



JOHNS HOPKINS
BIOMEDICAL ENGINEERING

BME Virtual Seminar Series

Tatiana Segura, PhD

Professor of Biomedical Engineering
Duke University

Monday, January 24th, 2022

1:30 p.m.

Held via Zoom

Faculty host: Joshua Doloff



MAPing Principles, Properties and Applications to Tissue Regeneration

Abstract: Microporous annealed particle (MAP) scaffolds are materials composed of hydrogel microparticle (HMP) building blocks. Thus, rather than use polymers as the building block that form the hydrogel, we use particles. This makes MAP scaffolds granular materials, which open unique properties such as inner porosity, exterior porosity, injectability, and heterogeneity. We have found that these properties make MAP uniquely suited for applications in tissue regeneration applications. We have found that simple changes in the MAP composition can have dramatic changes in the immune response to the material and subsequent regenerative healing response. This talk will cover the concept of MAP, software that we have developed to understand MAP microstructure, and some of our findings that relate the immune response and regenerative healing.

Bio: Tatiana Segura is a Professor of Biomedical Engineering, Neurology, and Dermatology at Duke University. She received her B.S. degree in Bioengineering from the University of California, Berkeley (UC Berkeley) and her doctorate in Chemical Engineering from Northwestern University working with Lonnie Shea. Before jetting off to Jeffrey A. Hubbell's laboratory in 2004 to begin a postdoctoral position, she secured a tenure track position at the University of California, Los Angeles (UCLA) in the Department of Chemical and Biomolecular Engineering. After finishing her postdoctoral work in 2006, she began at UCLA as an Assistant Professor. In 2012, she received tenure and a promotion to Associate Professor, and in 2016, she was promoted to the title of Professor. Two years later, she moved across country and joined the Duke faculty in 2018. Professor Segura has received numerous awards and distinctions during her career, including the 2020 Acta Biomaterialia Silver Medal, a CAREER Award from the National Science Foundation, an Outstanding Young Investigator Award from the American Society of Gene and Cell Therapy, and a National Scientist Development Grant from the American Heart Association. She was also named a Fellow of the American Institute for Medical and Biological Engineers (AIMBE) in 2017. Professor Segura has published over 100 peer-reviewed papers and reviews and has over 7,000 citations. Her laboratory has been continuously funded since 2008 with several grants from the National Institutes of Health (NIH). She currently serves as a permanent member of the Gene and Drug Delivery Study section at NIH.