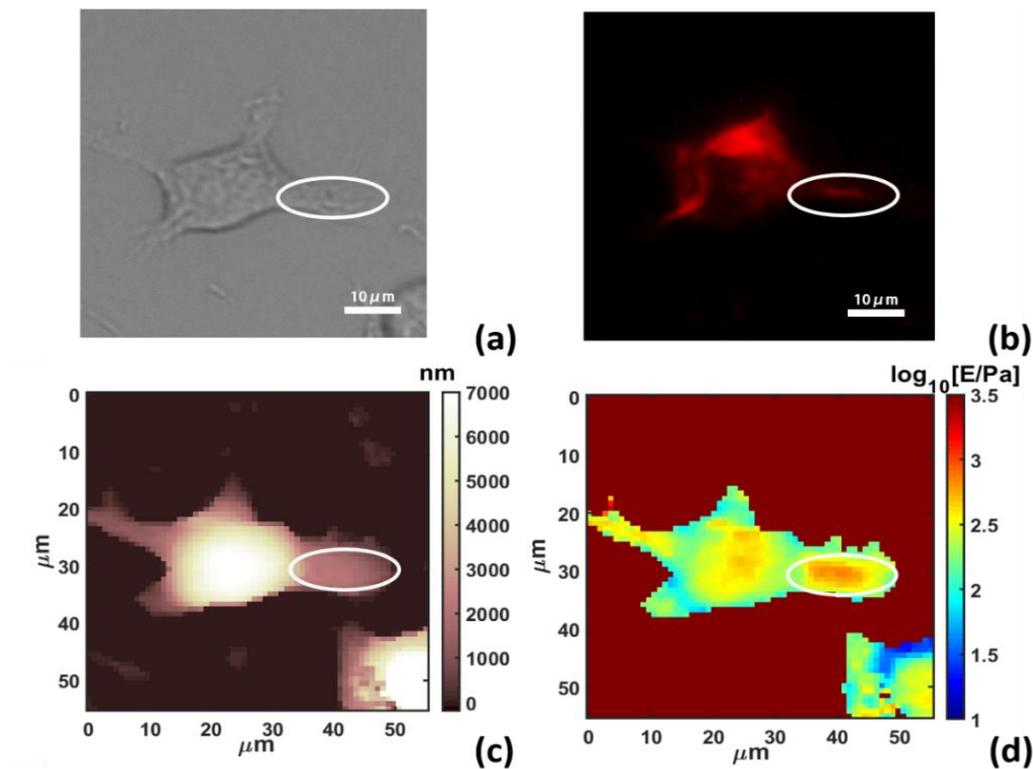
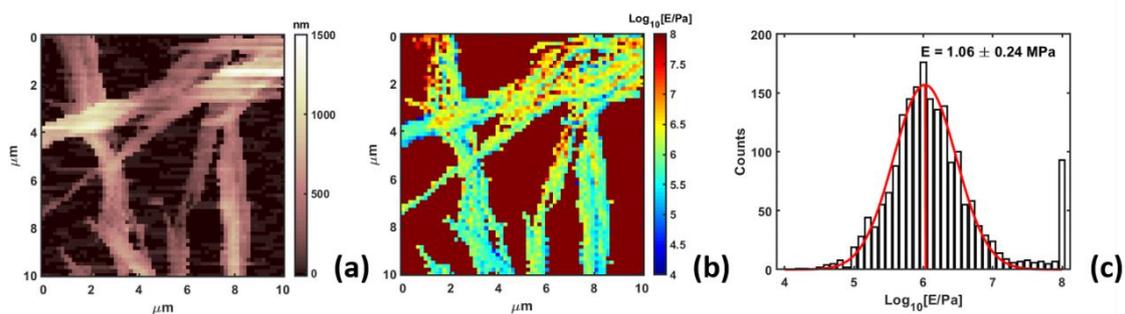


Supplementary Information

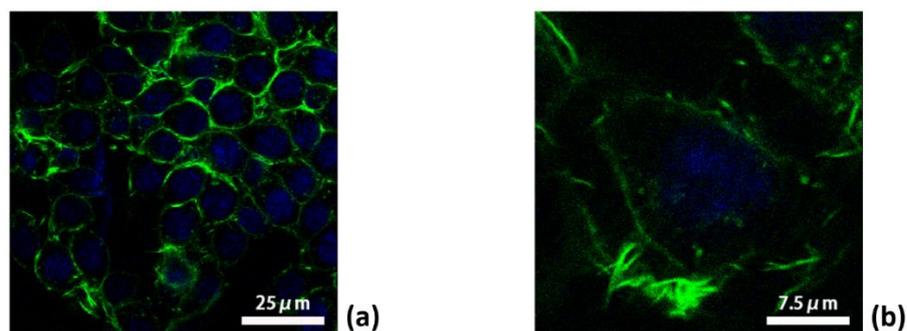
# Spatially Resolved Correlation between Stiffness Increase and Actin Aggregation around Nanofibers Internalized in Living Macrophages



