

A NOVEL METHOD TO QUANTIFY MECHANICAL TENSION IN CELL MONOLAYERS

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Introduction A new technology to analyze mechanical properties of adherent cell monolayers grown on elastic silicon membranes is introduced. Measurements were performed using 3T3 (NIH) fibroblasts under the influence of Cytochalasin D and Thrombin. The stress-strain relation of the cell monolayer-silicon-composite was monitored. The drum-like construct of the culture chamber opens new

roads for studying the mechanics of cell monolayers and of ultra flat two dimensional tissue constructs. Steady state as well dynamic mechanical studies can be performed. Defined mechanical boundary conditions together with the known number and orientation of the cells allow precise information on the average tension exerted by a single cell within the monolayer.