Laurel Kuxhaus

Biomedical Engineer | Medical Device Designer | Scientific Administrator | Educator

EDUCATION

Ph.D., Bioengineering (2008)
University of Pittsburgh, Pittsburgh, PA

M.S., Mechanical Engineering (2003)
Cornell University, Ithaca, NY

B.S., Engineering Mechanics (2001) *with Honors*
B.A., Music (2001) *with Honors*
Michigan State University, East Lansing, MI

ACADEMIC, RESEARCH AND TECHNOLOGY POSITIONS

October 2017 – June 2024 **Chief Technology Officer**
Adaptable Ortho Innovations, LLC. Potsdam, NY

July 2023 – June 2024 **Professor, Mechanical and Aerospace Engineering**
July 2023 – June 2024 **Professor, Institute for STEM Education** (courtesy)
October 2017 – July 2023 **Associate Professor, Institute for STEM Education** (courtesy)
May 2016 – July 2023 **Associate Professor, Mechanical and Aerospace Engineering**
July 2009 – May 2016 **Assistant Professor, Mechanical and Aerospace Engineering**
Clarkson University, Potsdam, NY

November 2009 – 2010 **Researcher** (Without compensation)
VA Hospital, Syracuse, NY

May 2008 – June 2009 **Postdoctoral Researcher, Orthopaedic Biomechanics (2008-2009)**
Allegheny General Hospital, Pittsburgh, PA

SCIENCE & TECHNOLOGY POLICY POSITIONS

As a science and technology policy expert, Dr. Kuxhaus has served in both the Legislative and Executive Branch of the United States Government.

June 2024 – March 2025 **Health Sciences Administrator (Program Officer), Bridge2AI Program**
National Institutes of Health, Rockville MD
Office of Strategic Coordination
Office of the Director

Key management aspects include managing a portfolio of grantees related to the Bridge2AI program, including leading a large intra-agency team, coordinating with an intra-agency Federal Working Group, and seeking input from stakeholders to envision the future of the program.

July 2019 – July 2023 **Program Director, Biomechanics & Mechanobiology**
National Science Foundation. Alexandria, VA
Division of Civil, Mechanical and Manufacturing Innovation (CMMI)
Engineering Directorate

Key management aspects include managing a basic science research portfolio spanning engineering biomechanics and mechanobiology (over $75M in total active awards), including multi-agency solicitations with the Center for Advancement of Science in Space (CASIS), the National Institutes of Health (NIH), and the US Food and Drug Administration (FDA). During her tenure, targeted outreach broadened awards to two states not previously included in the portfolio, and program leadership expanded. Key contributions included co-leading the development of CMMI's Boosting Research Ideas for Transformative and Equitable Advances in Engineering (BRITE) solicitation, and leading a broadened multiyear reissue of the Engineering Directorate's Engineering Research Initiation (ERI) solicitation, with an Interagency Agreement to secure DOE WPTO funds to support additional ERI awards.

June 2022 – January 2023 **Program Director** *(on Detail)*
National Science Foundation, Alexandria, VA
Office of the Chief Officer for Research Security Strategy and Policy
Office of the Director

Key duties included: coordinating review and award of cooperative agreements for training modules about research security; managing interagency agreements to fund cooperative agreements; and organizing a kickoff meeting of investigators and a cross-agency content expert group. Training modules developed on these awards now available at https://new.nsf.gov/research-security/training .

September 2018 – July 2019 **ASME Congressional Fellow, Office of Congressman Lipinski (IL-03)**
US House of Representatives, Washington, DC
in the AAAS Science & Technology Fellowship program

Key accomplishments included leading the introduction of the Growing Artificial Intelligence through Research Act (H.R. 2202 in the 116th Congress); drafting of Amendments to ensure postdoctoral researchers could fully benefit from the provisions of the STEM Opportunities Act, H.R.2528 in the 116th Congress (the amendments have persisted in future versions of the Bill); and drafting H.R. 3044, the Medical Device Sterilization Challenge Act of 2019. Additional policy areas included manufacturing, cybersecurity, immigration, and education.

AWARDS, HONORS, AND LICENSURE

- 2024: KEEN Scholarship to the ELATES (Executive Leadership in Academic Technology, Engineering, and Science) Program for the 2024-2025 cohort. *(declined due to change in employment.)*
- 2024: Clarkson University Phalanx Distinguished Service Award, Re-Imagining Clarkson Task Force.
- 2024: AIMBE Fellow
- 2022: NSF Director's Award for Superior Achievement (Group) – *Engineering Research Initiation working group* (Role: Group Leader).
- 2020 *Journal of Biomechanical Engineering* Editor's Choice Award (for paper: "Bridging the Gap: Science and Technology Policy in the (Bio) Engineering Classroom")
- 2018-19 ASME Congressional Fellow in Bioengineering.
- 2nd place, 2018 Orthopaedic Research Society Business Plan Competition (Adaptable Ortho Innovations).
- 2018: ASME Fellow
- 2015, 2018 Outstanding Reviewer Status, *Journal of Biomechanics*.
- 2015 US Bone and Joint Initiative Grantwriting Mentoring Program (Participant).
- 2011– 2024: NY State Department of Health Nontransplant Anatomic Bank License for human tissue use in research(#NA158)
- 2007 University of Pittsburgh Graduate and Professional Students' Association Travel Award.
- 2006 University of Pittsburgh Graduate and Professional Students' Association Travel Award.
- 2006 University of Pittsburgh School of Engineering Book Scholarship Award.
- 2006 University of Pittsburgh Provost's Development Fund Award.

- 2005 University of Pittsburgh Graduate and Professional Students' Association Travel Award.
- 2005 University of Pittsburgh IGERT Fellowship in assistive technology.
- 2004 American Society of Biomechanics Student Travel Award.
- 2004 University of Pittsburgh IGERT Fellowship in assistive technology.
- 2001 NSF Graduate Research Fellowship.
- 2001 GE Faculty of the Future Award.
- 2001 Honorable Mention, National Physical Sciences Consortium Fellowship Competition.

RESEARCH

As a researcher, Dr. Kuxhaus is an orthopaedic biomechanist with expertise in the upper extremity, bone fracture development, implantable fracture fixation devices, engineering education, and science and technology policy. The long-term research goals of the Orthopaedic Biomechanics Laboratory at Clarkson University are to characterize function of the upper extremity (including relationships to bone health), characterize osteoporotic cancellous bone fracture, and both design and bring to market implantable orthopaedic devices to improve patient outcomes while reducing costs. Her research group maintains close collaborations with other engineers, orthopaedic surgeons, physical therapists, an anatomist, and an operating room nurse. Beyond the laboratory, Dr. Kuxhaus seeks to broaden participation in STEM and science and technology policy by disseminating best practices.

PUBLICATIONS

† *INDICATES A SUPERVISED GRADUATE STUDENT AT THE TIME OF RESEARCH*
‡*INDICATES A SUPERVISED UNDERGRADUATE STUDENT AT THE TIME OF RESEARCH*
NUMBER OF TIMES CITED IS CURRENT AS OF 06 FEBRUARY 2024.

JOURNAL PAPERS:

28. Erath BD, Fite KF, **Kuxhaus L** (2024). "Catalyzing clinically-driven undergraduate design projects at the nexus of engineering, medicine, and business." *Expert View, ASME J Biomech Eng. Mar 2024, 146(5): 054701 (8 pages) https://doi.org/10.1115/1.4064717*
27. **Kuxhaus L**, Michalek AJ, Martin SM, Steinbacher JL. (2020). "Bridging the Gap: Science & Technology Policy in the (Bio)engineering Classroom" *J Biomech Eng. November 2020. 142(11): 114703 (7 pages)* doi: 10.1115/1.4047480 ***Editor's Choice Award***
    TIMES CITED: 0
26. **Kuxhaus L** and Troy KL. (2018) "Bad to the Bone: Multifaceted Enrichment of Open-Ended Biomechanics Class Projects." *J Biomech Eng.;* **140**(8):081008-081008-5. doi:10.1115/1.4040293.
    TIMES CITED: 3
25. Gale NC† (Corbiere), Zeigler SL, Towler CD, Mondal S, Issen KA, Mesfin A, Michalek AJ, **Kuxhaus L.** (2018) "Increased lumbar spinal column laxity due to low-angle, low-load cyclic flexion predisposes to acute injury" *JOR Spine. 2018;e1038. https://doi.org/10.1002/jsp2.1038*
    TIMES CITED: 3
24. Michalek AJ, **Kuxhaus L.**, Jaremczuk D‡, Zaino NL‡ (2018) "Proteoglycans contribute to local swelling pressure, but not compressive mechanics, in intact cervine medial meniscus." *J Biomech,* **74**, p. 86-91. doi: https://doi.org/10.1016/j.jbiomech.2018.04.023
    TIMES CITED: 12
23. Hedgeland MJ†, Ciani MJ, Clark AM, Michalek AJ, **Kuxhaus L.** (2017) "A proximally-adjustable variable length intramedullary nail: ex-vivo quasi-static and cyclic loading evaluation." *ASME J Med Dev,* **11**(4), 045001(1-7) doi: 10.1115/1.4037260
    TIMES CITED: 0
22. Zaino NL‡, Hedgeland MJ†, Ciani MJ, Clark AM, **Kuxhaus L**, Michalek AJ. (2017) "White-tailed deer as an ex-vivo knee model: joint morphometry and ACL rupture strength." *Annals of Biomedical Engineering,* **45**(4), 1093-1100. *doi:10.1007/s10439-016-1746-8*
    TIMES CITED: 6
21. Gale NC† (Corbiere), **Kuxhaus L,** Ciani MJ. (2016) "Erector spinae muscle – iliocostalis anatomic variation." *Journal of Musculoskeletal Research,* **19**(2):1650007 (6 pages)

