1128-92-312 **Adnan Morshed*** (adnan.morshed@wsu.edu), Mechanical and Materials Engineering, Pullman, WA 99164, **Prashanta Dutta**, Mechanical and Materials Engineering, Pullman, WA 99164, and **Robert Dillon**, Mathematics and Statistics, Pullman, WA 99164. *Modeling the TGFβ–SMAD signaling pathway interactions in a tumor microenvironment.*

The TGFβ–SMAD interaction is prevalent in a wide range of tumor microenvironments with autocrine and paracrine mechanisms driving the temporal evolution. However, the dual nature of TGFβ as tumor suppressor and promoter still remains poorly understood. We investigated the dynamic landscapes of TGFβ–SMAD signaling pathway for different levels of extracellular TGFβ. This required a hybrid spatio-temporal description of the extracellular environment with cell membranes being the immersed interfaces. Intracellular reaction network was connected to the extracellular domain through surface reactions. Model tuning with PE25 cells indicate the production of intracellular TGFβ is activated in a switch-like manner depending on the extracellular levels. Additionally, spatial effect of cellular proximity in a microfluidic cell culture setting is explored where the variation in intercellular distance between different cells show transformation in intracellular behavior similar to tumor mediated transformation of fibroblasts to myofibroblasts. Our model also predicts that TGFβ distribution in the domain to be largely affected by receptor concentrations in different types of cells and diffusivity of the media. (Received February 28, 2017)