



**Sunday, February 16**

**11:30 AM – 1:00 PM**

**Room 33A**

**NanoSurface Biomedical**

**Recreating the Extracellular Matrix in a Dish**

Cells in the body use a variety of cues (e.g. structural, mechanical, electrical, and chemical) from the extracellular matrix (ECM) to develop and mature physiologically. These influential cues help regulate a broad spectrum of processes such as cell signaling, division, and differentiation. Many in vitro platforms seek to incorporate these cues into the cell's microenvironment, but often fail, suffering from lack of reproducibility and incompatibility with other well-established end-point assays. Here, we demonstrate biomimetic in vitro platforms capable of reliably reproducing these essential ECM cues. These platforms markedly improve the structural and functional development of a variety of cell types, including stem cells, cardiomyocytes, muscle cells, and many more. Specifically, we show how NanoSurface Plates and Cytostretcher Cell-stretching Instruments can be utilized individually or collectively to study various model systems. The effects of cell-nanotopography interactions on adhesion, signaling, polarity, and migration across many applications such as human epithelia, cardiovascular function, and cancer biology are highlighted. Further, we describe how the differentiation of stem cells can be enhanced by providing a more biomimetic culture environment, with a particular focus on iPSC-derived cardiomyocytes and skeletal muscle cells.

**Speaker**

Hamed Ghazizadeh, Product Manager, NanoSurface Biomedical