TIMES CITED: 0

20. Cassidy E†, McCullom SB†, Parnes N, **Kuxhaus, L**, Ciani MJ. (2016). "Morphological variation of the carotid arterial system increases the risk of development of central nervous system ischemia." *Clinical Medicine Reviews in Vascular Health,* **8**, 1-5. *doi: 10.4137/CMRVH.S38902*
TIMES CITED: 1
19. Corbiere NC†, Zeigler SL, Issen KA, Michalek AJ, **Kuxhaus L.** (2016) "Ring apophysis fractures induced by low-load low-angle repetitive flexion in an ex-vivo cervine model" *J Biomech,* **49**(9):1477-81. *doi: 10.1016/j.jbiomech.2016.03.022*
TIMES CITED: 2
18. **Kuxhaus L**, Corbiere NC†. (2016) "Classroom Journal Club: collaborative study of contemporary primary literature in the biomechanics classroom." *J Biomech Eng,* **138**(7), 070801 (5 pages). *doi: 10.1115/1.4032802*
TIMES CITED: 10
17. McDonald LT, Corbiere NC†, DeLisle JA, Clark AM, **Kuxhaus L**. (2016) " Winning the war on postoperative pain: a multimodal strategy to reduce pain and narcotic pain medication usage after total joint arthroplasty." *AORN Journal,* **103**(6): 606-613. *http://dx.doi.org/10.1016/j.aorn.2016.04.003*
THIS ARTICLE WAS SELECTED FOR CONTINUING EDUCATION CREDIT, WITH AN ACCOMPANYING QUIZ.
TIMES CITED: 15
16. Hedgeland MJ†, Libruk MA†, Corbiere NC†, Ciani MJ, **Kuxhaus L**. (2016) "The *Odocoileus virginianus* femur: mechanical behavior and morphology." *PLoS ONE 11(1): e0146611. doi:10.1371/journal.pone.0146611 Data available at: doi:10.5061/dryad.59gg3.*
TIMES CITED: 6
15. McDonald LT, Clark AM, Landauer AK‡, **Kuxhaus L**. (2015) "Winning the war on surgical site infection: the role of a preoperative evidence-based intervention bundle in total joint arthroplasty." *AORN J,* **102**(2):182.e1-182.e11. *doi: 10.1016/j.aorn.2015.06.007.*
TIMES CITED: 8
14. Throop AD†, Clark AM, **Kuxhaus L**. (2015) "An adjustable-length intramedullary nail: development and mechanical evaluation in cervine tibiae." *J Med Dev;* **9**(2):024503-024503-5. *doi: 10.1115/1.4030152*
TIMES CITED: 2
13. Miller MC, **Kuxhaus L,** Cowgill ML, Cook HA, Druschel M, Palmer B, Baratz ME. (2015) "Unique model evokes the supination/pronation deficits found after Mason II fractures." *J Orthop Res,* **33**(3),343-8. *doi: 10.1002/jor.22771*
TIMES CITED: 3
12. Throop AD†, Landauer AK‡, Clark AM, **Kuxhaus L**. (2015) "Cervine tibia morphology and mechanical strength: a suitable tibia model?" *J Biomech Eng,* **137**(3), 034503 (6 pages) *doi: 10.1115/1.4029302*
TIMES CITED: 9
11. Landauer AK‡, Mondal S, Yuya PA, **Kuxhaus L**. (2014) "Cyclic cryopreservation affects the nanoscale material properties of trabecular bone." *J Biomech* **47,** pp.3584-89 *doi: 10.1016/j.jbiomech.2014.08.027*
TIMES CITED: 5
10. Corbiere NC†, Lewicki KA‡, Issen KA, **Kuxhaus L**. (2014) "Creating physiologically realistic vertebral fractures in a cervine model." *J Biomech Eng,* **136,** 064504-1 – 064504-4. *doi: 10.1115/1.4027059*
TIMES CITED: 7
9. **Kuxhaus L**, Zeng S†, Robinson CJ. (2014) "Dependence of elbow joint stiffness measurements on speed, angle, and muscle contraction level." *J Biomech,* **47**(5):1234-7. *doi: 10.1016/j.jbiomech.2013.12.008.*
TIMES CITED: 5
8. Sotereanos NG, Wohlrab D, Hofer A, **Kuxhaus L**, Miller MC. (2013) "Subsidence in two uncemented femoral stems: an in vitro study." P*roc Inst Mech Eng (H): J Eng Med.* **227**(10), 1067-1072. *doi: 10.1177/0954411913493877*
TIMES CITED: 1
7. Tanaka M, Weisenbach CA‡, Miller MC, **Kuxhaus L**. (2011) "A continuous method to compute model parameters for soft biological materials." *J Biomech Eng,* **133**(7), 074502:1-7
TIMES CITED: 24

6. **Kuxhaus L**, Schimoler PJ, Vipperman JS, Miller MC. (2009) "Validation of a feedback-controlled elbow simulator design: elbow muscle moment arm measurement." *J Med Dev,* **3**(1), 021002:1-7. *doi: 10.1115/1.3191725*
   TIMES CITED: 13
5. **Kuxhaus L**, Schimoler PJ, Vipperman JS, Baratz ME, Miller MC. (2009) "Effects of camera switching on fine accuracy in a motion capture system." *J Biomech Eng,* **131**(1), 014502:1-6. *doi: 10.1115/1.3002910*
   TIMES CITED: 9
4. Conti S, Dazen D, Stewart G, Green A, Martin R, **Kuxhaus L**, Miller, MC. (2008) "Proprioception after total ankle arthroplasty." *Foot and Ankle International,* **29**(11), 1069-1073. *doi: 10.3113/FAI.2008.1069*
   TIMES CITED: 16
3. Espiritu M, **Kuxhaus L**, Kaufman RA, Li ZM, Goitz RJ. (2005) "Quantifying the effect of the distal intrinsic release procedure on proximal interphalangeal joint flexion: a cadaveric study." *J Hand Surg [Am]* **30A**(5), 1032-1038. d*oi: 0.1016/j.jhsa.2005.05.003*
   TIMES CITED: 5
2. **Kuxhaus L**, Valero-Cuevas FJ, and Roach SS. (2005) "Quantifying deficits in the 3D force capabilities of a digit caused by selective paralysis: Application to the thumb with simulated low ulnar nerve palsy.", *J Biomech,* **38**(4), *725-736. doi: 10.1016/j.jbiomech.2004.05.010*
   TIMES CITED: 12
1. Li ZM, Fisk JA, **Kuxhaus L**, Christophel TH. (2005) "Coupling between wrist flexion-extension and radial-ulnar deviation." *Clin Biomech*, **20**(2), 177-183. d*oi: 10.1016/j.clinbiomech.2004.10.002*
   TIMES CITED: 108

GOVERNMENT DOCUMENTS WITH SUBSTANTIAL CONTRIBUTIONS:

9. Dear Colleague Letter - **DOE Water Power Technologies Office and NSF Engineering Research Initiation Special Emphasis Areas** (2023)
   - NSF Dear Colleague Letter 23-119
   - *Role: Lead NSF Program Director to negotiate an Interagency Agreement, including a Dear Colleague Letter, with the Department of Energy/Water Power Technologies Office to support additional Engineering Research Initiation awards in two special emphasis areas: Marine energy and powering the blue economy; and Hydro-power and climate change impacts.*

8. Solicitation - **Boosting Research Ideas for Transformative and Equitable Advances in Engineering (BRITE)** (2021, 2022)
   - NSF solicitations 21-568, 22-559.
   - *Role: Key member of working group that conceptualized and wrote solicitation, including substantial outreach to stakeholders.*

7. Program Description – **Biomechanics and Mechanobiology Program** (2021)
   - *Role: Sole author of a redraft of the BMMB program description to clarify program focus areas in contemporary language, and harmonize the structure of the program description with that of related programs in other Divisions and Directorates of NSF.*

6. Solicitation – **Reproducible Cells and Organoids via Directed-Differentiation Encoding (RECODE)** (2021)
   - NSF solicitation 21-608; 21-532;
   - Role: Member of working group that conceptualized and wrote solicitation.

5. Solicitation – **Engineering Research Initiation** (2021, 2022)
   - NSF solicitation 21-574; 22-595
   - Role: Member of working group that conceptualized and wrote solicitation, including substantial outreach to stakeholders (NSF 21-574); Working group lead (NSF 22-595)

4. Solicitation - **NSF/CASIS Collaboration on Tissue Engineering and Mechanobiology on the International Space Station (ISS) to Benefit Life on Earth** (2020, 2021, 2022)
   - NSF solicitations 20-500, 21-520 22-535.
   - *Role: Substantially revised existing solicitation.*

3. Amendments to the **STEM Opportunities Act** (H.R. 2528 in the 116th Congress) (2019)
   - Analyzed existing bill text and drafted Amendments to ensure postdoctoral researchers could fully benefit from the provisions set forth. The amendments have persisted in future versions of the Bill.

2. **Growing Artificial Intelligence through Research Act** (H.R. 2202 in the 116th Congress). (2019)

- Bipartisan, bicameral introduction; this Bill informed further AI policy legislation that was signed in to law as part of the National Defense Authorization Act (H.R. 6395 in the 116th Congress).
- *Role: lead staffer for stakeholder engagement, drafting bill text, and shepherding through the process.*

1. **The Medical Device Sterilization Challenge Act of 2019** (H.R. 3044 in the 116th Congress) (2019)
   - Introduced to the US House of Representatives.
   - *Role: lead staffer for conceptualization, stakeholder engagement, drafting bill text, and shepherding through the process.*

PATENT AND FDA-CLEARED MEDICAL DEVICE:

1. **Kuxhaus L**, Clark AM "Adjustable-length Orthopedic Device." USPTO US 9,161,790 B2. Approved 10/20/15. *FDA clearance*: 3/18/2021, 510(k) K210285; Regulation Number 888.3020; Classification Product Code HSB

PENDING PATENTS:

3. Davis BG‡, Anderson II AD‡, Curry MM‡, **Kuxhaus L,** Pelton CR‡, Robinson C‡, Shea M†, Priganc V. Patent Application # 15/897,681, from Provisional # 62/460,174 -- Prescribed Motion Brace. (Full patent filed February 16, 2018)
2. **Kuxhaus L,** Clark AM, Palin S, Hedgeland MJ†, Robinson DA‡. "Developments on an Adjustable Length Orthopedic Device." Provisional # 62/516,180 (Provisional patent filed June 7, 2017) Full application filed on June 8, 2018. US18/36262
1. Hambrose G‡, Doerfler BN‡, Chrzan BP‡, Fenoff TM‡, Kudlacik CL‡, Slocum K‡, Bertocchi A‡, Hawley B†, **Kuxhaus L**. "Wheel Spikes" Patent Application # 16383131 filed April 12, 2019; (based on Provisional #62/656,570, filed April 12, 2018)

PROVISIONAL PATENTS:

3. Crady SD‡, Drapeau KE‡, Piersall TC‡, Weiner AA‡, #Robinson DA‡, (students advised by L Kuxhaus) 62/483,344 – Single-Digit Continuous Passive Motion Machine (Provisional patent filed April 20, 2017)
2. Hambrose G‡, Doerfler BN‡, Chrzan BP‡, Fenoff TM‡, Kudlacik CL‡, Slocum K‡, Bertocchi A‡, Hawley B†, **Kuxhaus L**. "Caster Skis" Provisional #62/656,657. (Provisional Patent filed April 12, 2018)
1. Hambrose G‡, Doerfler BN‡, Chrzan BP‡, Fenoff TM‡, Kudlacik CL‡, Slocum K‡, Bertocchi A‡, Hawley B†, **Kuxhaus L**. "Wheel Treads" Provisional #62/656,528. (Provisional Patent filed April 12, 2018)

BOOK CHAPTER:

1. Sonar AV†, **Kuxhaus L**, Carroll JC. (2010) "Simulation of subject specific bone remodeling and virtual reality visualization." in Virtual Reality, Jae-Jin Kim (Ed.), ISBN: 978-953-307-518-1, InTech.

