

Abstract Submitted
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Characterization of endothelial cell remodeling using Multiple Particle Tracking Microrheology.¹ JUAN C. DEL ALAMO², GADOR CANTON, YI-SHUAN LI, GERRARD NORWICH, SHU CHIEN, JUAN C. LASHERAS, University of California, San Diego — The cytoskeleton of endothelial cells remodels itself in response to external mechanical stimuli, causing changes in the proliferation and orientation of stress fibers. We speculate that these changes modify the magnitude and isotropy of the viscoelastic cytoplasmatic shear moduli to minimize the cell's internal deformation energy. To assess this idea, we have applied Multiple Particle Tracking Microrheology (MPTM) to vascular endothelial cells subjected to different stress protocols. This technique is based on the observation of the Brownian dynamics of small intracellular markers (either endogenous or exogenous), and has been preferred to the more standard Magnetic Twisting Cytometry because it is more innocuous for the cytoskeleton. We have extended the MPTM technique to provide the anisotropy of the shear moduli and to account for local effects of cell crawling or spreading.

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