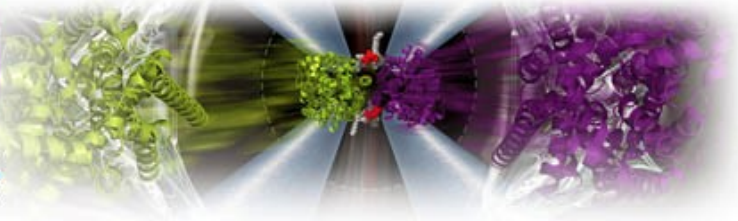


BPS19

63RD ANNUAL MEETING OF THE BIOPHYSICAL SOCIETY

BALTIMORE, MARYLAND • MARCH 2–6, 2019



Monday, March 4

3:30 pm – 5:00 pm

Room 303

NanoSurface Biomedical

BIOMIMETIC CELL CULTURE PLATFORMS FOR ENHANCING CELL BIOLOGY STUDIES

Cells use structural and mechanical cues from the extracellular matrix (ECM) to regulate a broad spectrum of processes such as cell signaling, electrophysiology, differentiation, division, and even life and death. Over the past few decades, the literature has demonstrated that many cell types cultured in conventional flat, rigid, and static culture conditions lack both structural and functional phenotypes seen in the body, and that the lack of extracellular cues contributes significantly to the disconnect between *in vitro* experimental results and *in vivo* observation. We will demonstrate that ECM-inspired substrate nanotopography drastically improves the structural and functional development of a variety of cell types. Specifically, we show how NanoSurface Cultureware and the NanoSurface Cytostretcher can be utilized to study the effects of cell-nanotopography interactions on adhesion, signaling, polarity, migration, physiology, and differentiation across many cell types and model systems including cancer biology, human epithelia, and cardiovascular function. Further, we will describe how the differentiation of induced pluripotent stem cells can be accelerated and enhanced by providing a more biomimetic culture environment. We will also illustrate how the combination of nanotopography and mechanical stretch can enhance the *in vitro* phenotypes of cells in culture.

Speaker

Nicholas Geisse, Chief Science Officer, NanoSurface Biomedical