

# PAGE MORTON HUNTER DISTINGUISHED SEMINAR SERIES



## BIOMECHANICS AND BIOTRANSPORT OF THE MENISCUS

The meniscus is a fibrocartilaginous tissue in the knee that plays an essential role in load distribution, congruency, and joint stability. Accordingly, the presence of a healthy and functioning meniscus is necessary for proper joint biomechanics. Traumatic failures, such as meniscal tears are the most frequent type of injury to the meniscus, especially in active younger adults. Repair of tears via surgical suturing decreases the development of osteoarthritis and subsequent need for joint replacement, but its rate of success is limited. Synthetic scaffolds have been developed to address segmental tissue defects; however, midterm outcomes have shown high failure rates and progression of chondral wear. The ultimate goal of our research is to develop a long-lasting treatment for meniscus tears based on regeneration of the tissue and preservation of its function. We believe that a scaffold closely mimicking structure and composition, as well as biomechanical and biotransport properties of a healthy native tissue will integrate into the meniscus and will regenerate meniscal tissue at the defect. Unfortunately, to date, little investigation has been conducted on biomechanics and biotransport in meniscus. In this talk, we will present our advances in understanding the biomechanical behavior of the meniscus and its transport properties in relation to its unique compositional and structural features.

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Dr. Francesco Travascio is an Associate Professor at the Mechanical and Aerospace Engineering Department of the University of Miami, where he directs the Musculoskeletal Biomechanics Laboratory. He is also Associate Director of the Max Biedermann Institute for Biomechanics at Mount Sinai Medical Center in Miami Beach.

Dr. Travascio received his B.S. and M.S. in Materials Engineering at the University of Naples Federico II (Italy) in 2001, and a Ph.D. in Chemical Engineering in 2004. He also holds a doctoral degree in Biomedical Engineering (University of Miami, 2009). Before his academic appointment at the University of Miami, he worked for two years as a bioengineer at MAKO Surgical, Inc. (now MAKO Stryker, Inc.).

Dr. Travascio's expertise is in the areas of occupational and sports biomechanics, as well as orthopaedics. His current research on meniscal tissue is funded by the National Institute of Musculoskeletal and Skin Diseases (NIAMS).

Dr. Travascio is author of two books and more than 100 scientific publications. He is also a Fellow of the American Society of Mechanical Engineers (ASME), and an active member of the Orthopaedic Research Society.

April 21, 2022 • 3:30 p.m.

Virtual seminar:

<https://clemson.zoom.us/j/99897062717>



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