Moreno, Patrick McCulloch. Double Tension Slide Technique as a Novel Repair for Distal Biceps Tendon Tear: A Biomechanical Evaluation. Cureus 13(3): 2021. https://doi.org/10.7759/cureus.13895
8. Mingliang Jiang, Raghuveer Lalitha Sridhar*, **Andrew B. Robbins**, Alan D. Freed, Michael R. Moreno. A versatile biaxial testing platform for soft tissues. Journal of the Mechanical Behavior of Biomedical Materials. Volume 114. 2021. 104144, ISSN 1751-6161. https://doi.org/10.1016/j.jmbbm.2020.104144.
9. Zachary T. Lawson*, Jiwan Han*, W. Brian Saunders, Melissa A. Grunlan, Michael R. Moreno, **Andrew B. Robbins**. Methodology for performing biomechanical push-out tests for evaluating the osseointegration of calvarial defect repair in small animal models. MethodsX. Volume 8, 2021. 101541, ISSN 2215-0161. https://doi.org/10.1016/j.mex.2021.101541.
10. Joseph S Fernandez-Moure, Jeffrey L Van Eps, Jacob C Scherba, Iman K Yazdi, **Andrew B. Robbins**, Fernando Cabrera, Cory J Vatsaas, Michael Moreno, Bradley K Weiner, Ennio Tasciotti. Addition of platelet-rich plasma supports immune modulation and improved mechanical integrity in Alloderm mesh for ventral hernia repair in a rat model. Journal of Tissue Engineering and Regenerative Medicine. 2020
11. Kyle R. Sochacki, Zachary T. Lawson*, Robert A. Jack, David Dong, **Andrew B. Robbins**, Michael R. Moreno, Patrick C. McCulloch, "Distal Biceps Tendon Repair Using a Double Tension Slide Technique" Arthroscopy Techniques, 2020. http://www.sciencedirect.com/science/article/pii/S2212628720300293
12. Mingliang Jiang, Veysel Erel, Zachary T. Lawson*, Sophie Pervere*, Tianyi Nan, **Andrew B. Robbins**, Alan D. Freed, Michael R. Moreno, "Clamping Soft Biologic Tissues for Mechanical Testing: A Brief Survey of Current Methods and Development of a Novel Clamping Mechanism", Journal of Mechanical Behavior of Biomedical Materials, Vol. 103, March 2020
13. **Andrew B. Robbins**, Aland D. Freed, Michael R. Moreno, "Characterizing the Non-Linear Mechanical Behavior of Native and Biomimetic Engineered Tissues in 1D with Physically Meaningful Parameters." Journal of Mechanical Behavior of Biomedical Materials, Vol. 102, Feb. 2020 https://doi.org/10.1016/j.jmbbm.2019.103509
14. Ingram SN*, **Robbins AB**, Gillenwater SJ, Gresham V, Sacchettini JC, Moreno MR. A low-cost, novel endoscopic repeated-access port for small animal research. MethodsX. 2020;7:101049. doi:

10.1016/j.mex.2020.101049. eCollection 2020. PubMed PMID: 32944515; PubMed Central PMCID: PMC7481560.

15. Domenica Annette Delgado; Bradley S Lambert; Nickolas Boutris; Patrick C McCulloch; **Andrew B Robbins**; Michael R. Moreno; Joshua D Harris, "Validation of Digital VAS Pain Scoring with Traditional Paper-Based VAS Pain Scale in Adults", Journal of the American Academy of Orthopaedic Surgeons, 2(3):e088 March 2018. doi: 10.5435/JAAOSGlobal-D-17-00088
16. Kishan A.P., **Robbins* A.B., Mohiuddin** S.F., Jiang* M., Moreno M.R., Cosgriff-Hernandez E., "Fabrication of macromolecular gradients in aligned fiber scaffolds using a combination of in-line blending and air-gap electrospinning", Acta Biomateriala. Acta Biomateriala. 1;56:118-128, July 2017
17. doi: 10.1016/j.actbio.2016.12.041
18. Minardi S., Taraballi F., Wang X., Cabrera F.J., Van Eps J.L., **Robbins A.B.,** Sandri M., Moreno M.R., Weiner B.K., Tasciotti E., "Biomimetic collagen/elastin meshes for ventral hernia repair in a rat model", Acta Biomateriala. 1;50:165-177, March 2017 doi: 10.1016/j.actbio.2016.11.032

Journal Publications Under Review

1. Aaron Henry**, Jordan Ankersen*, Joshua Bertels, Dana Gaddy, Larry Suva, Michael Moreno, **Andrew B. Robbins**. Motion Capture Data Collection for Ovines and Other Quadrupeds. Journal of Biomechanics. **UNDER REVIEW**

