**Feel Thy Neighbor: Inter-cellular Force Interaction via Deformable Matrix**

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Cell-matrix force interactions have long been known to influence cell fate and behavior. Most studies of cultured cells deal with two extremes of cell density: either cells are sparse and isolated or densely packed into a monolayer. However, cells in a tissue are neither isolated nor packed in a monolayer, but are connected to other cells through the extracellular matrix (ECM). In this study, we explore the behavior and fate of cells that are mechanically connected via a deformable matrix. To address this question, we seeded mesenchymal stem cells (MSCs) at varying seeding density on two-dimensional substrates of different stiffness. At low density, cells on soft substrates do not spread, as is well documented. However, cell-cell distance has profound effects on cellular responses to mechano-signals, and at sufficiently high seeding density, cells spread, form stress fibers and mature focal adhesions, even on a soft substrate. Interestingly, the maximum depth of the substrate that a cell can sense and respond to also changes with seeding density. Our findings indicate that closely spaced cells sense the tension caused by their neighbors, and start spreading in response. We also show that such cell-cell mechanical interactions can modify cell cycle progression. In summary, cells can collectively modify their mechanical micro-environment, and thus change their fate in a feed-back mechanism.