PEER-REVIEWED CONFERENCE PAPERS:

3. Corbiere NC†, **Kuxhaus L**. "Collaborative learning journal clubs in biomedical engineering education." *ASEE St. Lawrence Chapter Regional Meeting, March 2012*. ** Best Paper Award**
2. Schimoler PJ, Vipperman JS, **Kuxhaus L**, Flamm AM, Budny D, Baratz ME, Miller MC. "Control system for an elbow joint motion simulator." *IMECE 2007. doi:10.1115/IMECE2007-42806*
1. **Kuxhaus L** and Grimmer MJ. (2001) "A purge solenoid structure-borne noise model." *2001 Noise and Vibration Proceedings*, SAE.

PEER-REVIEWED EXTENDED CONFERENCE ABSTRACTS: (*=PODIUM PRESENTATION; #=POSTER PRESENTATION)

IN THE FIELD OF BIOMECHANICS, THE STANDARD CONFERENCE ABSTRACT IS PEER-REVIEWED, ABOUT TWO-PAGES LONG, AND IS PRESENTED AT A CONFERENCE (EITHER POSTER OR PODIUM TALK.)

85. #Collins KJ, **Kuxhaus L**. "Vertebral bending moments during low-load, low-angle, high-repetition loading." *American Society of Biomechanics Conference, 2024.*
84. **Kuxhaus L** and #Richards, MC. "Bolstering scientific identity via an intentionally-inclusive real-time Journal Club. " *American Society of Biomechanics Conference, 2024.*

83. Zeigler SL†, Ellis BJ‡, Fuller D†, #**Kuxhaus L**. "The pomelo peel as impact protection from fall-related femur fracture: mechanical and biological property investigation. " *Summer Biomechanics, Bioengineering, and Biotransport Conference, 2024*.
82. *Erath BD, *__*__**Kuxhaus L**. " It takes a village: catalyzing clinically-driven undergraduate design projects at the nexus of engineering, medicine and business " *Summer Biomechanics, Bioengineering and Biotransport conference, June 2023*.
81. #Zeigler SL†, Ellis BJ‡, Saucier E‡, Collins KJ†, Peters BE†, **Kuxhaus L**. "Pomelo peel: A promising proxy for hip protection?" *North American Congress of Biomechanics, August 2022*.
80. #Zeigler SL†, Coleman C‡, Buonanno E‡, Whitham D‡, Jayaweera T‡, **Kuxhaus L**, Darie C. "A proteomics investigation of the Pomelo Peel" *Regional ACS meeting, Potsdam NY, February 2022*.
79. **Kuxhaus L**, Tuller BK, Scheidt RA, Swartz S, Zehnder SM. "Yes, there are biomechanics funding opportunities at the National Science Foundation!" *American Society of Biomechanics Conference, August 2020*.
78. Brombach J, *DeRidder ME‡, ***Kuxhaus L**. "Industrial ergonomics risk assessment meets research in the biomechanics classroom." *Summer Biomechanics, Bioengineering, and Biomechanics Conference, June 2019*.
77. *Troy KL, **Kuxhaus L**. "Open-ended discussion in the biomechanics class" *American Society of Biomechanics, August 2018*.
76. Bertocchi A‡, #Chrzan BP‡, Doerfler B‡, Fenoff TM‡, Hambrose GJ ‡, Kudlacik CL‡, Slocum K‡, Hawley BL†, **Kuxhaus L.** "Skis and treads: products to promote independence for manual wheelchair users in winter conditions." *World Congress of Biomechanics, July 2018*
75. #Shea M†, Davis BG‡, Priganc VW, **Kuxhaus L.** "Design, validation, and functional testing of a limited-motion wrist brace." *World Congress of Biomechanics, July 2018.*
74. *Martin RC‡, **Kuxhaus L.** "Fibrous Rupture in Physiologically Realistic Meniscal Tears: An Ex-Vivo Model." *World Congress of Biomechanics, July 2018.*
73. #Davis BG‡, Shea M†, **Kuxhaus L.** "DART Brace: A custom solution for early mobilization." *ORS Northeast Regional Symposium, July 2017.*
72. #Robinson DA‡, Hedgeland MJ†, Clark AM, **Kuxhaus L.** "Closing the Gap: An Adjustable Intramedullary Nail." *ORS Northeast Regional Symposium, July 2017.*
71. #Martin RC‡, **Kuxhaus L.** "An Ex-Vivo Model for Physiologically Realistic Meniscal Tears via Mechanical Overload." *ORS Northeast Regional Symposium, July 2017.*
70. Gale NC†, Zeigler SL, Towler C, Issen KA, Michalek AJ, ***Kuxhaus L**. "Evidence of low back injury in the absence of radiographic detection" *American Society of Biomechanics annual meeting, August 2017*.
69. *Troy KL, ***Kuxhaus L**. "Enhancing the biomechanics classroom with entrepreneurial mindset learning activities" *American Society of Biomechanics annual meeting Teaching Symposium, "Pedagogical Approaches in Undergraduate Biomechanics", American Society of Biomechanics annual meeting, August 2017*.
68. Crady SD‡, Drapeau KE‡, Piersall TC‡, Cassady EA‡, Weiner AA‡, #Robinson DA‡, **Kuxhaus L,** Fite KB, Priganc V, LaRue J†, Kelso M†. "Wearable rehabilitation: a customizable continuous passive motion device for early phalangeal mobilization" *Summer Biomechanics, Bioengineering, and Biotransport Meeting, June 2017*.
67. Anderson II AD‡, Bosquet B‡, Curry MM‡, #Davis BG‡, Pelton CR‡, Robinson C‡, **Kuxhaus L,** Shea M†, Priganc V. "DART brace: Daily Advanced Range of motion Therapy for maximizing function" *Summer Biomechanics, Bioengineering, and Biotransport Meeting, June 2017*.
66. Corbiere-Gale NC†, Zeigler SL, Towler C, Issen KA, Michalek AJ, #**Kuxhaus L**. "Biomechanical changes precede radiographic evidence of nontraumatic vertebral fracture under cyclic loading: an ex-vivo study" *Summer Biomechanics, Bioengineering, and Biotransport Meeting, June 2017*.
65. Corbiere-Gale NC†, Zeigler SL, Towler C, Issen KA, Michalek AJ, ***Kuxhaus L**. "Repetitive small-angle flexion may increase injury risk: an ex-vivo study" *Summer Biomechanics, Bioengineering, and Biotransport Meeting, June 2017*.
64. ***Kuxhaus L**, Troy KL. "Real-world problem solving and value creation in the biomechanics classroom" *Summer Biomechanics, Bioengineering, and Biotransport Meeting, June 2017*.
63. #Zeigler SL, Towler C, Corbiere NC†, Michalek AJ, Issen KA, **Kuxhaus L**. "Low amplitude flexion movements during activities of daily living can cause vertebral fracture " *Exercise and Physical Activity in Aging Conference II, July, 2016*

62. #Hedgeland MJ†, Clark AM, **Kuxhaus L**. " Performance of three variable-length intramedullary nails: the effect of the length-adjustment mechanism." *Summer Biomechanics, Bioengineering, and Biotransport Meeting, July 2016*. FINALIST IN THE MS-LEVEL PAPER COMPETITION
61. #Corbiere NC†, Zeigler SL, Issen KA, Michalek AJ, **Kuxhaus L**. " Kinematic evidence of ring apophysis fracture during cyclic loading typical of ADLs." *Summer Biomechanics, Bioengineering, and Biotransport Meeting, July, 2016*.
60. #Zaino NL‡, Hedgeland MJ†, **Kuxhaus L,** Michalek AJ. "Characterizing a novel ex-vivo animal knee model: ACL rupture and meniscus compressive strength." *Summer Biomechanics, Bioengineering, and Biotransport Meeting, July 2016*. 2ND PLACE IN THE BS-LEVEL PAPER COMPETITION
59. ***Kuxhaus L**. " Best practices in teaching biomechanics: connecting biomechanics beyond the classroom." *Summer Biomechanics, Bioengineering, and Biotransport Meeting, July 2016*.
58. #Hedgeland MJ†, Throop AD†, Clark AM, **Kuxhaus L**. "Design and biomechanical comparison of two novel adjustable-length intramedullary nails." *ORS Annual Meeting, March 2016, Orlando, FL*.
57. #Corbiere NC†, Zeigler SL, Issen KA, Michalek AJ, **Kuxhaus L**. " Ring apophysis fractures under simulated activities of daily living: a cervine model." *ORS Annual Meeting, March 2016, Orlando, FL*.
56. #Zaino NL‡, Hedgeland MJ†, Clark AM, **Kuxhaus L,** Michalek AJ. "*Odocoileus virginianus* as a model for the human anterior cruciate ligament." *ORS Annual Meeting, March 2016, Orlando, FL*.
55. Libruk MA†, #Hedgeland MJ†, Corbiere NC†, Ciani MJ, **Kuxhaus L**. "Comparative evaluation of morphometric and biomechanical properties of the cervine femur." *ASB Annual Meeting, August 2015, Columbus, OH*.
54. #Hedgeland MJ†, Throop AD†, Clark AM, **Kuxhaus L**. "Adjusting thinking about IM nails: mechanical evaluation of an adjustable intramedullary nail prototype." *ASB Annual Meeting, August 2015, Columbus, OH*.
53. #Corbiere NC†, Zeigler SL, Issen KA, Michalek AJ, **Kuxhaus L**. "Activities of daily living induce vertebral fractures despite healthy BMD." *ASB Annual Meeting, August 2015, Columbus, OH*.
52. #**Kuxhaus L**. "Activities to promote reflective learning in the biomechanics classroom." *ASB Annual Meeting, August 2015, Columbus, OH*.
51. *Corbiere NC†, Zeigler SL, Michalek AJ, Issen KA, **Kuxhaus L**. "Towards vertebral compression fracture prevention: simulating physiologic fracture during small movement ADLs." *Summer Biomechanics, Bioengineering, and Biotransport meeting, June 2015, Salt Lake City, UT*.
50. *Hedgeland MJ†, Libruk MA†, Corbiere NC†, Ciani MJ, **Kuxhaus L**. "Oh deer! Morphological and biomechanical evaluation of cervine femora." *Summer Biomechanics, Bioengineering, and Biotransport meeting, June 2015, Salt Lake City, UT*.
49. #**Kuxhaus L**. "Best practices in teaching biomechanics: integrating reflective learning activities." *Summer Biomechanics, Bioengineering, and Biotransport meeting, June 2015, Salt Lake City, UT*.
48. #Landauer AK‡, Mondal S, Yuya PA, **Kuxhaus L**. "Multiple freeze-thaw cycles alter nanoscale viscoelastic properties of cancellous bone." *World Congress of Biomechanics, July 2014*, Boston, MA.
47. #Throop AD†, Clark AM, **Kuxhaus L**. "Continuously adjustable intramedullary nail: prototype and biomechanical test results." *World Congress of Biomechanics, July 2014*, Boston, MA.
46. #Corbiere NC†, Zeigler SL, Issen KA, **Kuxhaus L**. "Fracture Creation in cervine vertebral motion segments via eccentric cyclic loading." *World Congress of Biomechanics, July 2014*, Boston, MA.
45. #**Kuxhaus L**, Corbiere NC†, Throop AD†. "Engaging undergraduate students via journal clubs in a biomechanics course." *World Congress of Biomechanics, July 2014*, Boston, MA.
44. Westervelt AR‡, *Landauer AK‡, *Goss PK‡, *Lipinski MR‡, Creager KT‡, **Kuxhaus L,** Erath BD, Fite KB. "An inexpensive mechanically powered laryngopharynx excitation device." *World Congress of Biomechanics, July 2014*.
43. #Landauer AK‡, Yuya PA, **Kuxhaus L**. "Repetitive freezing: does it change nanoscale material properties of cancellous bone?" *ASB Annual Meeting*, Omaha, NE; September 2013.
42. #Throop AD†, Landauer AK‡, Clark AM, **Kuxhaus L**. "Comparing periosteal morphology between cervine and human tibiae." *ASB Annual Meeting*, Omaha, NE; September 2013.
41. #Corbiere NC†, Lewicki KA‡, Issen KA, **Kuxhaus L**. "Towards preventing cancellous bone collapse: cervine model and fracture imaging." *ASB Annual Meeting*, Omaha, NE; September 2013.
40. #Corbiere NC†, Kafka OL‡, Issen KA, **Kuxhaus L**. "Cancellous bone fracture visualization method." *ASB Annual Meeting*, Omaha, NE; September 2013.