Peer-reviewed Abstracts and Conference Proceedings

1. Aaron Henry**, Gordon Goodchild, Jon Greenwald, Morteza Meftah, Michael R. Moreno, **Andrew B. Robbins.** Experimental Validation of a Computational Knee Model of TKR Implant Placement. Design of Medical Devices Conference. Minneapolis, MN April 2023. (Podium and published abstract)
2. Aaron Henry**, Gordon Goodchild, Jon Greenwald, Morteza Meftah, Michael R. Moreno, **Andrew B. Robbins**. Experimental Validation of a Computational Knee Model of TKA Implant Placement. Orthopedic Research Society Conference. Dallas, TX February 2023. (Poster and abstract)
3. Singh, MM*; Lawson, ZT*; Labbe, KA; Watts, AE; **Robbins, AB**; "Development of Methodology for Biomechanical Evaluation of a Novel Equine Hock Arthrodesis Technique". Orthopedic Research Society Conference. Dallas, TX February 2023. (Poster and abstract)
4. Raghuveer Lalitha Sridhar*., Mingliang Jiang, **Andrew B. Robbins**, Alan D. Freed, Michael R. Moreno. "Novel apparatus for performing simple shear deformations on soft membranes". Summer Biomechanics, Bioengineering, and Biotransport Conference (2020). Virtual.
5. Libby X. Fears*, Zachary T. Lawson*, **Andrew B. Robbins**, Connor J. Demott, Melissa A. Grunlan, Michael R. Moreno. "Mechanical Characterization of Creep Compliance Response In Dual Network Hydrogels For Articular Cartilage Repair In Osteochondral Defects". Summer Biomechanics, Bioengineering, and Biotransport Conference (2020). Virtual.
6. Lise Ochej, **Andrew B. Robbins**, Joe N. Kornegay, Michael R. Moreno, "Characterization of Golden Retriever Muscular Dystrophy Biomechanics with Motion Capture During a 6-Month Longitudinal Study", Annual Meeting of the Orthopedic Research Society, Austin, TX, February 2019
7. **Andrew B. Robbins** and M. R. Moreno, "A comparison of material models for mechanical analysis of tissue engineered grafts and scaffolds: The descriptive-mathematical vs. physical-synthetic approach", 8th World Congress of Biomechanics, Dublin, Ireland, Oxford Abstracts, P4332, July 8-12, 2018
8. L. Ochej, **A. B. Robbins**, J. Kornegay, M. R. Moreno, "Development of a non-invasive motion-capture based method for the characterization of the evolution of GRMD", 8th World Congress of Biomechanics, Dublin, Ireland, Oxford Abstracts, P2640, July 8-12, 2018
9. Kishan, A., **Robbins, A.,** Moreno M., Cosgriff-Hernandez, E. Aligned Electrospun Grafts with Gradient Properties for Interfacial Tissue Engineering. Tissue Engineering Part A, Volume 22, Issue S1, pp. S100-S101, 2016

10. R. Upadhya, D. Upadhya, B. Hattiangady, **A. Robbins**, M. Kodali, B. Shuai, A. Bates, M. Moreno, A. K. Shetty, "Early curcumin treatment after exposure to blast shock waves prevents longterm cognitive and memory impairments and maintains higher levels of hippocampal neurogenesis", Society for Neuroscience 47th Annual Meeting, Poster Session, Washington D.C., Nov. 11-15, 2017
11. Mishra, Vikas, Hattiangady, Bharathi, B, **Robbins, A**, Shuai, B, Moreno, M, Prockop, D, Shetty, A., "Mild Traumatic Brain Injury Induced Through an Exposure to Blast Shock Waves Causes Lasting Hippocampus-Dependent and Hippocampus-Independent Memory Dysfunction and Depression", Cell Transplantation, 23, 778-778, 2014 doi:10.1115/SBC2007-176143

Invited Talks and Papers (Not Peer Reviewed)

1. A. B. Robbins. Facility strategies for the productive collision of engineering and health sciences. University Facilities for the Sciences & Advanced Technologies. Tradeline Publications. Boston, April 4th, 2022.
2. A. B. Robbins. Creating a Home for a New Blended Engineering and Medicine Program: *Texas A&M Designs a Building to Nurture a Culture of Medical and Technological Innovation*. University Facilities for the Sciences & Advanced Technologies. Tradeline Publications. Phoenix AZ, 2021.

