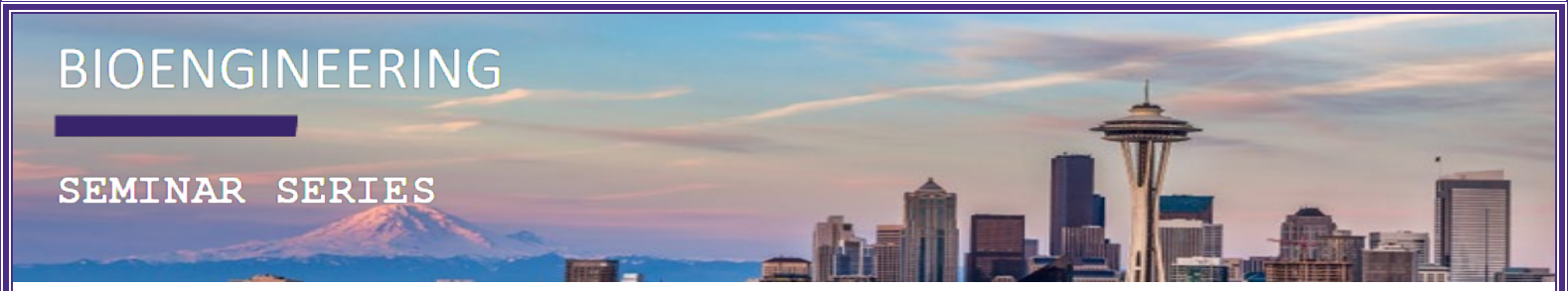

Sylvia Qu, Ph.D.

Assistant Professor, University of Washington
Department of Orthopaedics & Sports Medicine
Department of Mechanical Engineering

May 16th, 2024

12:30 – 1:00 PM Coffee/Pastry Mixer
1:00 – 1:50 PM, Foege N130
live stream: https://washington.zoom.us/j/94375637567

"Using Digit Tip Regeneration to Inform Regenerative Engineering of Complex Musculoskeletal Tissues"

ABSTRACT: Humans have limited regenerative potential of musculoskeletal tissues following limb loss, and successful attempts to regrow missing digits or limbs could significantly improve the prognosis for amputees. To that end, the ability of the mouse digit tip to completely grow back following amputation provides a mammalian model to interrogate complex tissue regeneration. In this model, local stem/progenitor cells naturally regenerate digit tissues after distal amputation but form a fibrotic scar after amputation at more proximal levels. The mechanisms regulating regeneration versus scarring are currently unknown and may define new avenues to therapies that will help restore the lost tissues. In this talk, I will present my work on the transcriptional landscape of digit regeneration after amputation at different levels and the cellular and molecular mechanisms that underlie skeletal elongation and patterning during this process. I will also explore the significance of developmental pathways that guide limb patterning during digit regeneration, such as the role of *Hox* genes. Finally, I will discuss ongoing work on the development of novel cell- and biomaterial-based therapies that have potential to restore complex musculoskeletal tissues after injury.

BIO: Dr. Feini (Sylvia) Qu is an Assistant Professor of Orthopaedics and Sports Medicine and Mechanical Engineering, as well as a core faculty member of the Institute for Stem Cell and Regenerative Medicine at the University of Washington. Dr. Qu holds the Treuer-Wagner Endowed Chair in Regenerative Spine Surgery. Dr. Qu trained as a veterinarian-scientist at the University of Pennsylvania, graduating with a Doctor of Veterinary Medicine (V.M.D.) and a Ph.D. in Bioengineering in 2017. She then moved to Washington University in St. Louis, where she was an NIH F32 NRSA postdoctoral fellow in the Department of Orthopaedic Surgery. In 2022, she received an NIH K99/R00 Pathway to Independence Award. The goal of Dr. Qu's research program is to understand the cellular and molecular pathways of composite musculoskeletal tissue regeneration, especially with respect to the bone and connective tissues of limbs and joints, and then leverage this knowledge to regenerate lost or diseased structures using stem cells, gene editing, and biomaterial-mediated approaches. To this end, the Qu Lab uses the murine digit tip to identify pathways that regulate tissue morphogenesis after amputation and to test potential therapies, providing a translational framework to regenerate tissues or organs as complex as an entire limb.