39. #Landauer AK‡, Yuya PA, **Kuxhaus L**. "Effects of freeze-thaw cycling on material properties of cancellous cervine bone as characterized by nanoindentation." *ASME Summer Bioengineering Conference*, Sunriver, OR; June 2013. doi: 10.1115/SBC2013-14607
38. Zeng S†, Robinson CJ, ***Kuxhaus L**. "Measuring elbow stiffness at two muscle contraction levels." *ASME Summer Bioengineering Conference*, Sunriver, OR; June 2013. doi: 10.1115/SBC2013-14651
37. #**Kuxhaus L**. "Using journal clubs to teach biomechanics: a two-year review." *ASME Summer Bioengineering Conference*, Sunriver, OR; June 2013. doi: 10.1115/SBC2013-14053
36. *Osaheni AO‡, *Amell JM‡, *Griffin RW‡, *Malfa MB‡, *Nycz CJ‡, Erath BD, Fite K, **Kuxhaus L**. "Cost effective electrolarynx design: a feasibility study." *ASME Summer Bioengineering Conference*, Sunriver, OR; June 2013. doi: 10.1115/SBC2013-14057
35. #Zeng S†, Robinson CJ, **Kuxhaus L**. "Development and verification of an elbow stiffness tester." *ASB Annual Meeting*, Gainesville, FL; August 2012.
34. #Corbiere NC†, Lewicki KA‡, Ferrucci LM‡, Issen KA **Kuxhaus L**. "Creating physiologically realistic vertebral fractures." *ASB Annual Meeting*, Gainesville, FL; August 2012.
33. *Burns T‡, *Finn T‡, *Garrant E‡, *Hemsing F‡, *Lewicki KA‡, Pane R‡, **Kuxhaus L,** Fite K. "Design of a multi-function walker/cane for enhanced assistive function." *ASME Bioengineering Division Summer Bioengineering Conference, June 2012*. doi: 10.1115/SBC2012-80299
32. #**Kuxhaus L,** Corbiere NC†. "Engaging students in bioengineering: a basic structure for collaborative learning journal clubs." *ASME Bioengineering Division Summer Bioengineering Conference, June 2012*. doi: 10.1115/SBC2012-80093
31. #**Kuxhaus L**, #Weisenbach CA‡, Miller MC, Tanaka ML. "A novel technique for measuring ulnar collateral ligament strain." *ASB Annual Meeting*, Long Beach, CA; August 2011.
30. #Weisenbach CA†, Rosch JG‡, #Corbiere NC†, Cowgill ML, Miller MC, **Kuxhaus L**. "Quantifying mechanical behavior of soft tissues using a continuous optimization method." *ASB Annual Meeting*, Long Beach, CA; August 2011.
29. #Corbiere NC†, Sonar AV†, Issen KA, Carroll JJ, **Kuxhaus L**. "Assessing the accuracy of a 3D cancellous bone quantifying algorithm." *ASB Annual Meeting*, Long Beach, CA; August 2011.
28. **Kuxhaus L**, #Weisenbach CA‡, Miller MC, Tanaka ML. "A continuous method to quantify stress-strain behavior of biologic materials." *ASME Summer Bioengineering Conference*, Farmington, PA; June 2011. doi: 10.1115/1.4004412
27. #Sonar AV, Issen KA, **Kuxhaus L**, Carroll JJ. "Simulation of subject-specific bone remodeling." *ASB Annual Meeting*, Providence, RI; August 2010.
26. Motlagh AM, Cook HA, Kim S, **Kuxhaus L**, Brogdon ML, DeMeo PJ, #Miller MC. "The strain in the medial ulnar collateral ligament is localized in both the anterior and posterior bands of the anterior bundle." *ASME Summer Bioengineering Conference,* Naples, FL; June 2010. doi: 10.1115/SBC2010-19343
25. #Schimoler PJ, **Kuxhaus L**, Vipperman JS, Miller MC. "Robotic controller design for an elbow simulator." *2009 BMES Conference,* Pittsburgh, PA; October 2009.
24. **#Kuxhaus L**, Brogdon ML, Druschel MJ, Schimoler PJ, Marchessault JS, Baratz ME, Miller MC. "A method to quantify the influence of radial head fracture location on elbow kinematics." *ASB Annual Meeting,* State College, PA; August 2009.
23. ***Kuxhaus L**, Dazen D, Hofer A, Miller MC. "A comparison of two hip stem styles: subsidence, failure load, and bone density." *ASME Summer Bioengineering Conference,* Lake Tahoe, CA; June 2009. doi: 10.1115/SBC2009-204300
22. *Brogdon ML, **Kuxhaus L**, DeMeo PJ, Schimoler PJ, Flamm A.M., Vipperman JS, Miller MC. "Physiologic length of the UCL: at what flexion angle do the bands of the anterior bundle have zero strain?" *ICMMB Conference,* Pittsburgh, PA; July 2008.
21. #**Kuxhaus L**, Thomines F, Flamm A.M., Schimoler PJ, Brogdon ML, Vipperman JS, DeMeo PJ, Miller MC. "Measurement of elbow medial ulnar collateral ligament strain: choice of reference length reduces interspecimen variability." *ASB Conference,* Ann Arbor, MI; August 2008.
20. Schimoler PJ, Vipperman JS, **Kuxhaus L**, Budny DD, Flamm AM, *Miller MC. "Accuracy and precision of a control system for an elbow joint simulator." *ASME Summer Bioengineering Conference,* Marco Island, FL; June 2008. doi: 10.1115/SBC2008-192826
19. #Miller MC, Thomines F, **Kuxhaus L**, Flamm AM, Schimoler PJ, Vipperman JS, DeMeo PJ. "Tensile strain measurement of the bands of the medial ulnar collateral ligament." *ORS annual meeting,* San Francisco, CA; February 2008.

18. #Schimoler P, Vipperman JS, **Kuxhaus L**, Budny DD, Flamm AM, Baratz ME, Miller MC. "Switching control to actuate elbow motion." *American Society of Biomechanics Conference*, Stanford, CA; August 2007.
17. *__Kuxhaus L__, Schimoler P, Flamm AM, Vipperman JS, Baratz ME, Miller MC. "Moment arm measurement to validate a closed-loop feedback-controlled elbow joint simulator." *American Society of Biomechanics Conference*, Stanford, CA; August 2007.
16. *__Kuxhaus L__, Schimoler PJ, Vipperman JS, Baratz ME, Miller MC. "Changes in camera visibility affect measured marker motion." *ASME Summer Bioengineering Conference*, Keystone, CO; June 2007. *doi: 10.1115/SBC2007-176503*
15. *__Kuxhaus L__, Schimoler PJ, Vipperman JS, Flamm AM, Budny D, Baratz ME, DeMeo PJ, Miller MC. "Measuring moment arms using closed-loop force control with an elbow simulator." ASME Summer Bioengineering Conference, Keystone, CO; June 2007. *doi: 10.1115/SBC2007-176513*
14. *__Kuxhaus L__, Schimoler PJ, Vipperman JS, Miller MC. "Closed-loop control measurement of moment arms during pronation-supination in an elbow simulator." *Northeast American Society of Biomechanics Conference,* Baltimore, MD March 2007.
13. Martin C, *__Kuxhaus L__, Galik K, Flamm AM, Butler AL, Baratz ME, Miller MC. "A computer model to evaluate radial head translation." *5th World Congress of Biomechanics,* Munich, Germany July 2006. Published in: Journal of Biomechanics (2006) **39**(S1) p. S47.
12. Miller MC, Galik K, #__Kuxhaus L__, Butler A, Cohen MS, Baratz ME. "Transection of the annular ligament affects radial head travel but not the axis location in pronation-supination of the forearm." *Orthopaedic Research Society,* Chicago, IL March, 2006.
11. Miller MC, Galik K, #__Kuxhaus L__, Butler A, Cohen MS, Baratz ME. "Translation and travel of monoblock and bipolar radial head replacements during supination-pronation." *Orthopaedic Research Society, March, 2006.*
10. #__Kuxhaus L__, Vipperman JS, Baratz ME, Magnusen JP, Miller MC. "Reproducing physiologic moment arms with an elbow simulator." *American Society of Biomechanics*, Cleveland OH, August 2005.
9. #__Kuxhaus L__, Harkness DA, Li ZM. "Directional force control of the thumb." *American Society of Biomechanics* Conference, Portland OR, September 2004.
8. #__Kuxhaus L__, Fisk JA, Christophel TH, Li ZM. "Wrist position influences range of motion." *American Society of Biomechanics* Conference, Portland OR September, 2004.
7. Espiritu MT, *__Kuxhaus L__, Kaufmann RA, Li ZM, Goitz RJ. "Quantifying PIP joint flexion improvement with distal intrinsic release." *Fifth Triennial International Hand and Wrist Biomechanics Symposium*, Syracuse, NY, September 7, 2004.
6. *Li ZM, Fisk JA, __Kuxhaus L__, Christophel TH. "Coupling between wrist flexion/extension and radial/ulnar deviation." *Fifth Triennial International Hand and Wrist Biomechanics Symposium*, Syracuse, NY, September 7, 2004.
5. __Kuxhaus L__, Valero-Cuevas FJ, and *Roach SS. "Effect of simulated low ulnar nerve palsy on the 3D force production capabilities of the thumb." *Fifth Triennial International Hand and Wrist Biomechanics Symposium*, Syracuse, NY, September 7, 2004.
4. Espiritu MT, __Kuxhaus L__, Kaufmann RA, Li ZM, Goitz RJ. "Quantifying PIP joint flexion improvement with distal intrinsic release." *Pittsburgh Orthopaedic Journal*, volume 15, pp. 146-147, 2004.
3. *__Kuxhaus L__, Valero-Cuevas FJ, and Roach SS. "Effect of Simulated Low Ulnar Nerve Palsy on the 3D Force Production Capabilities of the Thumb." *Upstate Medical University Alumni Day*, Syracuse, NY, June, 2003.
2. *__Kuxhaus L__, Valero-Cuevas FJ, and Roach SS. "Effect of simulated low ulnar nerve palsy on the 3D force production capabilities of the thumb." *American Society of Biomechanics*, Toledo, OH, September 2003.
1. #__Kuxhaus L__, Pearlman JL, Weisman M, Valero-Cuevas FJ. "Predicting thumb force changes with ulnar nerve impairment." *American Society of Biomechanics*, Toledo, OH, September, 2003.