Other Abstracts, Presentations, and Publications

1. Gupta, P.*, Hakam, S.*, Panzo, N.*, Nisar, A.*, Memon, M.*, **Robbins, A.B.,** Developing a Simple, Programmable, Wearable Display: Vital Sign Tracking and Piloerection Stimulation in Dangerous Fields. Biomedical Engineering Society Conference. Seattle Wa., October 2023. (Poster)
2. Mendoza, Z.*, Look Fong, B.A.*, Hakam, S.*, **Robbins, B.A.,** Integration of Tumor Curette onto The Digit as a Means of Resection with Minimized Tissue Damage. Biomedical Engineering Society Conference. Seattle Wa., October 2023. (Poster)
3. Ramos, A., Alias, B., Lannon, C., Collins, C., Robbins, A.B., Shoulder Sling with Integrated Compliance System for Post-Operative Monitoring. Biomedical Engineering Society Conference. Seattle Wa., October 2023. (Poster)
4. R. Loving, W. Singer, J. Ankersen, A. B. Robbins, P. McCulloch. Intraoperative Camera Mount: The Future of Surgical Education. 2023 Surgeons and Engineers Conference. Chicago. 2023 (Podium)
5. Aaron Henry**, Gordon Goodchild, Jon Greenwald, Morteza Meftah, Michael R. Moreno, **Andrew B. Robbins**. Experimental Validation of a Computational Knee Model of TKR Implant Placement. EFFORT conference. Vienna, Austria May 2023. (Podium)
6. Lawson ZT*, Saunders WB, **Robbins AB**, Moreno MR. Quasi-Static Biomechanical Evaluation of Cutting Efficiency in Canine Cementless Total Hip Replacement Broaches. Biomedical Engineering Society Conference. San Antonio, TX. October 2022. (Poster)
7. Bates RM*, Lawson ZT*, Saunders WB, **Robbins AB**, Moreno MR. Development of Drop Tower Impact Testing Apparatus to Evaluate Novel THA Femoral Broaches. Biomedical Engineering Society Conference. San Antonio, TX. October 2022. (Oral)
8. White K*, Lawson ZT*, **Robbins AB**, Moreno MR. Biomechanical Evaluation of a Novel Collagen Based Ligament Repair Technique in an Ovine Model. Biomedical Engineering Society Conference. San Antonio, TX. October 2022. (Poster)
9. Aaron Henry**, Jordan Ankersen*, Joshua Bertels, Dana Gaddy, Larry Suva, Michael Moreno, **Andrew B. Robbins**. Full-body Motion Capture Protocol for Ovines and Other Quadrupeds. North American Congress on Biomechanics. Ottawa, Canada. August 2022. (Poster)
10. Aaron Henry**, Jordan Ankersen*, Joshua Bertels, Dana Gaddy, Larry Suva, Michael Moreno, **Andrew B. Robbins**. Kinetic Analysis of an Ovine Model of Hypophosphatasia Biomedical Engineering Society Conference. San Antonio, TX. October 2022. (Poster)

