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Article

Tracking Lysosome Migration within Chinese Hamster Ovary (CHO) Cells Following Exposure to Nanosecond Pulsed Electric Fields

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Supplementary Material

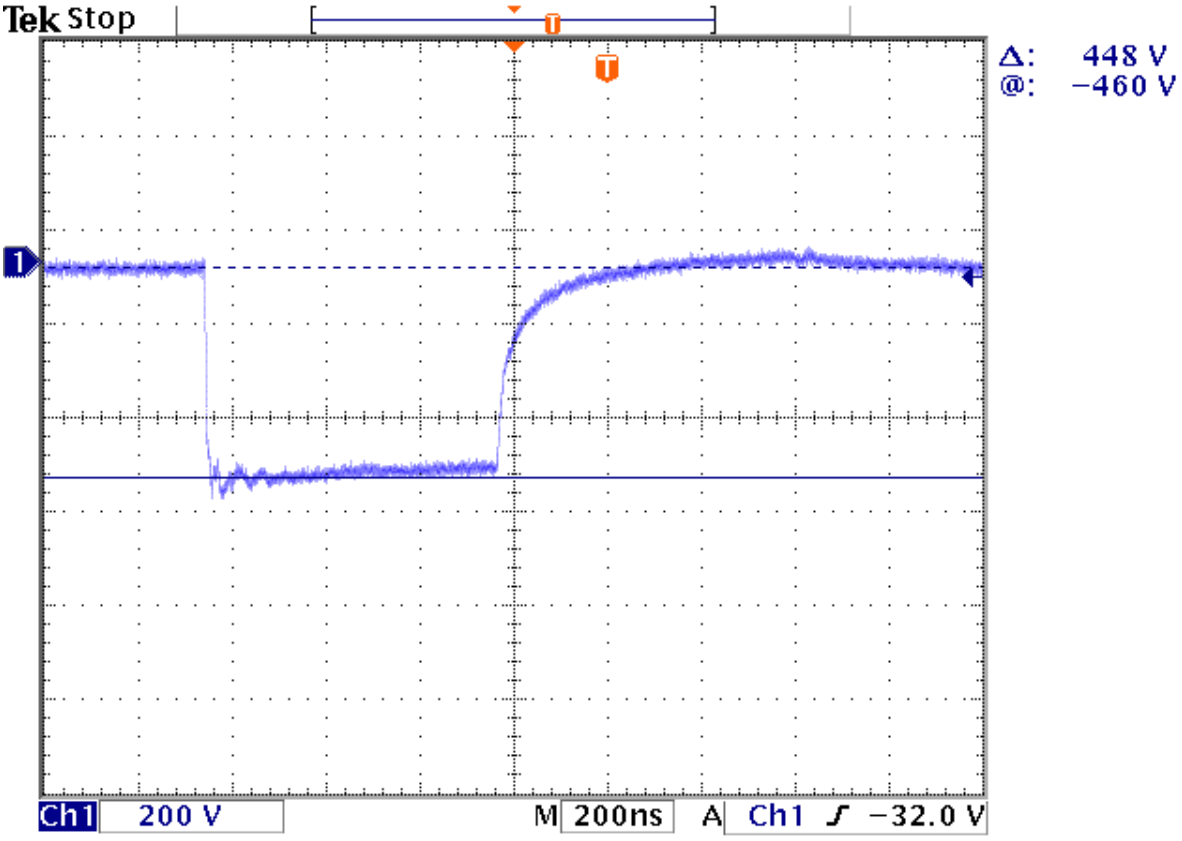
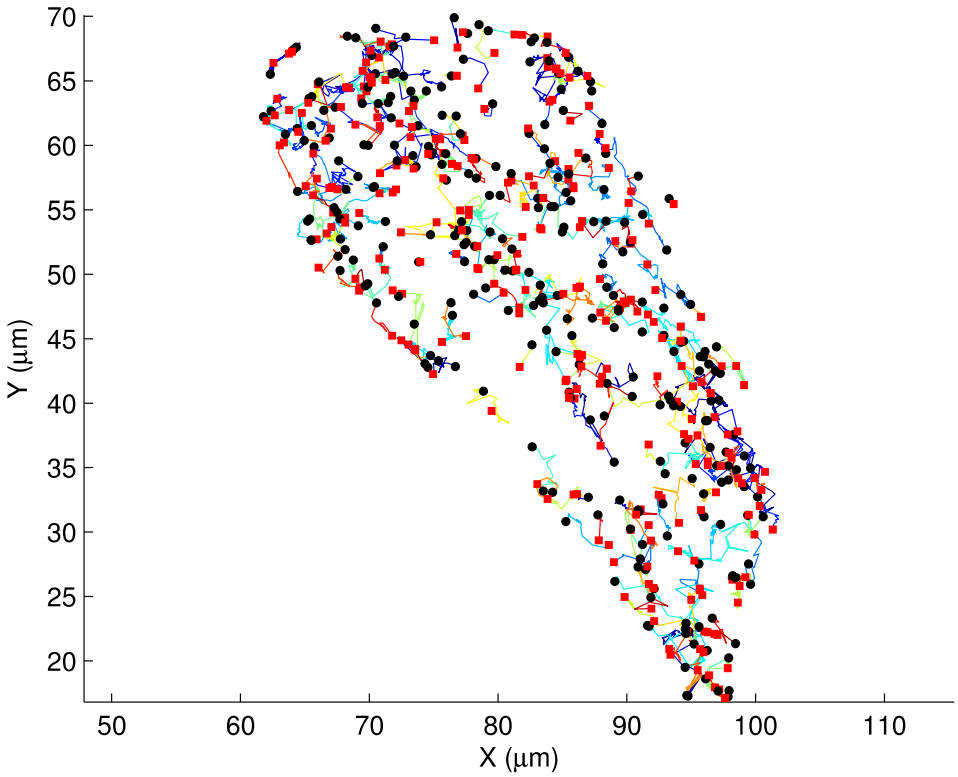