RESEARCH FUNDING

IN ADDITION TO THE FUNDED PROJECTS BELOW, LK'S SUPERVISED STUDENTS HAVE EARNED AWARDS WITH FINANCIAL SUPPORT FOR WORK CONDUCTED UNDER HER SUPERVISION. SEE "STUDENT AWARDS" SECTION BELOW.

FUNDED GRANTS:

BiOengineering Research Education to AcceLerate Innovation in STEM (BOREALIS) *1R25EB033080 - 01A1*		
NIH (NIBIB, R25)	*May 1, 2023 - 2027*	Role: PI (Collaborators: Boolani, Richards, Michalek, Erath, Fite, and others)
	Impact Score: 20	Awarded Budget: $660,475 (Submitted Budget: $885,919)
Awarded grant transferred to PI Richards upon departure from Clarkson University (June 2024)		

GARDE: Walking and talking: Improved Quality of Life Through Enhanced Mobility and Communication *(Award #1510367)*		
NSF (GARDE)	August 2015 – July 2020 ($125,000)	Role: PI (Co-Investigators Fite, Erath)

Adjustable-length Orthopaedic Device		
Coulter Foundation *(via Shipley Center at Clarkson University)*	May 2014 – April 2016 ($40,000)	Role: PI (Collaborator: Clark, Sharon Hospital)

Adjustable-length Orthopaedic Device – prototype development		
Shipley Center at Clarkson University	May 2012 – April 2014 ($5,000)	Role: PI (Collaborator: Clark, Canton-Potsdam Hospital)

Optimization of an Electromechanical Device for Voice Rehabilitation Following Laryngectomy		
Clarkson University (ASPIRE)	June 2013 – May 2014 ($5,000)	Role: Co-Investigator (PI Erath; Collaborator Fite)

Nanoindentation of trabecular bone		
Clarkson University (CSoE SEED)	Dec. 2011 – Dec. 2012 ($5,000)	Role: Co-Investigator (PI: Yuya)

Developing a mathematical model of elbow ligament strain		
Clarkson University (CSoE SEED)	June 2010 – May 2011 ($5,500)	Role: PI (Collaborator Miller, Allegheny General Hospital)

Quantifying strain in the medial ulnar collateral ligament of the elbow		
The Pittsburgh Foundation (Orthopaedic Fund)	July 2008 – July 2009 ($5,000)	Role: PI (Collaborator Miller, Allegheny General Hospital)

ADDITIONAL EXTERNAL SUPPORT:

Intergovernmental Mobility Assignment *(NSF Award # 1940823)*		
NSF (CMMI)	July 2019– July 2023 ($680,573)	Role: IPA

Venture Capital Funding *(Series A round)*		
Adaptable Ortho Innovations	2018 – present ($500,000+) *Additional amount unknown due to NSF policies while serving as IPA*	Role: CTO

ASME Congressional Fellowship *(Stipend)*		
ASME Foundation	2018 – 19 ($80,000)	Role: Congressional Fellow in Bioengineering

TEACHING AND MENTORING

Dr. Kuxhaus is a teacher and mentor both in and outside the classroom. She actively recruits students from a wide swath of disciplines to work in her laboratory. Over the years, her research group has included 18 women, 3 students with physical disabilities, and 6 students from underrepresented groups. Undergraduate alumni of her laboratory have pursued graduate study at institutions such as Cornell University, Brown University, Virginia Commonwealth University, Dartmouth College, and Syracuse University. In the classroom, she incorporates Active and Reflective Learning techniques in all courses.

In addition to classroom teaching, Dr. Kuxhaus is an Academic Advisor for undergraduate students; her 2017-18 academic year advising load was 46 advisees.

While serving in government, Dr. Kuxhaus continued to mentor – including webinars for investigators, career development skills for interns in a Congressional office, and one-on-one mentoring of faculty preparing NSF proposals.

STUDENTS SUPERVISED

LK HAS SUPERVISED 9 GRADUATE STUDENTS AND 30+ UNDERGRADUATE STUDENTS AT CLARKSON UNIVERSITY.
CURRENT SUPERVISION IS 2 GRADUATE AND 1 UNDERGRADUATES (INCLUDING 1 HONORS STUDENT).
[KI] INDICATES STUDENTS CO-ADVISED WITH KATHLEEN ISSEN.
[PY] INDICATES STUDENTS CO-ADVISED WITH PHILIP YUYA.
[AM] INDICATES STUDENTS CO-ADVISED WITH ARTHUR MICHALEK.

Department of Mechanical and Aeronautical Engineering, Clarkson University, Potsdam NY

Graduate Students *Thesis title listed for completed students*

Name (dates)	**Degree Program(s)** *Mech. Eng. unless noted*	**Research Topic**
Kimberly Collins (May 2020 – May 2024)	MS (2024)	Spine endplate fractures
M.S. Project: Vertebral bending moment during low-load, low-angle, high-repetition loading		
Stacey Zeigler, DPT *(Sept. 2019 – May 2024)*	PhD, IBB (2024)	Hip protection device
Ph.D. Dissertation: The Pomelo Peel's Potential as Impact Protection from Fall-Related Femur Fracture: Biological and Mechanical Property Investigation		
Maggie Shea, P.A. *(Sept. 2016 – May 2017)*	M.S. Physician's Assistant (2017)	Dart-thrower's motion wrist brace
Morgan Libruk, P.A.	M.S. Physician's Assistant	Cervine Femur Morphology

(Sept. 2014 – May 2015)	(2015)	
Mark J. Hedgeland, B.S. *(August 2014 – August 2016)*	M.S. (2016)	Adjustable tibia nail design
M.S. Thesis: Design and Ex-vivo Evaluation of Two Adjustable-length Intramedullary Nails		
Alexander D.W. Throop, B.S. *(May 2012 – May 2014)*	M.S. (2014)	Adjustable orthopaedic implant design
M.S. Thesis: A novel intramedullary nail: design and testing in cervine tibiae		
Charles A. Weisenbach, B.S. *(May 2010 – May 2014)*	M.S. (Basic Science – Biology; non-thesis)	Medial ulnar collateral ligament strain
Nicole C. (Corbiere) Gale [KI], B.S., M.S. *(May 2010 – December 2017)*	M.S. (2012) Ph.D. (2017)	Vertebral fracture of cancellous bone
M.S. Thesis: Creating physiologically realistic vertebral fractures *Ph.D. Dissertation: Biomechanical evidence of nontraumatic vertebral fracture precedes radiographic evidence: an ex-vivo study of cervine and cadaver vertebral motion segments under cyclic loading*		
Sisi Zeng, M.S. *(Sept. 2009 – May 2013)*	M.S. (2013)	Elbow joint stiffness
M.S. Thesis: Measurement of human elbow joint stiffness		

Undergraduate Students ** INDICATES STUDENTS WHO WENT ON TO PURSUE A GRADUATE DEGREE.*

Name (dates)	**Degree and Research Program(s)** *Mech. Eng. unless indicated*	**Research Topic(s)**
Benjamin Ellis *(May 2021 – present)*	B.S. (2024)	Hip protector computational analysis
Eola Saucier *(January 2021 – May 2021)*	B.S. (2022)	Hip protector analysis
Kimberly Collins* *(January 2020 – May 2020)*	B.S. (2020 – SUNY Canton)	Vertebral fracture assessment
Brian Chrzan *(January 2018 – June 2018)*	B.S. (2018)	MicroCT scanning of bone
Megan DeRidder *(August 2017 – May 2019)*	B.S. (2020)	Cervical collar design
Rachel C. Martin *(May 2017 – May 2020)*	B.S. (2020)	Physiologically realistic meniscus tears
Brian Davis *(May 2017 – June 2017)*	B.S. (2017)	Limited motion wrist brace
Deja A. Robinson* *(January 2017 – present)*	B.S. Eng & Mgt (2018), McNair	Intramedullary nail
Alexandria Barber *(February 2017 – May 2017)*	B.S. (expected May 2019)	Cervine cancellous bone microstructure
Michael Ann Baker *(September 2016 – December 2016)*	B.S. (2016)	X-ray visibility of ring aphophysis fractures
Elisabeth Cabral[PY] *(October 2015 – May 2017)*	B.S. (May, 2019)	Bone nanoindentation
Kate Slocum *(June 2015 – July 2015; September 2018 – present)*	B.S., Honors (May, 2019)	Ligament cross-sectional area
Honors Thesis: The Future of Wheelchair Mobility in the Snow		
Nicole Zaino[AM] *(May 2015 – May 2018)*	B.S. (May 2018)	Cervine ACL strength
*Jacob Misch[PY] *(Nov. 2014 – May 2016)*	B.S., Honors (2016)	Modulus mapping of trabecular bone

Liz Miele *(Sept. 2014 – May 2018)*	B.S., Honors (May 2018)	Cervine femur mechanical testing
*Skyler Canute *(Sept. 2014 – May 2016)*	B.S., Honors (2016)	Hand grip force measurement
*Alexander K. Landauer[PY] *(May 2011 – May 2014)*	B.S., Honors (May 2014)	Elbow stiffness modeling; Nanoindentation of trabecular bone.
Honors Thesis: Effects of Freeze-Thaw Cycling on Material Properties of Cervine Cancellous Bone Characterized by Nanoindentation		
*Leonard Minier *(May 2013 – Aug. 2013)*	B.S., McNair (May 2015)	Intervertebral disc failure
Christopher A. LaDuca *(May 2013 – Aug. 2013)*	B.S., Honors (May 2016)	Fixture design for vertebral compression
XiaoJun (Junie) Huang[KI] *(May 2012 – Aug. 2012)*	B.S. Biomolec. Sci, McNair (2014)	Bone fracture visualization
Cassandra Christman[KI] *(May 2012 – Dec. 2012)*	B.S. MechE and AeroE (2014)	Bone fracture compression fixture
*Allen Osaheni *(May 2012 – Aug. 2012)*	B.S. (2013), McNair	Ligament stress-strain development
*Thomas V. Finn *(Jan. 2012 – May 2012)*	B.S. (2012)	Ligament area measurement
Bubah Conteh *(May 2011 – Aug. 2011)*	B.S (2013), McNair	Device for ligament testing
Trevor Loomis *(Jan. 2011 – Dec. 2011)*	B.S. Biology (May 2014)	Motion tracking protocols
*Kathleen Lewicki[KI] *(Sept. 2010 – May 2012)*	B.S. (2012), Honors	Animal models for vertebra testing
Honors Thesis: Methods for creating and analyzing microarchitectural fractures in cervine vertebral bone		
*Andrew Bluestein *(May 2010 – Dec. 2010; Aug. 2011-May 2012)*	B.S. (MechE & Physics) (2013)	Hardware for stiffness tester; validation of motion analysis system.
Lisa Ferrucci[KI] *(Jan. 2011 – Dec. 2011)*	B.S. (2013)	Device for bone compression
*Diana Woodcock *(Jan. 2010 – May 2011)*	B.S. ChemE (2011)	Polymers for stereolithography of bone-like structures
Maxim Chepenuk *(Jan. 2010 – May 2011)*	B.S. Biomolec. Sci (2011)	Elbow stiffness and Parkinson's; Animal models for spine research.
*Justin Rosch *(Sept. 2010 – May 2011)*	B.S. ChemE (2011)	Software development to compute ligament strain
*Robert Pouliot[KI] *(Sept. 2010 – May 2011)*	B.S. ChemE (2011)	Polymers for stereolithography of bone-like structures
*Nathan Pepin *(Jan. 2010 – May 2010)*	B.S. (2010)	Axis finder for elbow stiffness measurement.
*Charles A. Weisenbach *(Jan. 2010 – May 2010)*	B.S.	Continuous method for ligament modeling
*Nicole C. Corbiere[KI] *(Jan. 2010 – May 2010)*	B.S.	Vertebral fracture of cancellous bone