11. Anish Easwaran*, Aaron Henry**, Jordan P. Ankersen*, **Andrew B. Robbins**. Assessment of Surgical Radar Tracking Accuracy Across Different Material Encasings Biomedical Engineering Society Conference. San Antonio, TX. October 2022. (Poster)
12. Shannon N. Ingram*, Zachary T. Lawson*, Lise Ochej, **Andrew B. Robbins**, Cristin J. Mathew, David Dong, Patrick C. McCulloch, Joshua D. Harris, Michael R. Moreno, "Influence of Femoroacetabular Impingement on Pelvic Deformation", Annual Meeting of the Orthopedic Research Society, Austin, TX, February 2019
13. Brandon A. Keys, Hunter S. Storaci, Jordan Ankersen*, Lise Ochej, **Andrew B. Robbins**, Michael R. Moreno, "Analysis of the Development of Quarterback Throwing Mechanics", Annual Meeting of the Orthopedic Research Society, Austin, TX, February 2019
14. Lise Ochej, Raghuveer Lalitha Sridhar*, Brandon A. Keys, Bradley S. Lambert, Stephanie S. Gardner, Shari R. Liberman, David Dong, Joshua D. Harris, **Andrew B. Robbins**, Michael R. Moreno, "Development of an Instrumented Ergometer for Analysis of Hip Mechanics in Competitive Rowers to Determine at Risk Motions", Annual Meeting of the Orthopedic Research Society, Austin, TX, February 2019
15. Raghuveer Lalitha Sridhar*, Zachary T. Lawson*, **Andrew B. Robbins**, Matthrew L. Becker, Ennio Tasciotti, Michael R. Moreno, "Fracture Development in a Biodegradable Cylindrical Bone Fixation Device After Short Term Degradation", Annual Meeting of the Orthopedic Research Society, Austin, TX, February 2019
16. Zachary T. Lawson*, Shannon N. Ingram*, **Andrew B. Robbins**, Cristin J. Mathew, David Dong, Patrick C. McCulloch, Joshua D. Harris, Michael R. Moreno, "Biomechanical Evaluation of Joint Stability in Repaired Hip Capsulotomy", Annual Meeting of the Orthopedic Research Society, Austin, TX, February 2019
17. Zachary T. Lawson*, Kyle R. Sochacki, Robert A. Jack II, David Dong, Patrick C. McCulloch, **Andrew B. Robbins**, Michael R. Moreno, "Double Tension Slide Technique as a Novel Repair of Distal Biceps Tendon Rupture: A Biomechanical Evaluation", Annual Meeting of the Orthopedic Research Society, Austin, TX, February 2019
18. Shannon N. Ingram*, Grady Burnett*, Joshua Van Cura*, David Tighe*, **Andrew B. Robbins**, Michael R. Moreno. "MR Elastography as Technique for Investigation of Blast Induced Traumatic Brain Injury", Poster Presentation, Summer Biomechanics, Bioengineering, and Biotransport Conference (SB^3C), June 2017.
19. **Andrew B. Robbins,** Hunter W. Storaci, Michael R. Moreno, Anastasia Muliana, "Non-linear Viscoelastic Responses of PLGA Fibers Under Physiologic Loading Conditions", Poster Presentation, Summer Biomechanics, Bioengineering, and Biotransport Conference (SB^3C), June 2017.
20. Domenica Delgado, Joshua D. Harris, Bradley S. Lambert, **Andrew Robbins**, Nick Boutris, Michael R. Moreno, Patrick C. McCulloch, "Validation of Digital Visual Analog Scale (VAS) Pain Scoring with Traditional Paper Based Visual Analog Scale Pain Scale in Adults", Podium Presentation at Mid-America Orthopedic Association Conference, April 2017
21. Domenica Delgado, Joshua D. Harris, Bradley S. Lambert, **Andrew Robbins**, Nick Boutris, Michael R. Moreno, Patrick C. McCulloch, "Validation of Digital Visual Analog Scale (VAS) Pain Scoring with Traditional Paper Based Visual Analog Scale Pain Scale in Adults", Poster Presentation, Annual Meeting of the Orthopedic research Society, San Diego, CA, March 2017
22. Cosgriff-Hernandez E, Kishan A, **Robbins AR**, Jiang M, Erel V, Moreno MR, *"Multivariate Scaffold Designs that Mimic the Complexity of Tissue Interfaces",* Biomedical Engineering Society Annual Meeting, October 22-25, 2016,
23. Hunter W. Storaci, **Andrew B. Robbins**, Michael R. Moreno, "Building a Better Quarterback: Using Biomechanics to Improve Throwing Mechanics", Summer Biomechanics, Bioengineering, & Biotransport Conference, National Harbor, Maryland, Poster Session, June 29-July 2, 2016
24. **Andrew B. Robbins**, Silvia Minardi, Ennio Tasciotti, Alan D. Freed, Michael R. Moreno, "Application of a Novel Biomechanical Fiber Model to Tissue Engineering for Improved Clinical Outcomes", Summer Biomechanics, Bioengineering, & Biotransport Conference, National Harbor, Maryland, Podium Session, June 29-July 2, 2016
25. **Robbins AB**, Anumolu P, Van Loon R, Moreno MR, "*Determination of Empirical Relations Between Shock Tube Geometry and Pressure Profiles",* Biomedical Engineering Society Annual Meeting, October 22-25, 2015.
26. **Robbins, A.**, Shetty, A., Moreno, M, "Design of a Novel Shock Tube System for Blast Induced Traumatic

Brain Injury", Summer Biomechanics, Bioengineering & Biotransport Conference, Snowbird, Utah, Poster Session, June 17-20, 2015

27. **Robbins, A**., Anumolu, P., Van Loon, R., Moreno, M., "Determination of Empirical Relations Between Shock Tube Geometry and Pressure Profiles", 2014 Biomedical Engineering Society Annual Meeting, Poster Session, October 22-25

