

A SOCIETY OF PHYSICS STUDENTS (SPS)

presents: PHYSICS ALUMNI SERIES SEMINAR

Effects of Geometry and Structural Constraints on the Mechanics of 3D Engineered Microtissues

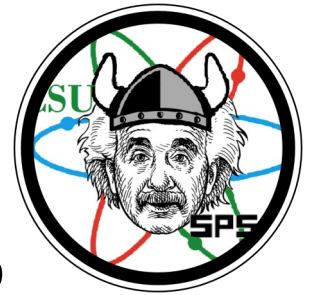


Prasenjit Bose

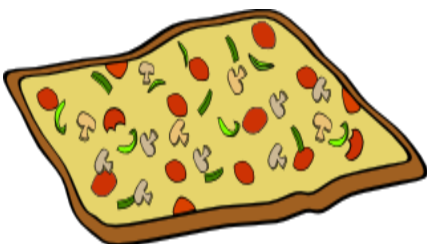
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BS-Honors Physics/Math, CSU 2012



Cells in multicellular organisms reside in a complex extracellular matrix (ECM) environment. The structure of the ECM in living tissues plays a critical role in facilitating numerous cellular functions. Hence, understanding and controlling the ECM structure is crucial for modeling various mechanobiological and wound healing processes. We have developed a platform to control ECM alignment in engineered microtissues, while simultaneously measuring their mechanical properties. In this talk, I will discuss the technological challenges behind these kinds of mechano-biological measurements and how we combined techniques varying from multi-layered lithography, tissue engineering, electro-magnetism and quantitative image analysis to obtain readouts of these tissues' force generation and local deformation field under tensile loading. Lastly, I will utilize finite element continuum mechanics models and data-model minimization algorithms to provide quantitative measures of the effective elastic moduli, and their spatial variation across the different microtissue geometries.



WHERE SR – 151

WHEN 11:30 – 12:20

Thursday, March 22, 2018

