

Abstract Submitted
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Directive Nanophysical Cues for Regenerative Neural Cell Systems VIRGINIA AYRES, Michigan State Univ, VOLKAN MUJDAT TIRYAKI, Siirt University Kezer Campus, IJAZ AHMED, DAVID SHREIBER, Rutgers, The State University of New Jersey — Until recently, implantables such as stents, probes, wafers and scaffolds have been viewed as passive vehicles for the delivery of physical, pharmacological and cellular interventions. Recent research, however, indicates that the physical environments that implantables present supply directive cues in their own right that work in conjunction with biochemical cues and produce a jointly-directed outcome. We will present our research in CNS repairs using advanced scanning probe microscopy, electron microscopies and contact angle measurements to quantitatively describe the nanoscale elasticity, surface roughness, work of adhesion and surface polarity for investigation of scaffold environments. We will also present our research using super-resolution immunocytochemistry and atomic force microscopy to evaluate neural cell morphological responses with associated micro filament, microtubule and intermediate filament expressions, along with results on how and which integrin-family receptors are possibly involved. Finally, we will present our novel application of k-means cluster analysis applied across multiple experimental modalities for quantification of synergistic scaffold properties and cell responses.

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