

Abstract Submitted
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Magnetically Directed Cell Co-Localization EDWARD FELTON, DANIEL REICH, Johns Hopkins University, YOOJIN AN, CHRISTOPHER CHEN, University of Pennsylvania — The ability to control the movement and location of biological cells has led to novel approaches to several areas of interest, from tissue engineering to the study of cell-cell interactions. We have introduced ferromagnetic nanowires as a tool for applying forces to cells; their high remanent magnetization allows cells bound to nanowires to be manipulated in low-strength magnetic fields. Micropatterned magnetic structures generate magnetic fields that can precisely guide cells into predetermined positions on substrates in culture, and cells can be restricted to localized areas through chemical functionalization of the substrate. We have used these directed cell assembly techniques to organize cells into a variety of patterns with a single cell type, and have extended its utility to include two cell types. We have created regular arrays of cells in which heterotypic cells pairs are magnetically trapped at each array site. This method of producing large numbers of isolated heterotypic cell pairs is potentially useful in studies of cell-cell interactions between different cell types.

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