Figure S1. Representative oscilloscope trace of a single 600 ns electric pulse with peak amplitude of about -460 V delivered across parallel tungsten rod microelectrodes in solution with PEG 300 and without Ca^{2+} (PNC).

(a)



(b)

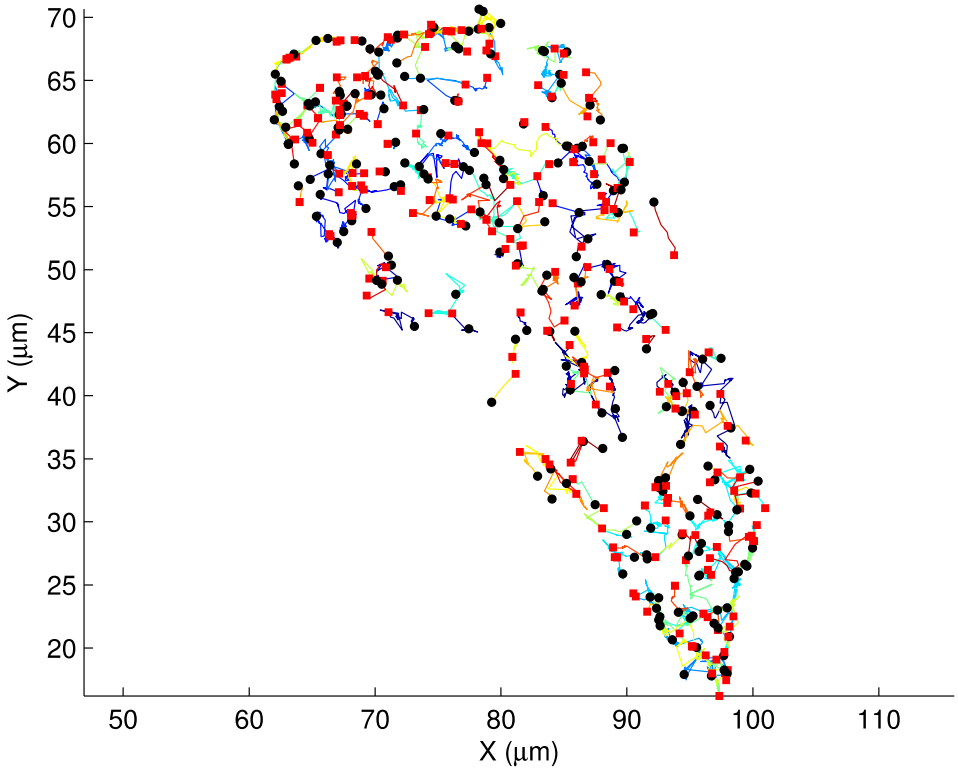


Figure S2. Particle tracks of lysosomes within a CHO cell over 180 s (a) before and (b) after exposure to a single 600 ns PEF of 16.2 kV/cm in solution without Ca^{2+} (NC1). Black circles (●) represent initial particle spots, while red squares (■) indicate final spot detections. Tracks are represented by arbitrarily colored lines.