Departmental, College, and University Service

1. EnMed Student Performance Committee, Member, 2024
2. Acting Director of Admissions, School of Engineering Medicine, Texas A&M University, 2020 – 2024
3. Acting Director of the E2EnMed Early Assurance Program 2020 - 2024
4. EnMed Applicant Evaluation Committee, Chair, 2022 - 2024
5. EnMed Engineering Syllabi ad hoc committee, Chair, 2024
6. Acting Director of the EnMed Innovation Center, 2020 - 2024
7. Associate Dean of Admissions Search Committee Member, School of Medicine, Texas A&M University, 2023 - 2024
8. Interviewer, School of Medicine, Texas A&M University, 2019 – 2024
9. Interviewer, School of Engineering Medicine, Texas A&M University, 2021 – 2024
10. Associate Dean of Admissions Search Committee Member, School of Medicine, Texas A&M University, 2022
11. Engineering Faculty Search Committee Member, School of Engineering Medicine, Texas A&M University, 2022
12. EnMed Curriculum Subcommittee, School of Engineering Medicine, Texas A&M University, 2021-2022

Professional Service

1. Reviewer for National Science Foundation
2. Reviewer for the Journal of Biomechanics

Professional Associations

1. Orthopedic Research Society (ORS) December 2018 – **Present**
2. American Society of Mechanical Engineers (ASME) April 2017 – **Present**
3. Biomedical Engineering Society (BMES) January 2014 – January 2018, February 2023 – **Present**
4. Society for Physician Entrepreneurs (SoPE) January 2023 – 2024
5. American Society of Testing and Measurement (ASTM)

Courses Taught

1. Experimental Measurements and Techniques (MENG 3210), University of Texas at Tyler
   Fall 2024
2. Intro to Medical Innovation (ITDE 489), Texas A&M Multidisciplinary Engineering, E2EnMed Program
   Spring 2023, 2024
3. Introduction to Engineering Innovation in Medicine, (variously: ENGR 689, ITDE 689, ITDE 610), Texas A&M University, *EnMed Program,*
   Summer 2017, 2018, 2019, 2020, 2021, 2022, 2023
4. Engineering Foundations in Medicine II (ENGR689, ITDE 612) Texas A&M University, *EnMed Program*,
   Spring 2020, 2021, 2023, 2024
5. Engineering Foundations in Medicine III (ENGR689, ITDE 613) Texas A&M University, *EnMed Program*,

Fall 2020, 2021, 2022, 2023

6. Innovation Immersion Engineering Design I (ITDE 640) Texas A&M University, *EnMed Program*,
   Spring 2021, 2022, 2023, 2024
7. Innovation Immersion Engineering Design II (ITDE 641) Texas A&M University, *EnMed Program*,
   Spring 2020, 2021, 2022, 2023, 2024
   Fall 2020, 2021, 2022, 2023
8. Innovation Immersion Engineering Design III (ITDE 642) Texas A&M University, *EnMed Program*,
   Spring 2021, 2022, 2023, 2024
   Fall 2020, 2021, 2022, 2023
9. Engineering Foundations in Medicine I (ENGR 689, ITDE 611) Texas A&M University, *EnMed Program*,
   Fall 2019, 2020, 2021, 2022
10. Mechanical Engineering Studio (MEEN 404), Texas A&M University, Mechanical Engineering
    Fall 2018, Spring 2020
11. Mechanical Measurements (MEEN 260), Texas A&M University, Mechanical Engineering
    Spring 2019, Fall 2019
12. Engineering Innovation Areas, (ENGR 689), Texas A&M University, *EnMed Program*,
    Fall 2018, 2019
13. Orthopedic Biomechanics (BMEN 457/657), Texas A&M University, Biomedical Engineering
    Spring 2018

Graduate Students Advised

Sohrab Mirzaabedini	(Chair, PhD Interdisciplinary Engineering)	Fall 2023 – Fall 2024
Aaron Henry	(Chair, PhD Interdisciplinary Engineering)	Spring 2021 – Present
Noah Giese	(Chair, MEng Interdisciplinary Engineering)	Summer 2018 – Spring 2023
Lameese Elnihum	(Chair, MEng Interdisciplinary Engineering)	Summer 2017 – Spring 2022
Shannon Ingram	(Member, PhD Biomedical Engineering)	Fall 2018 – Fall 2023
Jordan Ankersen	(Member, PhD Biomedical Engineering)	Fall 2018 – Fall 2023
Jiwan Han	(Member, MS Mechanical Engineering)	Fall 2018 – Spring 2022
Raghuveer Sridhar	(Member, PhD Mechanical Engineering)	Spring 2019 – Spring 2022

Undergraduate Researchers Supervised

Through the Biomechanical Environments Laboratories Undergraduate Research Program, Dr. Robbins has supervised several dozen undergraduate researchers since his faculty appointment in 2018. This program provides mentorship to students beyond research, and prepares them for careers in industry as well as to attend graduate school. His students gone on to attend top tier graduate programs at MIT, Stanford, Carnegie Mellon, Georgia Tech, Rice, Texas A&M, Texas Tech, and Oregon State and have industry positions in medical device companies (Medtronic, Stryker, CardioQuip, Biosense Webster, 4Web, Shockwave Medical, OsteoRemedies, and Confluent Medical Technologies), aerospace and defense contractors (Honeywell, Dynetics, and NASA), and others (Caterpillar, GM, Rugged Robotics). Dr. Robbins' students have successfully competed for graduate fellowships, including the NSFGRFP, the GEM fellowship, and others.