Committee Member for additional graduate students *Thesis title listed for completed students*

Name (dates)	**Degree Program(s)** *Mech. Eng. unless indicated*	**Research Topic**

J. Miles Canino *(May 2016 – August 2017)*	Ph.D.	Ankle prosthetics
Ph.D. Thesis: The Development and Experimental Characterization of a Haptic Feedback Array to Enhance User-Perception of Locomotor Function and Motor Control of an EMG-Controlled Prosthetic Limb		
Robert Thomas *(Aug. 2013 – May 2016)*	Ph.D. (Civil Eng., May 2016)	Porous Concrete
Ph.D. Thesis: Properties and Performance of Alkali-Activated Concrete		
Frank Hemsing *(Aug. 2014 – January 2015)*	M.S.	Laryngeal Speech
M.S. Thesis: An Experimental Investigation of Pulsatile and Viscous Flow Features in Tracheoesophageal Speech		
Ajay V. Sonar *(Aug. 2009 – Dec. 2011)*	Ph.D. (Elect. Comp. Eng)	Bone Quantifying Algorithm
Ph.D. Thesis: Simulation of subject specific bone remodeling		

AWARDS EARNED BY SUPERVISED STUDENTS

STUDENTS OF LK HAVE EARNED UNIVERSITY-, REGIONAL-, AND NATIONAL-LEVEL AWARDS FOR THEIR SCHOLARSHIP AND RESEARCH. THREE LAB ALUMNI AND ONE UNDERGRADUATE ADVISEE HAVE WON NSF GRADUATE RESEARCH FELLOWSHIPS SINCE 2013, REPRESENTING 27% OF THE TOTAL AWARDED TO CLARKSON UNIVERSITY ALUMNI FROM 2013-2015.

- Clarkson University Institute for STEM Education Fellowship, January 2023 *(Kim Collins, graduate student)* ***(GRADUATE RESEARCH ASSISTANTSHIP)***
- Diversity Travel Award, Summer Biomechanics, Bioengineering, and Biotransport Conference, June 2016 *(Megan DeRidder, undergraduate researcher)* ***($375 CASH AWARD)***
- Honorable Mention in Medicine & Biomedical Engineering, 2017 Spring Research and Project Symposium, Clarkson University. *(Brian Chrzan, undergraduate researcher)*
- World Congress of Biomechanics Diversity Travel Award *(Rachel Martin, undergraduate researcher)* ***($435 CASH AWARD)***
- NSF Graduate Research Fellowship, April 2018 *(Nicole Zaino, undergraduate researcher)*
- Honorable Mention – NSF Graduate Research Fellowship, 2018 *(Tyler Tuttle, undergraduate mentee)*
- Best Presentation in Biomedical Engineering, 2017 Spring Research and Project Symposium, Clarkson University. *(Megan Curry, Brian Davis, Katie Pelton, Anthony Anderson, Christopher Robinson, Shelly Wood, Bridgette Bosquet, undergraduate mentees)*
- Honorable Mention – NSF Graduate Research Fellowship, 2017 *(Tyler Tuttle, undergraduate mentee)*
- Diversity Travel Award, Summer Biomechanics, Bioengineering, and Biotransport Conference, June 2016 *(Nicole Corbiere)* ***($430 CASH AWARD)***
- Honorable Mention – NSF Graduate Research Fellowship, 2016 *(Skyler Canute)*
- Honorable Mention – NSF Graduate Research Fellowship, 2016 *(Jacob Misch)*
- Finalist, MS-Level Student Paper Competition, Summer Biomechanics, Bioengineering, and Biotransport Conference, June 2016. *(Mark Hedgeland)*
- 2nd Place, BS-Level Student Paper Competition, Summer Biomechanics, Bioengineering, and Biotransport Conference, June 2016. *(Nicole Zaino)* ***($200 CASH AWARD)***
- ASB Student Travel Award, August 2015 *(Mark Hedgeland)* ***($250 CASH AWARD)***
- ASB Student Travel Award, August 2015 *(Nicole Corbiere)* ***($250 CASH AWARD)***
- Audience Choice – Best Poster Award, Clarkson University Symposium for Undergraduate Research, April 2015. *(Liz Miele)*
- NSF Graduate Research Fellowship, April 2015 *(Alex Landauer)*
- Finalist in the ASME Bioengineering Division's Undergraduate Design Competition in Rehabilitation and Assistive Devices, July 2014 *(Kevin T. Creager, Peter Goss, Alex Landauer, Maegan Lipinski, Andrea Westervelt)* ***($3,000 CASH AWARD)***
- Best Presentation, SURE Symposium, Clarkson University, April 2014 *(Alex Landauer)*
- NSF Graduate Research Fellowship, April 2014 *(Andrea Westervelt, undergraduate advisee)*
- Honorable Mention – NSF Graduate Research Fellowship, April 2014 *(Alex Landauer)*
- ASB Student Travel Award, September 2013 *(Nicole Corbiere)* ***($250 CASH AWARD)***

- 2nd place in the ASME Bioengineering Division's Undergraduate Design Competition in Rehabilitation and Assistive Devices, June 2013 *(Janine Amell, Christopher Nycz, Madison Malfa, Allen Osaheni, Robert Griffin)* ***($3,000 CASH AWARD)***
- NSF Graduate Research Fellowship, April 2013 *(Kathleen Lewicki)*
- Best Presentation, SURE Symposium, Clarkson University, August 2012 *(Alex Landauer)*
- Honorable Mention, Poster, SURE Symposium, Clarkson University, August 2012 *(Allen Osaheni)*
- 2nd place in the ASME Bioengineering Division's Undergraduate Design Competition in Rehabilitation and Assistive Devices, June 2012 *(Kathleen Lewicki, Thomas Finn, Thomas Burns, Emily Garrant, Ryan Pane, Frank Hemsing)* ***($3,000 CASH AWARD)***
- Best Presentation, SURE Symposium, Clarkson University, April 2011 *(Kathleen Lewicki)*
- Honorable Mention, Poster, SURE Symposium, Clarkson University, April 2011 *(Andy Bluestein)*
- Best Paper Award, ASEE Regional Conference, April 2012 *(Nicole Corbiere)*
- Finalist and Travel Award, SWE Poster Competition, October 2011 *(Nicole Corbiere)* ***($250 CASH AWARD)***
- Honorable Mention, Mechanical Engineering Poster Presentation, SURE Symposium, Clarkson University, April 2011. *(Bubah Conteh)*
- 2nd place in the ASME Bioengineering Division's Undergraduate Design Competition in Rehabilitation and Assistive Devices, June 2011 *(Tracy Roux, Travis Kiser, Rochelle LaPorte, Caitlin Storey, Elsbeth Adams)* ***($3,000 CASH AWARD)***
- Honorable Mention, Mechanical Engineering Presentation, SURE Symposium, Clarkson University, April 2011. *(Kathleen Lewicki)*

UNDERGRADUATE SENIOR PROJECTS SUPERVISED

Department of Mechanical & Aeronautical Engineering, Clarkson University

KF OR BE INDICATES PROJECTS CO-ADVISED WITH KEVIN FITE OR BYRON ERATH, RESPECTIVELY

Project (Term)	Students
Winter Wheelchair *(Spring 2018)*	Anthony Bertocci, Brian Chrzan, Brianna Doerfler, Taylor Fenoff, Gavin Hambrose, Brittany Hawley (PA student), Christopher Kudlacik, Katie Slocum
Dart-thrower's motion wrist brace *(Spring 2017)*	Megan Curry, Brian Davis, Katie Pelton, Anthony Anderson, Christopher Robinson, Maggie Shea (PA student), Shelly Wood, Bridgette Bosquet
Single-finger continuous passive motion machine[KF] *(Spring 2017)*	Alyson Weisner, Sydney Crady, Thomas Piersall, Kiersten Drapeau, John LaRue (PT student), Molly Kelso (PT student)
Mechanolarrynx[KF, BE] *(Spring 2014)*	Andrea Westervelt, Maegan Lipinski, Alexander Landauer, Peter Goss, and Kevin Creager
Finalist in the ASME Bioengineering Division's Undergraduate Design Competition. ($3000 cash award)	
Cost-effective Electrolarynx[KF, BE] *(Spring 2013)*	Allen Osaheni, Christopher Nycz, Madison Malfa, Janine Amell, Robert Griffin
2nd place in the ASME Bioengineering Division's Undergraduate Design Competition. ($3000 cash award)	
A transformative cane and walker device[KF] *(Spring 2012)*	Kathleen Lewicki, Thomas Burns, Thomas Finn, Frank Hemesig, Emily Garrant, Ryan Pane
2nd place in the ASME Bioengineering Division's Undergraduate Design Competition. ($3000 cash award)	
A partial weight-bearing reminder device for rehabilitation after lower-extremity surgery[KF] *(Spring 2011)*	Tracy Roux, Rochelle LaPorte, Travis Kiser, Caitlin Storey, Elsbeth Adams
2nd place in the ASME Bioengineering Division's Undergraduate Design Competition. ($3000 cash award)	

Department of Mechanical Engineering and Materials Science, University of Pittsburgh

ALL CO-ADVISED WITH MARK CARL MILLER

Project (Term)	Students
Completion of an isometric elbow follower and its redesign into an isokinetic follower. *(Spring 2008)*	Jason Fitzwater, Melissa Neely, and Louis Magnotta.
Design of a device to measure isometric forearm strength *(Fall 2007)*	Robert Barbish, Jose Bernado, Jim Coyne, Peter McKeon

Reconfiguring a servocontrolled knee simulator, Phase I *(Spring 2006)*	Blythe Andrews, Brad Boyerinas, David Roeser, John Sheridan, Brian Sattler
Closed-loop control fixture for simulated elbow and wrist motion *(Fall 2006)*	Phillip Hobbins, Randy Longo, Richard Whalen
A six-DOF physical model of the elbow for use in a joint simulator *(Summer 2006)*	Justin Calugar, Herb Hewitt, Timothy Pournaras

FORMAL COURSES AND INFORMAL INSTRUCTION

National Science Foundation, Alexandria, VA

While serving as a Program Director at the National Science Foundation, Dr. Kuxhaus' informal teaching efforts have taken the form of individual mentoring of Principal Investigators (e.g., one-on-one mentoring to interpret review comments and discuss programmatic relevance), Panel Reviewers (e.g., teaching the panel review process to new and experienced panelists), Program Directors (e.g., onboarding of new colleagues and serving as a mentor), and public-facing webinars with lively Q&A sessions (e.g., developing webinar content, evaluating participant feedback.)

