

Cell-matrix interaction in a cell-based biosensor

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The main purpose of this research is to understand the cell-matrix interaction in a three dimensional (3-D) cell-based biosensor. We fabricated a poly-l-lactic-acid (PLLA) scaffold by solvent leaching/gas forming method. This polymer scaffold is highly porous and the pores are interconnected. We successfully integrated the human neuroblastoma cell line SH-SY5Y with the scaffolds discussed, and compared the cell-scaffold (3-D) interactions with the cell-cover slip (2-D) interactions regarding the cell attachment. We found the 3-D scaffold enhanced the cell attachment compared to the 2-D cover slip. In follow-up studies, we will investigate whether this enhancement could be reduced by blocking the integrin receptor, which is believed to play a key role in the in vivo cell-ECM interactions. Scanning Electron Microscopy (SEM) and Confocal Microscopy are being use to examine the morphological properties of the scaffold and the cells' behaviors on the scaffold.