Kaitlyn White (BS Mechanical Engineering, Texas A&M University) Fall 2021 – Spring 2022
Currently: **Co-Op at Ethicon**

John Waterworth (BS Mechanical Engineering, Texas A&M University) Spring 2021 – Fall 2021
Currently: **MEng Student at MIT** (Advanced manufacturing and Design)

Alfredo Flores (BS Mechanical Engineering, Texas A&M University) Spring 2021
Currently: **Product Engineer at Honeywell**
Jeevan Zachariah (BS Mechanical Engineering, Texas A&M University) Fall 2020 – Spring 2021
Currently: **MEng Student at Texas A&M University** (Mechanical Engineering)
Pranav Veerubhotla (BS Mechanical Engineering, Texas A&M University) Fall 2020
Currently: **EV Battery Engineer at GM**
Mason Sheffield (BS Biomedical Engineering, Texas A&M University) Spring 2020 – Fall 2020
Currently: **Clinical Specialist at Abbott**
Raniyah Nathani (BS Biomedical Engineering, Texas A&M University) Spring 2020
Currently: **MBE Student at Rice**
Qiji Lian (BS Mechanical Engineering, Texas A&M University) Spring 2020
Currently: **MS Student at Stanfor**d (Mechanical and Biomedical Engineering)
Jessica Ezemba (BS Mechanical Engineering, Texas A&M University) Fall 2019 – Fall 2020
Currently: **MS Student at Carnegie Mellon** (Mechanical Engineering)
Joseph Mahmoud (BS Mechanical Engineering, Texas A&M University) Fall 2019 – Spring 2020
Currently: **Mechanical Specialist** at S&B Engineers and Constructors
Yan Yao (BS Mechanical Engineering, Texas A&M University) Fall 2019
Currently: **Robotic Operations Engineer at Rugged Robotics**
Hunter Harris (BS Mechanical Engineering, Texas A&M University) Fall 2019
Currently: **Mechanical Engineer at Honeywell**
George Toledo (BS Mechanical Engineering, Texas A&M University) Fall 2019
Currently: **Project Engineer at Stryker**
Kelsey Tara (BS Mechanical Engineering, Texas A&M University) Fall 2019 – Fall 2021
Formerly: **MS Student at Stanford** (Biomedical Engineering)
Currently: **Research and Development Engineer at Shockwave Medical**
Ally Johnson (BS Mechanical Engineering, Texas A&M University) Fall 2019
Currently: **Associate Engineer at Caterpillar Inc.**
Elizabeth Salcedo (BS Mechanical Engineering, Texas A&M University) Fall 2019
Currently: **Software Test Engineer at Medtronic**
Sophie Pervere (BS Mechanical Engineering, Texas A&M University) Spring 2019 – Spring 2020
Currently: **R&D Engineer at Medtronic**
Mark Garwood (BS Mechanical Engineering, Texas A&M University) Spring 2019 – Spring 2020
Currently: **Test Engineer at Medtronic**
Audrey Sheppard (BS Biomedical Engineering, Texas A&M University) Spring 2019 – Spring 2021
Formerly: **Meng Student at Texas A&M** (Biomedical Engineering)
Currently: **Project Engineer at CardioQuip**
Preston Knowles (BS Biomedical Engineering, Texas A&M University) Spring 2019
Currently: **Clinical Account Specialist at Biosense Webster**
Sarah Kusumo (BS Biomedical Engineering, Texas A&M University) Spring 2019
Currently: **R&D Engineer at Medtronic**
Samuel Blair (BS Biomedical Engineering, Texas A&M University) Fall 2018
Currently: **PhD Student at Texas A&M (Mechanical Engineering)**
Anna Mendiola (BS Biomedical Engineering, Texas A&M University) Fall 2018
Formerly: **MS Student at Texas Tech** (Systems and Engineering Management)
Currently: **Biomedical Flight Controller at NASA**
Cynthia Co (BS Biomedical Engineering, Texas A&M University) Fall 2018 – Spring 2019
Currently: **NIH T32 Research Fellow** at University of Texas at Arlington
Eric Matthews (BS Biomedical Engineering, Texas A&M University) Fall 2018
Currently: **R&D Engineer at OsteoRemedies**