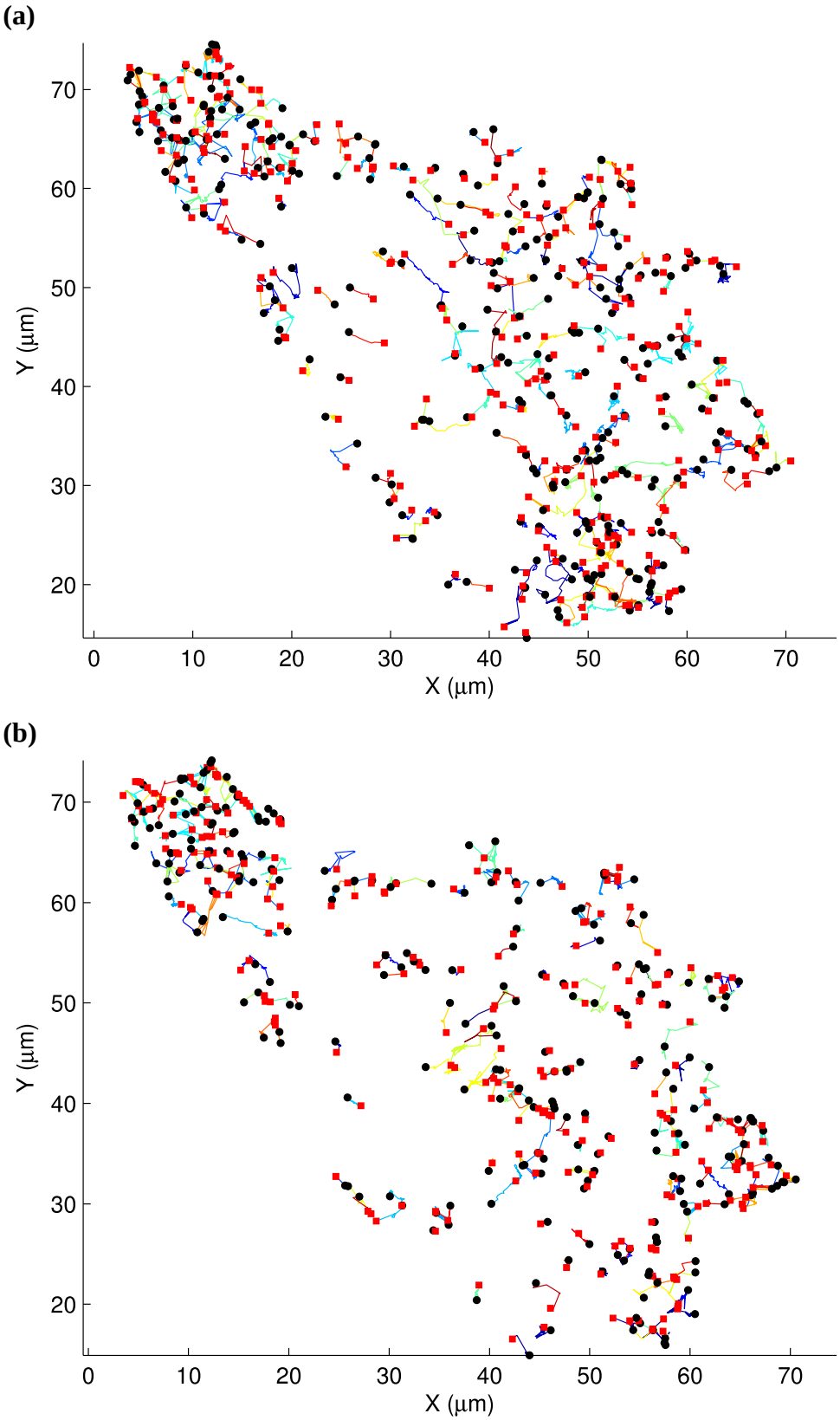


Figure S3. Particle tracks of lysosomes within a CHO cell over 180 s (a) before and (b) after exposure to a single 600 ns PEF of 16.2 kV/cm in solution with Ca^{2+} (C1). Black circles (•) represent initial particle spots, while red squares (■) indicate final spot detections. Tracks are represented by arbitrarily colored lines.

