

Abstract Submitted  
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**Microfluidic measurement of effects of ACF7/MACF1 gene on the mechanics of primary cortical neurons** DONGHEE LEE, University of Nebraska-Lincoln, MINHAN KA, WOO-YANG KIM, University of Nebraska Medical Center, SANGJIN RYU, University of Nebraska-Lincoln — Actin filaments and microtubules play important roles in determining the mechanics of cells, and ACF7/MACF1 (Actin Crosslinking Family 7/Microtubule And Actin Crosslinking Factor 1) gene seems to be closely related to connections between actin filaments and microtubules. To identify such roles of the ACF7/MACF1 gene of primary cortical neurons, we isolated neuronal cells from the cerebral cortex of the embryonic mouse brain, which is important in memory, language and perception. We exerted viscous shear flow to normal neuronal cells and ACF7/MACF1 gene knockout neuronal cells using rectangular microfluidic channels. While changing viscous shear stress on the cells, we recorded changes in the morphology of the two cell types using video microscopy. Having analyzed the deformation of the cells, we could quantitatively correlate differences in the morphological change between the both normal and ACF7/MACF1 gene knockout neuronal cells to the applied shear force, which will contribute toward identifying cell mechanical roles of the ACF7/MACF1 gene.

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