Reid Christopher (BS Mechanical Engineering, Texas A&M University) Fall 2018 – Spring 2019
Formerly: **MS Student Oregon State University (Robotics)**
Currently: **Robotics Engineer at Southwest Research Institute**
Christopher Bogaev (BS Mechanical Engineering, Texas A&M University) Fall 2018 – Spring 2019
Formerly: **MS Student at Georgia Tech** (Mechanical Engineering)
Currently: **Propulsion Engineer at Dynetics Space**
Darby Ballard (BS Biomedical Engineering, Texas A&M University) Su. 2018 – Spring 2020
Currently: **PhD Student at Texas A&M Health Science Center**
Formerly: **Manufacturing Engineer at Fujifilm**
Erica Huebner (BS Biomedical Engineering, Texas A&M University) Su. 2018 – Spring 2020
Formerly: **Meng Student at Texas A&M** (Biomedical Engineering)
Currently: **Project Manager at 4Web Medical**
Cassandra Cantu (BS Biomedical Engineering, Texas A&M University) Spring 2018 – Fall 2018
Formerly: **MS Student at Texas A&M University** (Biomedical Engineering)
Currently: **Quality Engineer at Ethicon**
Georgiana Metz (BS Biomedical Engineering, Texas A&M University) Fall 2017 – Spring 2019
Formerly: **Meng Student at Texas A&M** (Biomedical Engineering)
Currently: **Process Development Engineer at Confluent Medical Technologies**
Madeline Franke (BS Biomedical Engineering, Texas A&M University) Fall 2017 – Spring 2019
Currently: **Engineering Medicine Student at Texas A&M University**
Mu'ath Adlouni (BS Biomedical Engineering, Texas A&M University) Fall 2018 – Fall 2019
Currently: **Engineering Medicine Student at Texas A&M University**

Current students and those with unknown job status

Gabrielle Miller (BS Biomedical Engineering, Texas A&M University) Fall 2024 – **Present**
Future: **Engineering Medicine Student**
Annabelle Helin (BS Biomedical Engineering, Texas A&M University) Spring 2024 – **Present**
Future: **Engineering Medicine Student**
Likhitha Veerapali (BS Biomedical Engineering, Texas A&M University) Fall 2023 – **Present**
Future: **Engineering Medicine Student**
Carson Benner (BS Mechanical Engineering, Texas A&M University) Fall 2023 – **Present**
Future: **Engineering Medicine Student**
Jenna Carr (BS Biomedical Engineering, Texas A&M University) Fall 2022 – **Present**
Future: **Engineering Medicine Student**
Bailee CoVan (BS Biomedical Engineering, Texas A&M University) Fall 2022 – **Present**
Future: **Engineering Medicine Student**
Mandalyn Castleberry (BS Mechanical Engineering, Texas A&M University) Fall 2022 – **Present**
Anish Easwaran (BS Biomedical Engineering, Texas A&M University) Fall 2021 – **Present**
Future: **Engineering Medicine Student**
Doye Baker (BS Mechanical Engineering, Texas A&M University) Spring 2022 – Spring 2023
Andra Thurtell (BS Biomedical Engineering, Texas A&M University) Fall 2021
Phong Tran (BS Biomedical Engineering, Texas A&M University) Su. 2021 – Fall 2021
Logan Morris (BS Mechanical Engineering, Texas A&M University) Spring 2021 – Spring 2022
Michael Singh (BS Biomedical Engineering, Texas A&M University) Fall 2020 – Spring 2023
Future: **Engineering Medicine Student**
Timothy Grant (BS Mechanical Engineering, Texas A&M University) Spring 2020
Andrew Su (BS Mechanical Engineering, Texas A&M University) Fall 2019 – Fall 2020
Joel Grant (BS Mechanical Engineering, Texas A&M University) Fall 2019

Alexander Henze	(BS Mechanical Engineering, Texas A&M University) Spring 2019
Joseph Guerra	(BS Biomedical Engineering, Texas A&M University) Fall 2018 – Fall 2020
Farida Ellasar	(BS Biomedical Engineering, Texas A&M University) Fall 2018

Research

Funded Proposals

1. (Co-I) Ex Vivo Evaluation of a Novel Staple and Bone-Screw-Fastener Implant as a Method of Distal Tarsal Arthrodesis
   Vet. Orthopedic Society, Spring 2024
   $12,000

2. (PI) Validation of Accelerometer-based Gait Analysis in Healthy Human Subjects
   Industry Sponsored, Stridelink Inc., Fall 2023
   $31,685