Pedagogical Innovation: Under Dr. Kuxhaus' leadership, live webinars featured interactive Q&A sessions with a streamlined process for curating and moderating questions. Additionally, as part of the Working Group for the Engineering Directorate's CAREER workshop, substantial mentoring to workshop organizers and attendees was provided. Innovations as this workshop pivoted to be virtual included adjusting the activities to accommodate the virtual workshop and broadening participation.

Public webinars with a substantial role

- BRITE Solicitation webinar – 3/19/2021, 4/20/2021, 2/3/2022, 3/17/2022
- ERI Solicitation Webinar – 4/29/2021, 6/1/2022, 7/13/2022, 9/29/2022, 5/5/2023, 6/28/2023
- NSF/CASIS Tissue Engineering & Mechanobiology Solicitation Webinar – 12/2019, 12/2020

NSF Engineering CAREER Workshop *(Working Group Member)*
CAREER Workshop 2020 (virtual), 2021 (virtual), 2022 (virtual), 2023 (virtual)

Department of Mechanical and Aeronautical Engineering, Clarkson University, Potsdam NY

BR110 and BR111 – Intro to Biomedical Engineering Research

Taught Fall 2023, Spring 2024. 3 students per semester.

Designed by Prof. Kuxhaus, these are two courses in a four-course sequence designed to introduce first-year students to the biomedical engineering research process. Topics include the ethical and responsible conduct of research, development of STEM identity, and an interactive Journal Club with virtual guests. By the end of these two courses, students design and plan a research project to be completed in the following year's courses.

Innovation: The Journal Club structure is designed to be appropriate for first-year students, focusing on learning the vocabulary of research and interacting with guest speakers about both their science and their career paths.

ME/ES 380 and ME594 – Biomechanics

Taught Fall 2009-2017; enrollment 26-35 undergrad + 0-4 grad; Teaching effectiveness 4.0-4.5 out of 5.0.

Designed by Prof. Kuxhaus, this first course in biomechanics emphasizes the structure-function relationship between biological tissue behavior and orthopaedic biomechanics. Basic mechanics principles (statics, dynamics, and material properties) are covered. The student population is predominantly Mechanical

and Chemical Engineering students. Graduate students may earn graduate credit by completing additional requirements.

Innovation: The structure of the course is an active learning environment, blending traditional lecture with in-class activities. A Journal-Club style discussion of relevant biomechanics literature is a hallmark of the course, and students complete a motion analysis lab when TA support is available. Beyond quizzes and exams, assessments include a research paper, a group project, and a computer simulation.

ES 220 – Statics
Taught Spring 2010, 2023-2018, 2024; enrollment 37-94; Teaching effectiveness 3.9-5.0 out of 5.0.

This first course in mechanics emphasizes first principles of Newtonian mechanics. Given typical course sequencing in engineering, Dr. Kuxhaus teaches this course in the 'off semester'. Thus the student population is diverse, ranging from accelerated first-year students to seniors, from all engineering majors (including Engineering and Management students.) Most are not mechanical engineers. Teaching evaluations of this gateway mechanics course are often below the University average as students first encounter the rigor of the engineering curriculum.

Innovation: This course is taught in an active lecture style, including daily feedback activities. Formal assessments include regular homework assignments and exams. In recent years, Dr. Kuxhaus has implemented more frequent exams, and Cooperative Exams (where students repeat the exam in a group following the completion of their individual exam.) Student feedback indicates support for these initiatives.

ME 446 – Integrated Design II
Taught Spring 2014; enrollment 14; Teaching effectiveness 3.8 out of 5.0.

ES 223 – Dynamics
Taught Spring 2011; enrollment 75.

OTHER TEACHING EXPERIENCE

Adjunct Instructor, University of Pittsburgh (Fall, 2008)	Taught ENGR 0012 – Introduction to Engineering Analysis
Mechanical Engineering Teaching Assistant (May 2006 – August 2006) *University of Pittsburgh*	Supervised undergraduate students in Engineering Design.
Bioengineering Teaching Assistant (January 2006 – April 2006) *University of Pittsburgh*	Assisted in the teaching of Bioengineering Methods Laboratory to undergraduate students. Duties included assisting with laboratory exercises and grading.
Mathematics Teaching Assistant (August 2000 – May 2001) *Michigan State University*	Assisted in the teaching of Calculus II to undergraduate students. Duties included creating and grading weekly quizzes and teaching responsibilities.
Mathematics, Science, and Engineering Tutor (August 1997 – May 2000) *Student-Athlete Support Services, Michigan State University*	Assisted student-athletes in a wide range of math and engineering courses. Individual tutoring and drop-in group tutoring was provided.

PROFESSIONAL DEVELOPMENT AND SERVICE

DR. KUXHAUS IS AN ACTIVE CONTRIBUTOR TO THE BIOMECHANICS COMMUNITY. LOCALLY, SHE SERVES ON BOTH OFFICE- AND AGENCY-WIDE COMMITTEES. REGIONALLY, SHE HAS GIVEN INVITED RESEARCH TALKS. NATIONALLY, SHE HAS BEEN PARTICULARLY ACTIVE IN THE BIOENGINEERING DIVISION OF ASME AND HAS REVIEWED GRANTS FOR BOTH THE NSF AND NIH. HER NATIONAL SCIENTIFIC LEADERSHIP IS RECOGNIZED IN HER SELECTION TO SERVE AS PROGRAM DIRECTOR OF BIOMECHANICS AND

MECHANOBIOLOGY AT THE NATIONAL SCIENCE FOUNDATION, AND OF THE BRIDGE2AI PROGRAM AT THE NIH. HER NATIONAL SCIENCE & TECHNOLOGY POLICY LEADERSHIP IS EVIDENCED IN HER SELECTION FOR THE ASME CONGRESSIONAL FELLOWSHIP IN BIOENGINEERING, AND A DETAIL ASSIGNMENT TO NSF'S OFFICE OF THE CHIEF OFFICER FOR RESEARCH SECURITY STRATEGY AND POLICY. INTERNATIONALLY, SHE HAS PRESENTED HER WORK AT INTERNATIONAL MEETINGS (SEE PUBLICATIONS) AND SERVES AS A REVIEWER FOR NUMEROUS JOURNALS.

INVITED TALKS & WORKSHOPS

External:

- "This and that"
  - Bridge2AI Annual Meeting, December 5 2024
- About the Common Fund
  - HJF, November 13 2024
- Reflections from a rotator: What your program director really wants you to know
  - SUNY-Albany, April 2, 2024.
- Adventures in multiscale, multi-kingdom biomechanics
  - SUNY-Albany, April 2, 2024.
- Adventures in multiscale, multi-kingdom biomechanics
  - U. Mass – Lowell, March 28, 2024
- Building, Catalyzing, Bridging and Leading
  - Rochester Institute of Technology, February 14, 2024
- Building, Catalyzing, Bridging and the Merit Review Process
  - NIH, CSR, February 8, 2024
- Bridging the gap between policy and research via the Executive Branch
  - Orthopaedic Research Society, Science Communication Session, February 3, 2024.
- Building, Catalyzing, and Bridging
  - West Virginia School of Osteopathic Medicine, January 19 2024
- Building, Catalyzing, and Bridging
  - NIH, Common Fund, December 13, 2023
- Reflections from a rotator: What your program director really wants you to know
  - Bucknell University, November 15, 2023.
- Adventures in multiscale, multi-kingdom biomechanics
  - New Jersey Institute of Technology, September 29, 2023.
- Invited Workshop Speaker
  - Vermont Stem Cells, Cell Therapies and Bioengineering in Lung Biology and Diseases Conference – Women and Diversity Panel (July 2023)
  - Vermont Stem Cells, Cell Therapies and Bioengineering in Lung Biology and Diseases Conference – Funding and Financial Management of Your Lab Panel (July 2023)
  - Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C) – National Science Foundation Opportunities (June 2022)
  - NSF CAREER Workshop (hosted by ASEE) – Panel Briefing for Mock Panels (May 2023)
  - NSF CAREER Workshop (hosted by ASEE) – ERI Lunch and Learn session (May 2023)
  - Orthopaedic Research Society – Meet the Funding Agency Program Directors (February 2023)
  - Training in Grantsmanship in Rehabilitation Research (TIGRR) (January 2023)
  - SEAFRI Community of Practices – Research Security (December 2022)
  - North American Congress of Biomechanics/American Society of Biomechanics – Federal Funding Workshop (August 2022)
  - Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C) – National Science Foundation Opportunities (June 2022)
  - Orthopaedic Research Society – Best Practices to Promote Institutional Diversity, Equity, & Inclusion (February 2022)
  - Orthopaedic Research Society –An Objective View of Learning Objectives (February 2022)
  - Orthopaedic Research Society – Meet the Funding Agency Program Directors (February 2022)
  - Training in Grantsmanship in Rehabilitation Research (TIGRR) (January 2022)
  - Cellular and Molecular Bioengineering Conference – Grantwriting Workshop (January 2022)

- American Society of Biomechanics – Federal Funding Workshop (August 2021)
- Orthopaedic Research Society – Exploring Funding Mechanisms, Part 1: Beyond NIH (February 2021)
- Orthopaedic Research Society – Exploring Funding Mechanisms, Part 2: Meet the Program Officers (February 2021)
- American Society of Biomechanics Federal Funding Symposium (August 2021)
- Vermont Stem Cells, Cell Therapies, and Bioengineering in Lung Biology and Diseases – Navigating Funding Mechanisms (July 2021)
- National Postdoctoral Association – Career Path Workshop (April 2021)
- Summer Biomechanics, Bioengineering, and Biotransport Conference – Funding networking (June 2021)
- Orthopaedic Research Society – Meet the NIH workshop (February 2020)
- Cellular and Molecular Bioengineering Conference – Grantwriting Workshop(January 2020)

