

Laurel Kuxhaus

I am an experienced scientific administrator, policymaker, and biomedical engineer whose work has substantially advanced support of the research community through community development and creation of funding opportunities. My background includes managing multiple federal research portfolios and creating novel federal funding opportunities, experience creating science and technology policy legislation, entrepreneurial R&D and classroom teaching. *I am seeking a role to merge the knowledge and skills I have honed to further advance the nation's science and engineering enterprise.*

SCIENTIFIC LEADERSHIP, ACADEMIC, RESEARCH AND TECHNOLOGY POSITIONS

June 2024 – present

Health Sciences Administrator (Program Officer), Bridge2AI Program

National Institutes of Health, Rockville MD

Office of Strategic Coordination; Office of the Director

- *Program Management:* Managed multiple simultaneous projects (\$20M/year), including leading a large intra-agency team, with input from stakeholders to strategically plan the future of the program. Led strategic planning and approval for Stage 2 of the program.

July 2019 – July 2023

Program Director, Biomechanics & Mechanobiology

Program Director (detailee), Research Security Strategy and Policy

National Science Foundation. Alexandria, VA

Division of Civil, Mechanical and Manufacturing Innovation (CMMI)

Engineering Directorate

- Managed a basic science research portfolio spanning engineering biomechanics and mechanobiology (\$75M+), including multi-agency solicitations.
- *Communication:* Conducted outreach via curated webinars and seminars.
- *Supervised and hired* Fellows, new Program Directors, and reviewers, providing critical feedback on work.
- *Onboarded and mentored* incoming Program Directors and Fellows.
- Co-led the funding opportunities in response to data-driven analyses of needs to benefit all Americans, especially those in historically-underfunded groups.
- Navigated an Interagency Agreement to secure DOE WPTO funds to support awards.
- Secured interagency agreements to support research security training awards.

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

- Portfolio included AI/ML, cybersecurity, manufacturing, education, and immigration.
- Led the introduction of AI-related legislation (H.R. 2202 in the 116th Congress) and amendments to other bills related to science, space, and technology.
- *Communicated* with stakeholders across government, academia, industry, and constituents.

October 2017 – June 2024

Chief Technology Officer, Adaptable Ortho Innovations, LLC. Potsdam, NY

- Supervised the design, testing, patenting, and FDA clearance of a Class II medical device.

July 2009 – June 2024

Professor (incl. Asst., Assoc.), Mechanical and Aerospace Engineering

October 2017 – June 2024

Professor (incl. Assoc.), Institute for STEM Education (courtesy)

Clarkson University, Potsdam, NY

- Led and managed an independent research laboratory, including *securing grants, managing grants*, and supervising both students and staff.
- Taught fundamental (bio)engineering courses using best practices in pedagogy, including interdisciplinary human-centered design in collaboration with health sciences and business.

- Communicated results via peer-reviewed publications, presentations, and informal channels.
- Developed and launched the BOREALIS Scholars program.

Ad hoc since 2008

Independent Consulting and Contract Work

- Proposal preparation and editing services
- Proposal development workshops and webinars, in partnership with large universities and professional societies
- Research Development Officer, University of Wisconsin-Madison, Research Impacts and Outreach Office in the Grainger Institute of Engineering, June-July 2025. Strategic planning for a large-scale proposal incubator.
- Scientific Red-Teaming

AWARDS, HONORS, AND LICENSURE (SELECT)

- 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).
- 2018-19 ASME Congressional Fellow in Bioengineering.
- 2nd place, 2018 Orthopaedic Research Society Business Plan Competition (Adaptable Ortho Innovations).
- 2018: ASME Fellow
- 2011– 2024: NY State Department of Health Nontransplant Anatomic Bank License for human tissue use in research(#NA158)
- 2004 University of Pittsburgh IGERT Fellowship in assistive technology.
- 2001 NSF Graduate Research Fellowship.

EDUCATION

- **Ph.D., Bioengineering (2008)** - *University of Pittsburgh, Pittsburgh, PA*
- **M.S., Mechanical Engineering (2003)** - *Cornell University, Ithaca, NY*
- **B.S., Engineering Mechanics and B.A., Music (2001) with Honors** - *Michigan State U., E. Lansing, MI*

SCHOLARSHIP AND SUPERVISORY EXPERIENCE (SELECT)

Dr. Kuxhaus has served as a faculty member, active researcher, mentor, and entrepreneur. Highlights of her contributions include:

- Over \$2M in support for research and scholarly activities.
- 28 peer-reviewed journal publications
- 80+ peer-reviewed conference publications and presentations.
- 1 patent and 1 FDA-cleared medical device, licensed to a small business.
- Direct supervision of 9 graduate students, 30+ undergraduate students, and laboratory staff in the research laboratory. Supervision of 80+ NSF reviewers annually.

Full details regarding research outputs, teaching, and mentoring are included in the addendum.