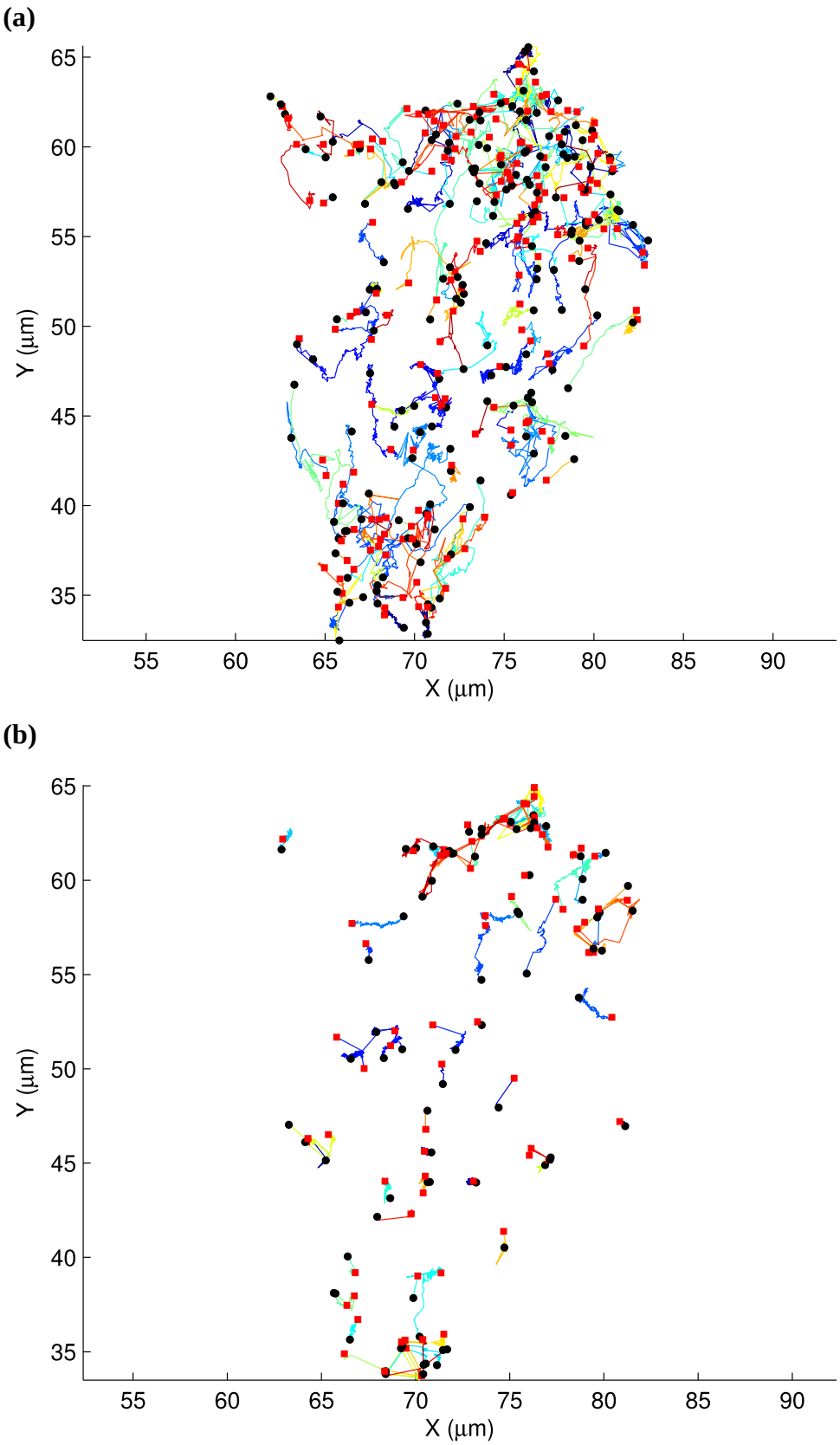
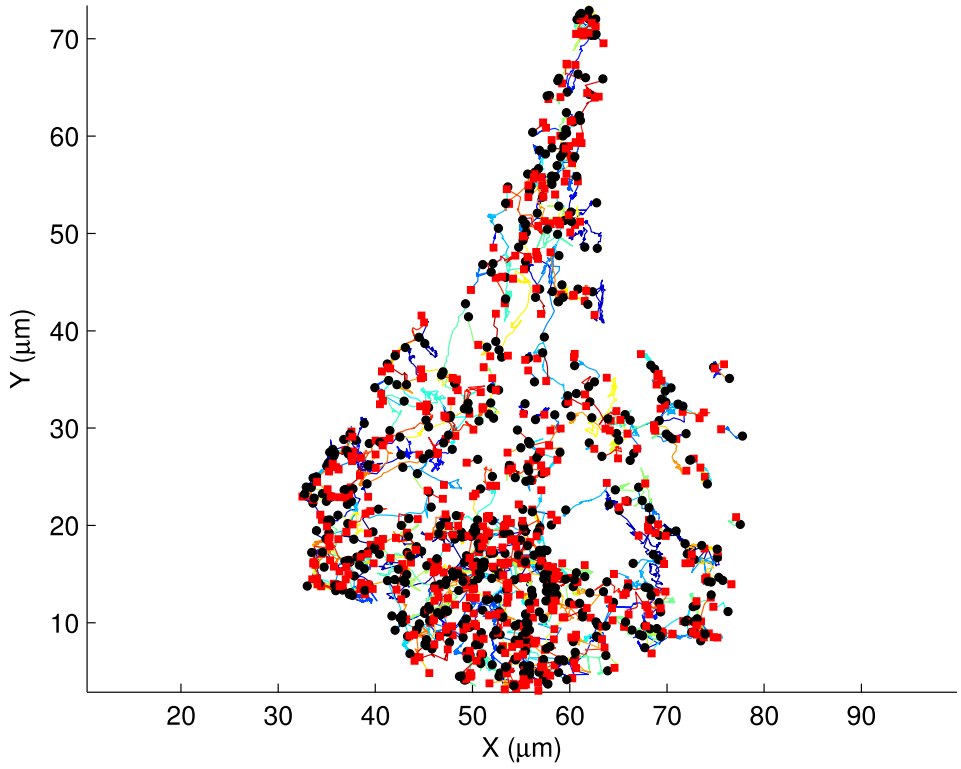


Figure S4. Particle tracks of lysosomes within a CHO cell over 180 s (a) before and (b) after exposure to a single 600 ns PEF of 16.2 kV/cm in solution with PEG 300 and without Ca^{2+} (PNC1). Black circles (•) represent initial particle spots, while red squares (■) indicate final spot detections. Tracks are represented by arbitrarily colored lines.

