

Abstract Submitted
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Internal Structure, Fluctuations and Micromechanical Properties of Bovine Arterial Endothelial Cells: An Optical Tweezers Study¹

CAROLYN PERRETTA, SHEENA FARRELL, OLGA LATINOVIC, H. DANIEL OU-YANG — The purpose of this study is to probe the micromechanical properties of cultured bovine arterial endothelial cells by using optical tweezers to trap endogenous granular structures in the cells. A novel application of oscillating optical tweezers and coherent detection of the forced oscillation of the trapped particle enables us to measure the viscoelastic properties in soft matter with a broad frequency range and with a high data sampling rate. This study was designed to determine the difference between the viscoelasticity of the cytoskeleton around granular structures in close vicinity of the nucleus and around the cell's edge. Time dependent measurements of the mechanical properties at a fixed oscillation frequency revealed pronounced fluctuation in living cells, indicating local dynamics of the cytoskeleton around the probed particle. Possible causes for the fluctuations will be discussed.

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