CURRENT NATIONAL SERVICE

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

ASME Bioengineering Division

- Committee for the Nerem Medal for Education and Mentorship, 2017-18, 2022-present
- Women's Networking Group Co-Chair, 2025-present

SB3C Foundation - President-Elect

Orthopaedic Research Society, Spine Section – Federal Funding Liaison (2025-present)

Addendum

This addendum contains complete information for sections abbreviated above.

RESEARCH AND TECHNICAL BACKGROUND

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. Her research group maintained 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:

30. Richards M, Appiah-Kubi K, Ball J, Boolani A, King M, Treptow S, **Kuxhaus L**, Almeida B. "Implementation of a Biomedical Research Training Program for Early-Stage Undergraduate Students to Inspire Development of a STEM Professional Identity." (2026) *Biomed Eng Ed*, March 2026. <https://doi.org/10.1007/s43683-026-00219-8>
29. **Kuxhaus L** and Sniadecki N. (2026) "Special Issue: NAMs in Biomechanical Engineering – What's in a NAM?". *J Biomech Eng*, February 2026, 148(2): 020201 (3 pages). <https://doi.org/10.1115/1.4070652>
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 Et, 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 St, 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." *Proc 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. doi: 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. doi: 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)

- o NSF Dear Colleague Letter 23-119
- o 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)

- o NSF solicitations 21-568, 22-559.
- o Role: Key member of working group that conceptualized and wrote solicitation, including substantial outreach to stakeholders.

7. Program Description – **Biomechanics and Mechanobiology Program** (2021)

- o 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)

- o NSF solicitation 21-608; 21-532;
- o Role: Member of working group that conceptualized and wrote solicitation.

5. Solicitation – **Engineering Research Initiation** (2021, 2022)

- o NSF solicitation 21-574; 22-595
- o 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)

- o NSF solicitations 20-500, 21-520 22-535.
- o Role: Substantially revised existing solicitation.

3. Amendments to the **STEM Opportunities Act** (H.R. 2528 in the 116th Congress) (2019)

- o 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)

- o 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

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, Viperman 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 Mt, 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		
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Clarkson University (ASPIRE)	June 2013 – May 2014 (\$5,000)	Role: Co-Investigator (PI Erath; Collaborator Fite)
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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+) <i>Additional amount unknown due to NSF policies while serving as IPA</i>	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 proposals.

STUDENTS SUPERVISED

LK HAS SUPERVISED 9 GRADUATE STUDENTS AND 30+ UNDERGRADUATE STUDENTS AT CLARKSON UNIVERSITY.

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)

FORMAL COURSES

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.

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 (COMPLETE)

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

At Clarkson University:

- 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

PUBLIC MEDIA AND POPULAR PRESS

Podcast:

- “Still in the middle: one government scientist’s story”. *This Academic Life* podcast, episode 88, released 6/4/2025.

NATIONAL SERVICE

SB3C Foundation

- President-elect (2025-2026)
- President (planned: 2026-2027)
- Past President (planned: 2027-2028)

ASME Journal of Biomechanical Engineering

Guest Editor, Special issue on NAMs in Biomechanical Engineering (December 2024-February 2025)

ASME Bioengineering Division

- Washington DC Section – Mentoring Circles Coordinator
- Women’s Networking Group Co-Chair, 2025-present
- 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.
- Federal Fellows Committee, 2025-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

- Membership Committee, 2024-present
- Reviewed abstracts for consideration. (2009 – 2018)
- Mentoring program participant

Orthopaedic Research Society

- Spine Section – Federal Funding Liaison (2025-present)
- 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 <i>Online/virtual</i>	January - March 2023
CMMI Game Changers Academy <i>Kardia Group, Online/virtual</i>	December 2022 – April 2023
KEEN Foundation Winter Conference <i>KEEN Foundation, Jacksonville, FL</i>	January 4 – 6, 2017
KEEN Foundation Winter Conference <i>KEEN Foundation, Tempe, Az</i>	January 3 – 5, 2016
US Bone and Joint Initiative, Young Investigators Initiative <i>AAOS, Rosemont, IL</i>	April 24 – 26, 2015
<i>University of Toronto, Toronto, Canada</i>	November 13 – 15, 2015
NSF Day <i>University of Rochester and RIT, Rochester, NY</i>	November 8, 2013
Effective Engagement in Large Technical Classes <i>Clarkson University, Potsdam, NY</i>	June 3 – 5, 2013
Effective Engagement Techniques <i>Clarkson University, Potsdam, NY</i>	November 3, 2012
Critical Thinking <i>SUNY Potsdam, Potsdam, NY</i>	November 5, 2011
How to Engineer Engineering Education <i>Bucknell University, Lewisburg, PA</i>	July 20 – 22, 2011

NSF CAREER Grant writing
Hartford, CT.

April 4 – 6, 2011

Moving away from a teacher-centered paradigm
St. Lawrence University, Canton, NY

November 4, 2010

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 – 2024.
- 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 2009–2024
- Society of Automotive Engineers (SAE) — September 2000 – December 2008

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)

REFERENCES: Available upon request.