(a)



(b)

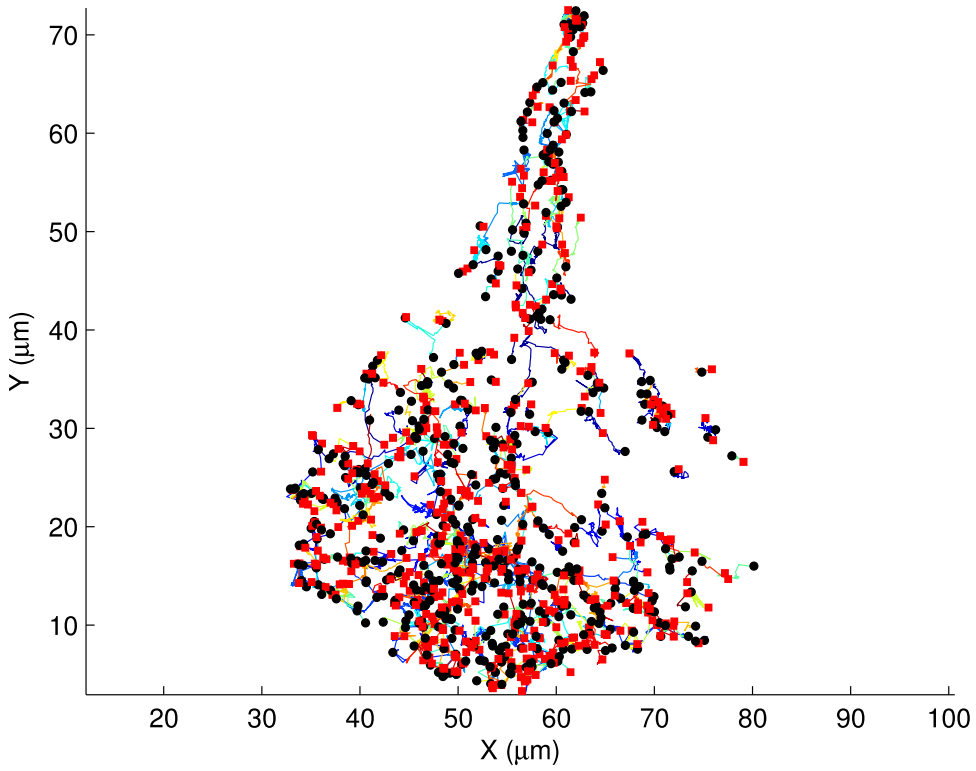
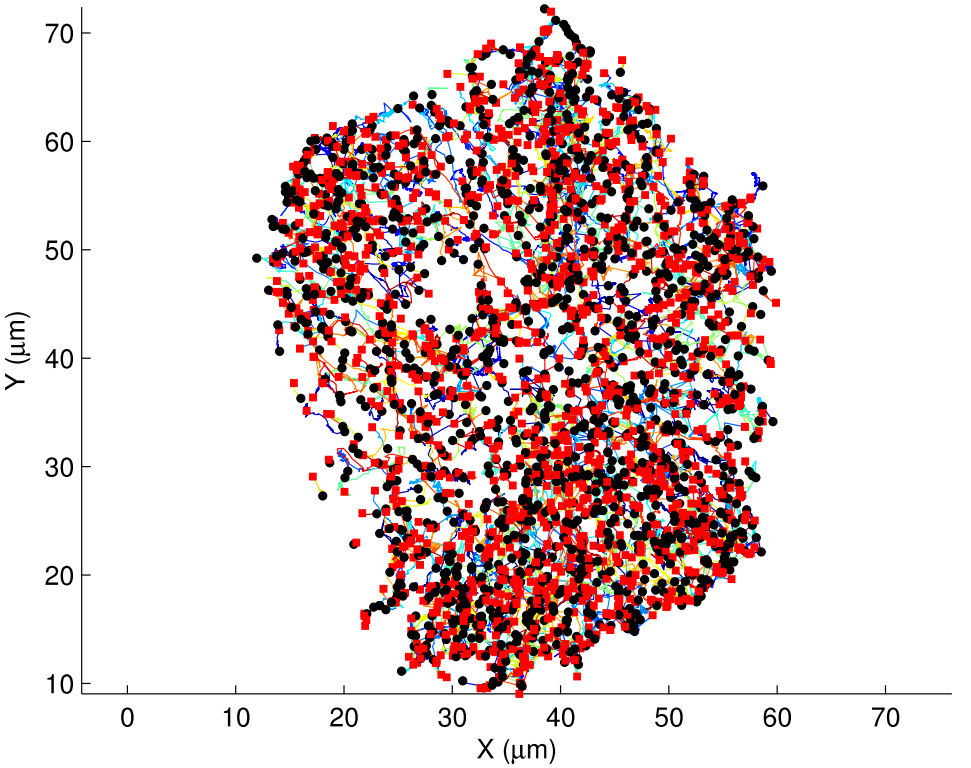


