

Electronic Supplementary Information for Large-scale arrays of picoliter chambers for single-cell analysis of large cell populations

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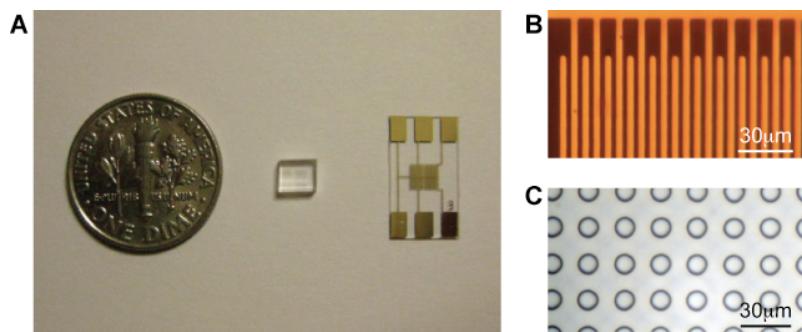


Fig. S1. Fabricated devices. (a) A PDMS (PolyDiMethylSiloxane) microwell array and a glass cover with gold electrodes. (b) An enlarged view of gold electrode patterns on the glass cover. (c) An enlarged view of the PDMS microwell array.

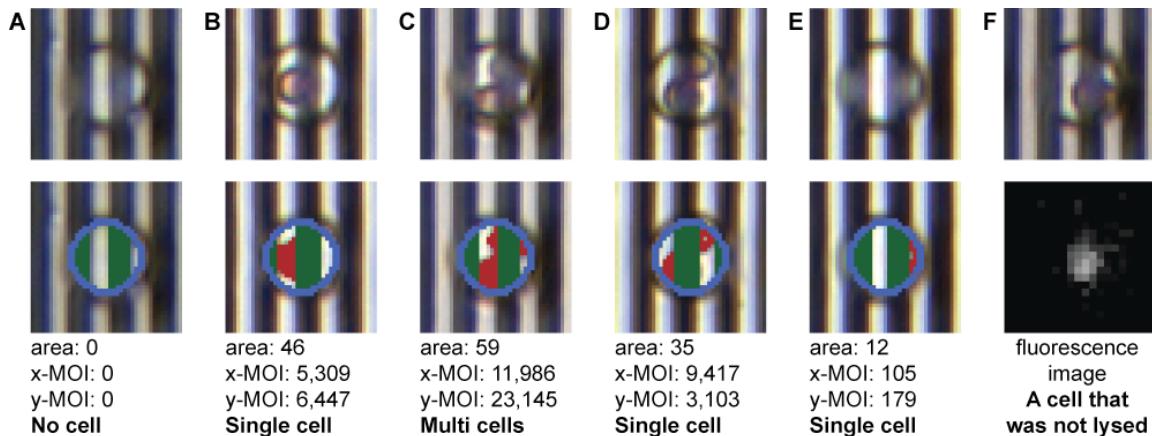


Fig. S2. Microchamber images of events a ~ f in Fig. 4B. The bottom parts of figures A ~ E show cell-recognition results of the image analysis. The events a, b, and c were identified correctly while the events d and e were misidentified as single-cell events. The event f indicates that a single cell was not lysed but permeabilized as shown in the fluorescence image after applying electric fields.

