

Abstract Submitted
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Traction Forces exerted by crawling cells BALDOMERO ALONSO-LATORRE, JUAN C. DEL ALAMO, JAVIER RODRIGUEZ-RODRIGUEZ, ALBERTO ALISEDA, RUDOLPH MEILI, RICHARD FIRTEL, JUAN C. LASHERAS, University of California, San Diego — We measure the forces exerted by *Dictyostelium discoideum* cells crawling over a deformable substrate from the displacements of fluorescent beads embedded in it. A particle tracking technique similar to PIV is used to obtain the displacements. From them, forces are computed by solving the elasto-static equation in a finite thickness slab. We will show that the finite thickness of the substrate and the distance of the beads to its surface affect substantially the results, although previous traction cytometry techniques neglected them. The measured forces are correlated to the different stages of the crawling cycle for various cell strains. It has been observed that a large fraction of the forces measured on the substrate are originated by the cell's internal tension through all the stages of motion, including the protrusion of pseudopods. This result suggests that the viscous drag exerted by the fluid in which the cells are immersed is very small compared to the forces applied by the cytoskeleton on the substrate.

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