Figure S5. Particle tracks of lysosomes within a CHO cell over 180 s (a) before and (b) after a sham exposure (i.e. no exposure) in solution with PEG 300 and without Ca^{2+} (PNC1). Black circles (●) represent initial particle spots, while red squares (■) indicate final spot detections. Tracks are represented by arbitrarily colored lines.

(a)



(b)

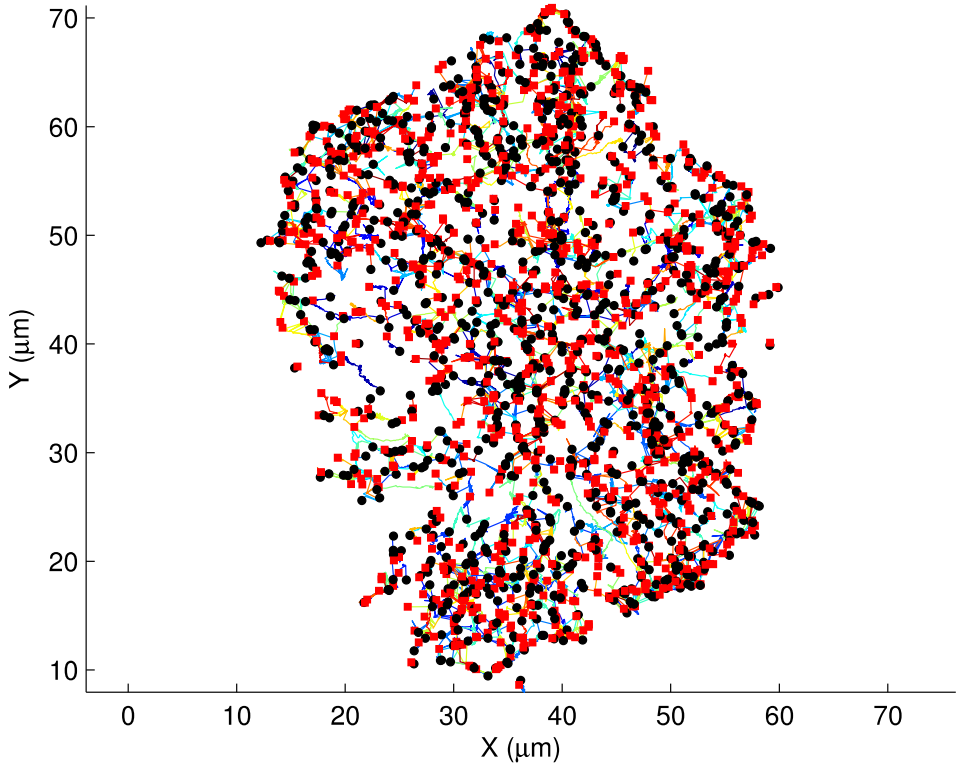


Figure S6. Particle tracks of lysosomes within a CHO cell over 180 s (a) before and (b) after a sham exposure (i.e. no exposure) in solution with PEG 300 and with Ca^{2+} (PC1). Black circles (•) represent initial particle spots, while red squares (■) indicate final spot detections. Tracks are represented by arbitrarily colored lines.

