

Abstract Submitted
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Polyacrylamide scaffolds for studying cellular response to substrate stiffness in three dimensions KENG-HUI LIN, Institute of Physics, Academia Sinica, Taipei, Taiwan — Recent developments in two-dimensional (2D) culture substrates with tunable stiffness and patterned adhesion ligands have demonstrated that biochemical and mechanical cues regulate the biological functions of living cells. We have extended these cell culture platforms into three dimensions (3D), as in complex biological systems, by producing highly ordered scaffolds of polyacrylamide coated with extracellular matrix proteins. We characterized parameters for the scaffold fabrication. We then grew individual fibroblasts in the identical pores of our scaffolds, examining cellular morphological, cytoskeletal, and adhesion properties. We have observed rich variety of morphologies and anchoring strategies assumed by cells growing on our tunable 3D polyacrylamide scaffolds to demonstrate the richness of cell-microenvironment interactions when cell adhesions are not confined to 2D surfaces.

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