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Force Dependent Changes in Non-Erythroid Spectrin and Ankyrins ELENI DEGAGA, MARTIN FORSTNER, Syracuse University — Mechanotransduction in cells describes the process by which external physical stimuli are converted into biochemical activity and plays an important role in many biological functions on both the cell and tissue level. However, the specific mechanisms by which mechanical forces lead to particular molecular and cellular responses are much less understood. We investigate the changes in non-erythroid spectrin and ankyrins as a result of equi-biaxial strain application to live cells in culture. Specifically, we focus on the spectrins' role in the ubiquitination process - a vital process in the regulation of protein degradation- of spectrin and ankyrins. We utilize immune-fluorescence staining and fluorescent fusion proteins for quantitative fluorescence imaging as well as biochemical methods to measure changes in of cell's spectrin and ankyrin content. Protein expression levels and localization between cells exposed to mechanical stimuli of different temporal and spatial profiles are compared. In addition, the threshold behavior of cell proliferation - as measured by number densities - of a variety of cell types as a function of mechano-stimulation is investigated.

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