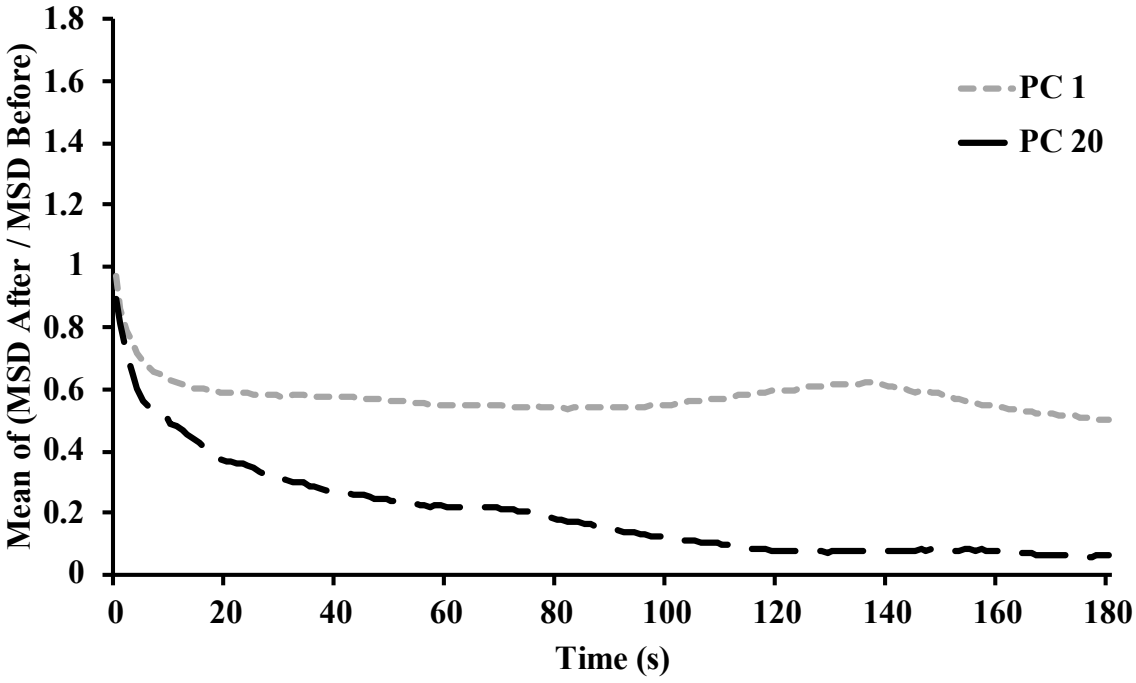


Figure S7. Ratios of the pre- and post-nsPEF means of cumulative MSD over 180 s for all lysosome tracks in cells in the presence extracellular Ca^{2+} and in the presence of PEG 300 are shown. Only a single cell is analyzed for each condition. Exposures consisted of 1 or 20, 600-ns duration pulses at 16.2 kV/cm.

Table S1. Results for particles tracked in cells within solution containing extracellular Ca^{2+} and PEG, before and after exposure to 1 (PC 1) or 20 (PC 20) pulses of 600 ns duration at 16.2 kV/cm. Only one cell per type of exposure is represented, and means and standard deviations (std. dev.) are calculated for all particle tracks within the single cell.

	PC 1	**PC 20**
Diffusion Coefficient, Before, Mean ± Std. Dev. ($\mu m^2/s$)	0.0340 ± 0.0578	0.0302 ± 0.0786
Diffusion Coefficient, After, Mean ± Std. Dev. ($\mu m^2/s$)	0.0295 ± 0.0556	0.0331 ± 0.0745
Velocity, Before, Mean ± Std. Dev. ($\mu m/s$)	0.214 ± 0.283	0.165 ± 0.242
Velocity, After, Mean ± Std. Dev. ($\mu m/s$)	0.200 ± 0.286	0.135 ± 0.238
% Decrease in Number of Particle Tracks	26.1	54.6