

BIOMEDICAL ENGINEERING

MTUengineering



Illuminating the mechanical adaptation of musculoskeletal interfaces

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Abstract: The bones of our skeleton get their shape from the transfer of mechanical loads applied by muscles at tendon attachment sites. These tendon-bone attachments are subject to dynamic loads throughout our lifespan, and changes to bone shape are often most sensitive during periods of growth and development. The research she will present focuses on the important role of mechanical loading during growth of the tendon and its attachment to bone. She will highlight some of her recent work using optogenetic tools, which can be leveraged to induce skeletal muscle contractions simply with blue light. This allows us to study how changes in the structure and function of tendon and bone are influenced by increased mechanical loading in live animals.

Bio: She is an alumna of Michigan Tech (BS ('05) and PhD ('10) in Biomedical Engineering) and a former member of the Women's Cross Country, Nordic Ski, and Track and Field teams. In her current role as an Assistant Professor in Orthopaedic Surgery at the University of Michigan, she lead an independent research laboratory focused on pediatric musculoskeletal biology and biomechanics. Prior to starting her laboratory at Michigan, she was a postdoctoral fellow at Washington University in St Louis from 2011-2015, and first established her research program in 2016 at the University of Delaware in the Department of Biomedical Engineering. She relocated her laboratory to Michigan in February 2020. She is the 2024 chair of the Student Paper Competition for the Summer Biomechanics, Bioengineering, and Biotransport Conference, and she has been an active member of SB3C/ASME Bioengineering Division since 2008. As a PI, she has received several competitive, independent funding from the National Institutes of Health and the National Science Foundation, including the NSF CAREER Award. Her laboratory focuses on the remodeling and damage of tendon and its attachment to bone (i.e., enthesis) in response to muscle loading during growth and aging in mice. Students in her laboratory have completed training in biomedical engineering, mechanical engineering, animal biosciences, integrative physiology and bioinformatics and have continued careers or training in STEM fields, and include clinicians, veterinarians, and research scientists and engineers at institutions like Booz Allen Hamilton, University of Pennsylvania, Cornell University, Rush University, the Children's Hospital of Philadelphia, Merck, Globus, and Qiagen.



Friday, September 29, 2023
4:00pm - 5:00pm



610 MM Building or via Zoom

BME Seminar Series