



UNIVERSITY OF
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**Lecture
Series**



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Bioengineered Hydrogels for Regenerative Medicine

ABSTRACT

Hydrogels, highly hydrated cross-linked polymer networks, have emerged as powerful synthetic analogs of extracellular matrices for basic cell studies as well as promising biomaterials for regenerative medicine applications. A critical advantage of these synthetic matrices over natural networks is that bioactive functionalities, such as cell adhesive sequences and growth factors, can be incorporated in precise densities while the substrate mechanical properties are independently controlled. We have engineered poly(ethylene glycol) [PEG]-maleimide hydrogels to study epithelial morphogenesis and identified independent contributions of biophysical and biochemical properties of these materials to this developmental process. In another application, we have developed synthetic hydrogels that support improved pancreatic islet engraftment, vascularization and function in diabetic models. These studies establish these biofunctional hydrogels as promising platforms for basic science studies and biomaterial carriers for cell delivery, engraftment and enhanced tissue repair.

BIOGRAPHY

Andrés J. García is the Neely Endowed Chair and Regent's Professor in the Woodruff School of Mechanical Engineering and the Petit Institute for Bioengineering and Bioscience at the Georgia Institute of Technology. He received a B.S. in Mechanical Engineering with Honors from Cornell University. He received M.S.E. and Ph.D. degrees in Bioengineering from the University of Pennsylvania. He completed a two-year post-doctoral fellowship in cell and molecular biology at the School of Medicine of the University of Pennsylvania. Dr. García's research program centers on integrating innovative engineering, materials science, and cell biology concepts and technologies to generate (i) novel insights into the regulation of adhesive forces and mechanotransduction, and (ii) cell-instructive materials for tissue repair in regenerative medicine applications. He has received several distinctions, including the NSF CAREER Award. He has been recognized as a top Latino educator by the Society of Hispanic Professional Engineers.

**FRIDAY
MARCH 2, 2018**

NOON - 1:30 P.M.

**COVERDELL CENTER
AUDITORIUM
(Room 175)**