

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Mechanics of actin networks crosslinked with mutant human α -actinin-4¹ SABINE VOLKMER, MIT, DANIEL BLAIR, KAREN KASZA, DAVID WEITZ, Harvard University — Globular actin can be polymerized *in vitro* to form F-actin in the presence of various binding proteins. These networks often exhibit dramatic nonlinear rheological response to imposed strains. We study the rheological properties of F-actin networks crosslinked with human α -actinin-4. A single genetic mutation of the α -actinin-4 protein is associated with focal and segmented glomerulosclerosis (FSGS), a genetic disorder which leads to renal failure. Mechanically, the mutant crosslinker has an increased binding strength compared to the wild type. We will show that human α -actinin-4, displays a unique stiffening response. Moreover, we also demonstrate that a single point mutation dramatically effects the inherent relaxation time of the crosslinked network.

¹Funding from the NSF under grant DMR-0602684

Daniel Blair
Harvard University

Date submitted: 20 Nov 2006

Electronic form version 1.4