3. (PI) Validation of Accelerometer-based Gait Analysis in Healthy Human Subjects
   Industry Sponsored, Stridelink Inc., Fall 2022
   $18,760

4. (CO-I) Sheep MCL Study (Evaluation of a Novel MCL Repair)
   DoD SBIR Subaward from Embody Inc., Fall 2021
   $137,009

5. (CO-PI) Development of a Novel Surgical Navigation System for Total Knee Replacement
   Subaward on NSF STTR, Spring 2021
   $84,243

6. (CO-PI) A GMP/GLP Investigation of Degradable Polymeric Shells for Traumatic Osteoregeneration
   Subaward on DoD MRMC award, Fall 2017
   $741,138

Work funded through the Biomechanical Services Cost Center (not through sponsored research projects)

1. (PI) Evaluation of a Novel Bone Screw Fastener for use in Equine Bone
   Contract work for TAMU School of Veterinary Medicine
   ~$15,000 (Ongoing)

2. (PI) Evaluation of Equine Arthrodesis Techniques
   Contract work for TAMU School of Veterinary Medicine
   ~$8,000 (Completed)

3. (PI) Material characterization for a novel vascular access device
   Contract work for Venostent Inc.
   ~$10,000 (ongoing)

Under Review Proposals

1. (CO-PI) NIH SBIR Phase II: Development of a Novel Surgical Navigation System for Total Knee Replacement,
   NIH SBIR Direct to Phase II Subaward from Caira Surgical, Fall 2023

$488,250

2. (CO-PI) NIH SBIR Phase II: Development of a Novel Surgical Navigation System for Total Knee Replacement,
   NIH SBIR Direct to Phase II Subaward from Caira Surgical, Spring 2024
   $516,417

Proposals Submitted but Not Funded

1. (CO-PI) Development of a Novel Surgical Navigation System for Total Knee Replacement (Funded on Resubmission)
   Fall 2020, STTR Phase I
   $84,243

2. (CO-I) Synthetic Cartilage-Capped, Regenerative Osteochondral Plugs to Heal Osteochondral Defects,
   Fall 2021, NIH R01
   $2,714,170

3. (CO-I) Endothelial Cell Adaptations to Relative Spatial Angle between Fluid Shear Stress and Cyclic Strain,
   Spring 2021, NIH R21,
   $551,895

4. (CO-I) Anisotropy through geometry: A new modeling paradigm for trabecular bone and an RVE for rapid computational studies,
   NIH R03,
   $148,500

5. (PI) SBIR Phase I: Clinician-assisted Orthotic for Manipulating Postural Alignment with Rehabilitative Exercises,
   NIH SBIR Phase I Subaward, Spring 2021
   $82,016

6. (PI) SBIR Phase I: Clinician-assisted Orthotic for Manipulating Postural Alignment with Rehabilitative Exercises
   NIH SBIR Phase I Subaward from Lynntech Spring 2022
   $14,972

7. (CO-I) Synthetic Cartilage-Capped, Regenerative Osteochondral Plugs to Heal Osteochondral Defects
   NIH R01, Summer 2022
   $3,535,468 (~$150,000 for my lab)

8. (CO-PI) STTR Phase II: Development of a Novel Surgical Navigation System for Total Knee Replacement,
   NSF STTR Subaward from Caira Surgical, Summer 2022
   $236,187

Active Research Projects and Collaborations

1. Validation of Accelerometer-based Gait Analysis in Healthy Human Subjects. StrideLink, Inc.
2. Development of a compliance measuring sling for post surgical use. In collaboration with Dr. Patrick McCulloch, Houston Methodist Hospital

3. Biomechanical evaluation of atl-atl bone projectile point impacts on bone in ancient human hunting: The Manis Mastodon. In collaboration with Dr. Mike Waters, Department of Anthropology
4. Evaluation of Broaching Tools for Canine Hip Replacement. In Collaboration with Dr. Brian Saunders, School of Veterinary Medicine
5. Development of a novel surgical tool for ensuring inflow and outflow graft cannula angles in LVAD's
6. Evaluation of performance of orthopedic devices and surgical techniques for Equine arthrodesis. In Collaboration with Dr. Kati Glass, School of Veterinary Medicine
7. Material characterization for a novel vascular access device. In collaboration with Venostent Inc.

Consulting

Legal Consulting; Medical Device Litigation, Law Offices of Frank L. Branson, P.C., 2021

Entrepreneurial Ventures

SurgiSim, LLC, 2023 - Present
Biomechanics Innovation Group, LLC, 2015 – present
http://Biomechanicalenvironments.com/big

This CV is current and correct to the best of my knowledge.

Signed: Andrew B. Robbins, September 1, 2024