CARNEGIE MELLON UNIVERSITY
BME 2023 SPRING SEMINAR SERIES

Prevention-Preservation-Modulation of Orthopaedic Joints

PRESENTED BY

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SCHEDULE

Hall of Arts (HOA) 160

Thursday,
February 9, 2023
(11:00AM-12:00PM)

Articular cartilage is the hydrated porous material that lines the ends of long bones in mammalian joints. In its healthy state, articular cartilage functions as a remarkable bearing material by supporting immense loads and complex joint motions over a lifetime. In this talk I will take us on a journey to explore the multiphasic mechanics (fluid + solid + charge) that lead to this phenomenon, how physical activity maintains this function, and how we can use this understanding to develop physiological mimics of articular cartilage. I will then transition us from articular cartilage to the spine and a very common condition known as scoliosis. I will introduce a large animal model of spinal deformity that will inform correction procedures, establish a preclinical testing platform for new devices, and decouple growth modulation between the vertebrae and the intervertebral disc. The culmination of this work lays the foundation for my research program that centers on the prevention of orthopaedic joint degeneration, preservation of orthopaedic joints, and growth modulation of orthopaedic tissues.

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