

Title: *A chemically-defined screening platform reveals behavioral similarities between primary human mesenchymal stem cells and endothelial cells.*

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Insight, Innovation, Integration

Insight: Our results indicate that human umbilical vein endothelial cells and human mesenchymal stem cells exhibit previously unrealized similarities in attachment, spreading, and proliferation as a function of cell adhesion ligand density, yet stark differences in migratory behavior. **Innovation:** These studies combined a chemically-defined self-assembled monolayer array platform with automated time-lapse microscopy to screen for the effects of cell adhesion ligand density (over several orders of magnitude) on several different cell behaviors. **Integration:** Investigation of identical sets of conditions for both cell types using a synthetic, chemically defined array allowed us to (i) rigorously compare behaviors within a single cell type and (ii) compare behaviors between both cell types to identify links between cell adhesion and critical cell behaviors.