- Funding Opportunities for the Biomedical Engineering Community at the National Science Foundation (presentation)
  - University of Pennsylvania (April 2023)
  - University of Pittsburgh (March 2023)
  - Texas Tech (February 2023)
  - University of North Texas Health Science Center, Fort Worth (February 2023)
  - University of North Texas Health Science Center, Denton (February 2023)
  - University of Washington (November 2022)
  - VA Ventures Puget Sound (November 2022)
  - University of Kansas (September 2022)
  - Western Carolina University (March 2022)
  - Cornell University (April 2021)
  - University of Kentucky (April 2021)
  - Virginia Tech (April 2021)
  - University of Connecticut (March 2021)
  - Brigham Young University (February 2021)
  - South Dakota School of Mines (December 2020)
  - University of South Dakota (November 2020)
  - Florida Institute of Technology (November 2020)
  - CU Boulder (November 2020)
  - University of Vermont (October 2020)
  - University of Rochester (October 2020)
  - SUNY-Cortland (September 2020)
  - Syracuse University (December, 2019)

- A Bioengineer goes to Capitol Hill
  - Science Café series, Potsdam NY, January 2021
  - Summer Biomechanics, Bioengineering, and Biotransport Conference, June 2019
- Biomechanical effects of rotational speed, joint angle, and muscle contraction on elbow stiffness
  - Ithaca College, April 10, 2015
- Finding and forecasting fracture: creating physiologically-realistic vertebral fractures
  - Worcester Polytechnic Institute, April 22, 2015
- Towards universal design in orthopaedics: the tale of an adjustable intramedullary nail
  - SUNY Cobleskill, September 30, 2016

<u>At Clarkson University:</u>

- MAE Department Seminar
  - Reflections from a rotator: What your program director really wants you to know, 26 October 2023.
- MAE Department Seminar
  - A bioengineer goes to Capitol Hill, 14 February 2020.
- STEM-Ed Institute

    - Small changes can make a big difference in the classroom: gradually enhancing the classroom with active learning, 22 January 2018.
- McNair Program
    - Research Ethics, June 2011, April 2012, June 2012, June 2013, June 2014, June 2015, June 2016, June 2017
- ES 542 – Fundamentals of Research
    - Research Ethics, November 2011, 2012
    - Graduate Student Success, April 2013
- BR 400 –Intro to Biomedical Engineering
    - Muscle Contraction, March 2010, 2011
    - Orthopaedic Fracture Fixation, April 2012
- BR 200 – Introduction to Biomedical and Rehabilitation Engineering
    - Intro to Biomechanics, November 2013
- Arts & Sciences Seminar, Clarkson University
    - Quantifying the Behavior of Biological Tissues: Methods and Biomechanics, November 2011

NATIONAL SERVICE

ASME Journal of Biomechanical Engineering
Guest Editor, Special issue on New Approach Methodologies (December 2024-present)

- Target publication date: December 2025

ASME Bioengineering Division

- Committee for the Robert M. Nerem Medal for Education and Mentorship
    - Leadership team that crafted the award.
    - Award Committee, 2017 – 2018; 2022 – present;
    - Committee Chair, 2023-present.
- Executive Board – Student Affairs Chair (July 2016 – June 2018)
- Information Chair, 2017 Summer Biomechanics, Bioengineering, and Biotransport Conference
- Education Committee
    - Chair, July 2013 – June 2016; Vice Chair, October 2012 – June 2013
    - Member, 2009 – present
    - Organized mentoring workshops for the 2011 and 2012 annual meetings.
    - Student poster competition judge, 2009, 2011, 2012.
    - Reviewed abstracts for annual meeting, 2012 – present.
    - Co-Chair of Conference Session, 2016
- Design, Dynamics, and Rehabilitation Committee member, 2007 – present
    - Co-chair of Conference Sessions:
        - Orthopaedic Design (2009, 2011)
        - Rehabilitation (2012, 2013)
        - Biomechanics of Wheelchair Locomotion (2014 World Congress of Biomechanics)
        - Joint Motion and Rehabilitation (2015)
        - Undergraduate Design Competition (2017)
- Subcommittee member, Undergraduate Design Competition, 2011 – present.
- Judge for PhD Presentation Competition, 2012; 2015.
- Reviewed abstracts for annual meeting, 2007 – present.
- 40th Anniversary Leadership Retreat, April, 2013.

American Society of Biomechanics

- Reviewed abstracts for consideration. (2009 – 2018)
- Mentoring program participant

Orthopaedic Research Society

- Reviewed abstracts for consideration. (2015 – 2018)

Ad-Hoc Journal Reviewer

- International Orthopaedics, September 2015 – present.
- Biomedical Engineering Online, May 2015 – present.
- Health and Technology, May 2015 – present.
- ASME Journal of Medical Devices, November 2014 – present.
- Journal of NeuroEngineering and Rehabilitation, August 2014 – present.
- ASME Journal of Biomechanical Engineering, September 2013 – present.
- IEEE Transactions on Biomedical Engineering, June 2013 – present.
- Clinical Biomechanics, March 2013 – present.
- Journal of Biomechanics, 2010 – present.
- Journal of Applied Biomechanics, 2009 – present.

National Academies

- *Ford Foundation Fellowship Reviewer, March 2018*

NSF Reviewer

- *Panels: Feb. 2010; Jan. 2012; Jan. 2013; Jan. 2014; Jan. 2016; September 2016; November 2023.*
- *Mail Review: Sept. 2011*

NIH Grant Review Panels 2009 – present

- Center for Scientific Review, Rehabilitation Sciences, November 2009; June 2014.

First Lego League – Judge *(December, 2010; 2011; 2012)*

Student moderator, Northeast ASB Conference March 2007

CAMPUS COMMITTEES AND ORGANIZATIONS

- Center for Rehabilitation Engineering, Science and Technology (CREST) Search Committee *(August 2023-present; Chair March 2024-June 2024)*
- Re-imagining Clarkson Task Force *(October 2023-December 2023)*
- COACHE Committee *(September 2023-June 2024)*
- Honors Advisory Council, President *(September 2023 – present)*
- Clarkson University Research Advisory Council *(August 2023-present)*
- Faculty Advisor, Clarkson University Orchestra *(August 2023-present)*
- Center for Rehabilitation Engineering, Science and Technology (CREST) Steering Committee *(August 2023-present)*
- Honors Research Committee *(Sept. 2014 – 2015)*
- Campus Safety Committee (*Nov. 2012 – May 2014)*
- Curriculum and Academic Programs Committee *(Oct. 2012 – Aug. 2013)*
- Fourth Wednesday Mentoring Series (*Nov. 2011 – May 2013)*
- Faculty Advisor, Society of Women Engineers – Clarkson University Chapter (*Sept., 2011 – Dec. 2012)*
- Clarkson University Symposium for Undergraduate Research - Judge *(April, 2011; Aug. 2012, April 2015)* and Session Chair *(Aug. 2013, April 2014, April 2015)*
- Clarkson University E-week – Judge *(April, 2011)*
- MAE Department Committees:
  - 3rd-year review committee (2023 – present)
  - Undergraduate Recruitment (September 2009 – May 2012)
  - Graduate Committee (September 2009 – 2018)
- University of Pittsburgh Engineering Women's Breakfasts April 2005 – May 2006

PROFESSIONAL DEVELOPMENT ACTIVITIES AND ASSOCIATIONS

Major Workshops, Courses, and Programs Attended:

NIH DPCPSI I-LEAD program — January – August 2025

Mental Health First Aid — August, 2023

Data Science Dojo — January - March 2023
Online/virtual

CMMI Game Changers Academy — December 2022 – April 2023
Kardia Group, Online/virtual

KEEN Foundation Winter Conference — January 4 – 6, 2017
KEEN Foundation, Jacksonville, FL

KEEN Foundation Winter Conference — January 3 – 5, 2016
KEEN Foundation, Tempe, Az

US Bone and Joint Initiative, Young Investigators Initiative
AAOS, Rosemont, IL — April 24 – 26, 2015
University of Toronto, Toronto, Canada — November 13 – 15, 2015

NSF Day — November 8, 2013
University of Rochester and RIT, Rochester, NY

Effective Engagement in Large Technical Classes — June 3 – 5, 2013
Clarkson University, Potsdam, NY

Effective Engagement Techniques — November 3, 2012
Clarkson University, Potsdam, NY

Critical Thinking — November 5, 2011
SUNY Potsdam, Potsdam, NY

How to Engineer Engineering Education — July 20 – 22, 2011
Bucknell University, Lewisburg, PA

NSF CAREER Grant writing — April 4 – 6, 2011
Hartford, CT.

Moving away from a teacher-centered paradigm — November 4, 2010
St. Lawrence University, Canton, NY

Professional Society Memberships:

- Association for Women in Science (AWIS) — January 2020 – present.
- Orthopaedic Research Society (ORS) — May 2014 – present.
- American Society for Engineering Education (ASEE) — December 2009 – present.
- American Association of University Women (AAUW) — October 2009 – present.
- American Society for Biomechanics (ASB) — July 2004 – present.
- American Society of Mechanical Engineers (ASME) — September 2002 – present.
- Biomedical Engineering Society (BMES)— February 2001 – present.
- American Association of University Professors (AAUP) — December 2009–present
- Society of Automotive Engineers (SAE) — September 2000 – December 2008

OTHER PROFESSIONAL EXPERIENCE

GM POWERTRAIN INTERN

Noise and Vibration Labs and Shops Group, Milford, MI, May 2001 – July 2001
Engine Noise and Vibration Group, Milford, MI, May 2000 – August 2000
Transmission Noise and Vibration Group, Ypsilanti, MI, May 1999 – August 1999
Rear Wheel Drive Design Group, Ypsilanti, MI, May 1998 – August 1998

BIOMECHANICS EVALUATION LABORATORY, January 2000 – May 2000
Michigan State University, East Lansing, MI

COMMUNITY ACTIVITIES

Community Leadership:

- Potsdam Community Band (Potsdam, NY; January 2010 – July 2018)
    - Leadership core
- Northern Symphonic Winds (Potsdam, NY; November 2013 – July 2018)
    - Board of Directors
- What a Raquette Music & Dance (Potsdam, NY; May 2011 – October 2016)
    - Board of Directors; Acting President
- 2008 Pittsburgh Symphony Orchestra *Soundbyte* Leadership Team (Pittsburgh, PA)
- (North) Pittsburgh Philharmonic (Pittsburgh, PA; February 2006 – March 2008)
    - Board of Directors; Recording Secretary July 2006 – March 2008.

Performing Member of:

- Washington Metropolitan Philharmonic (Alexandria, VA; December 2021 – present)
- Capital Wind Symphony (Falls Church, VA; September 2019 – March 2020)
- Capital City Symphony (Washington, DC; September 2019 – March 2020)
- Clinton Symphony Orchestra of the Mohawk Valley (Clinton, NY; December 2014 – 2018)
- Catskill Symphony Orchestra (Oneonta, NY; *ad hoc*, April 2015 – present)
- Orchestra of Northern NY (Potsdam, NY; *ad hoc,* July 2012 – present)
- Potsdam Community Band (Potsdam, NY; Sept. 2010 –present)
- Northern Symphonic Winds (Potsdam, NY; Sept. 2009 –present)
- Northern Lights Orchestra (Canton, NY; *ad hoc,* May 2010 – August 2012)
- St. Lawrence University Wind Ensemble (Canton, NY; *ad hoc,* Sept. 2009 – May 2013)

REFERENCES: Available upon request.