



**Antonios G. Mikos, Ph.D.**

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**Date** Friday, November 21, 2025

**Time** 12:00 to 1:00 PM

**Location** SEC 203

**Title:** *Extracellular Matrix-Based Biomaterials for Tissue Engineering*

**Abstract:** Extracellular matrices hold great promise as tissue engineering scaffolds because of the wealth of contained biochemical cues that aid in tissue formation and regeneration. However, there are challenges with their use in tissue engineering applications due to insufficient physicochemical properties, including mechanical and rheological properties and degradation characteristics. We have investigated the decellularization of different musculoskeletal tissues for the development of extracellular matrix-based biomaterials for diverse applications, and have examined the effects of material attributes, such as functionalization and crosslinking density, on cell behavior and tissue guidance. This presentation will review recent examples of extracellular matrix-based approaches from our laboratory for the regeneration of bone, cartilage, and skeletal muscle.

**Bio:** Antonios G. Mikos is the Louis Calder Professor of Bioengineering and Chemical and Biomolecular Engineering at Rice University. His research focuses on the synthesis, processing, and evaluation of new biomaterials for use as scaffolds for tissue engineering, as carriers for controlled drug delivery, as non-viral vectors for gene therapy, and as platforms for disease modeling. His work has led to the development of novel orthopaedic, dental, cardiovascular, neurologic, and ophthalmologic biomaterials. Mikos is a Member of the National Academy of Engineering, the National Academy of Medicine, the American Academy of Arts and Sciences, the National Academy of Inventors, the Chinese Academy of Engineering, the Academia Europaea, the European Academy of Sciences, the Royal Academy of Pharmacy of Galicia, and the Academy of Athens. He has been recognized by various awards including the Jensen Tissue Engineering Award of the Tissue Engineering and Regenerative Medicine International Society-Global, the Lifetime Achievement Award of the Tissue Engineering and Regenerative Medicine International Society-Americas, the Founders Award of the Society For Biomaterials, the Founders Award of the Controlled Release Society, the Robert A. Pritzker Distinguished Lectureship Award of the Biomedical Engineering Society, the Biomaterials Global Impact Award, and the Acta Biomaterialia Gold Medal. He is a Founding Editor and Editor-in-Chief of the journal Tissue Engineering.