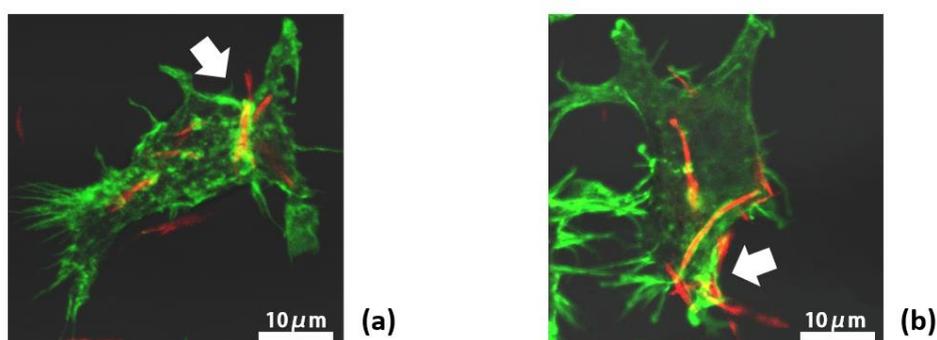
**Figure S1.** Optical microscopy and AFM colocalized observation of the cell presented in Figure 3 of main text. (a) optical transmission image, (b) fluorescence image, (c) AFM height image, (d) Young's Modulus mapping.



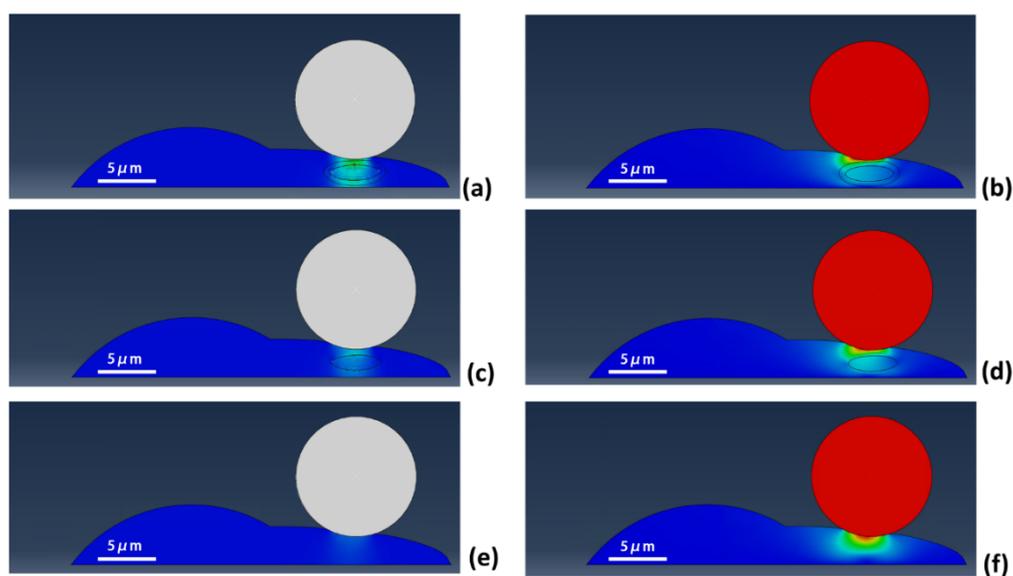
**Figure S2.** Nanomechanical analysis in PBS with AFM for PLGA-PEG nanofibers used in this study after deposition on mica. (a) Morphology, (b) Young's Modulus map, (c) quantification histogram of Young's Modulus.



**Figure S3.** CLSM images of fixed control. No red emission is detected due to absence of nanofibers in culture medium. (Blue: DAPI for nuclei, green: Phalloidin for actin), (a) low magnification, scale bar 25  $\mu\text{m}$ , (b) high magnification, scale bar 7.5  $\mu\text{m}$ .



**Figure S4.** CLSM images of fixed cells showing the internalized PLGA-PEG nanofibers after 14h and actin distribution (Scale bar: 10  $\mu\text{m}$ . Blue: DAPI for nuclei, green: Phalloidin for actin, red: Nile Red for nanofibers, white arrow shows actin wrap around nanofiber), (a,b) high magnification scale bar 10  $\mu\text{m}$ .



**Figure S5.** Normal stress field and magnitude of normal displacement field for FEM simulation of (a) and (b) PLGA-PEG nanofiber with 500 nm actin wrap, (c) and (d) PLGA-PEG nanofiber without wrap, (e) and (f) cell body without heterogeneity. Simulation fields were fixed at 600 nm of indentation after contact point.