

Controlled cellular microenvironments for quantitative bioassays

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Cellular interactions with the surrounding matrix proteins, neighboring cells and soluble factors define the state of cell differentiation or proliferation. To create realistic in vitro cellular microenvironments for in vitro bioassays, those extracellular stimuli need to be properly presented. Recent advances in micro-scale technologies allow better control in designing the microenvironment and therefore provide platforms where we can study cellular behaviors in a microscopic level. In this talk, novel microfabrication methods to create intelligent surfaces where we can present synergistic extracellular stimuli and probe cellular phenotype change simultaneously will be introduced. Diverse engineering techniques such as microarraying, photolithography, surface engineering, and biomaterials are employed to create those surfaces.