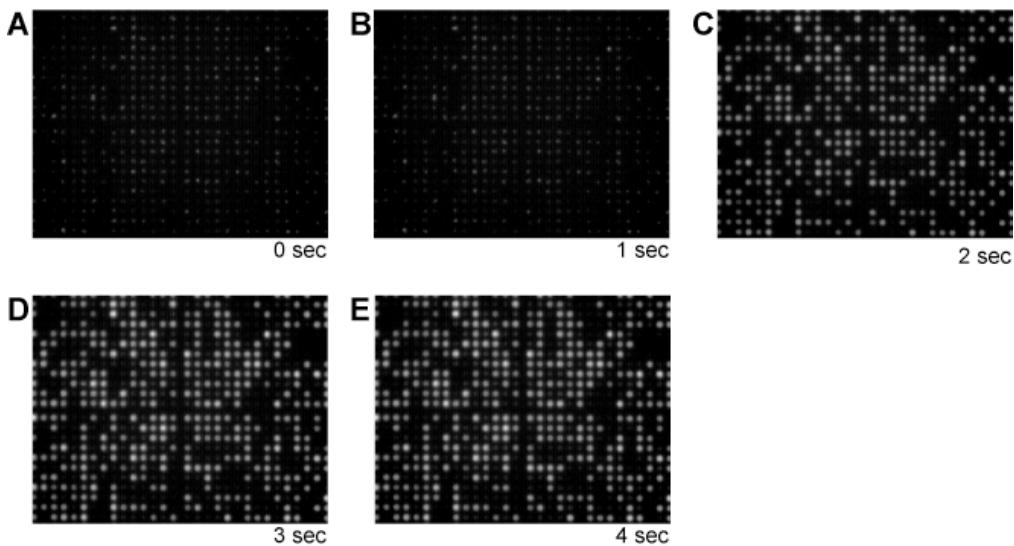


Fig. S3. Successive fluorescence images of microchambers (Fig. 4A) at 519 nm before and after lysis of the cells. Images were captured at every 1 sec. Electrical fields for the lysis were applied at ~1.8sec.

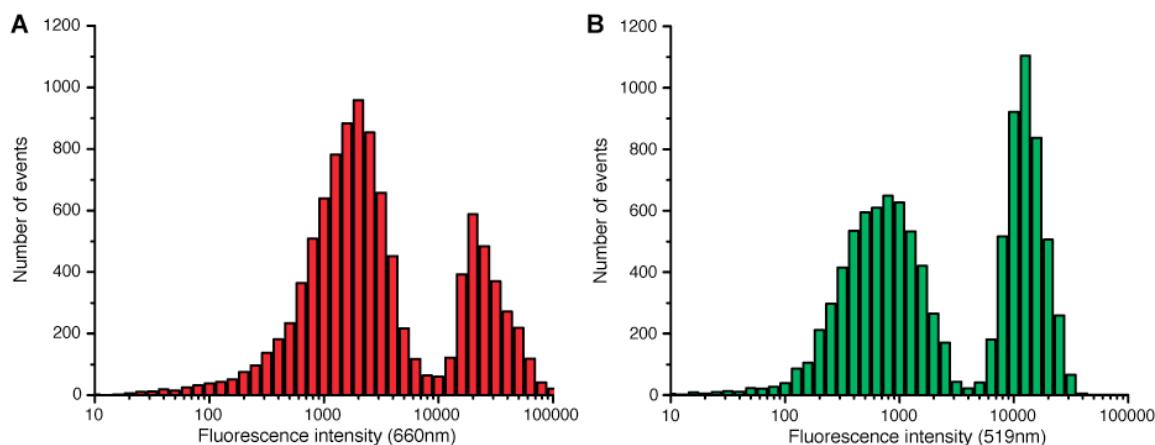


Fig. S4. Fluorescence intensity histograms of the raw events (Fig. 4B) measured by SiCMA. (a) Fluorescence intensity at 660nm. (b) Fluorescence intensity at 519nm.

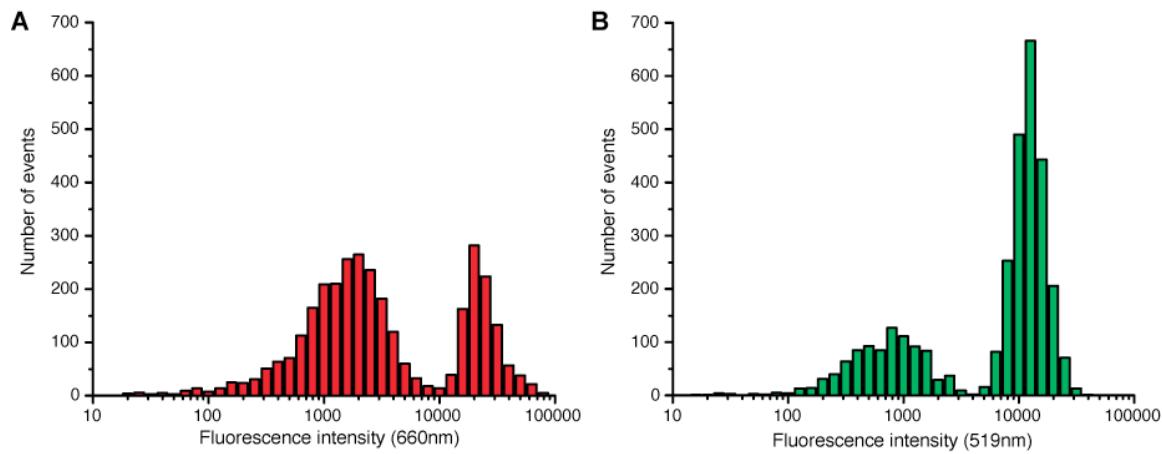


Fig. S5. Fluorescence intensity histograms of the filtered events (Fig.4C) measured by SiCMA. (a) Fluorescence intensity at 660nm. (b) Fluorescence intensity at 519nm.

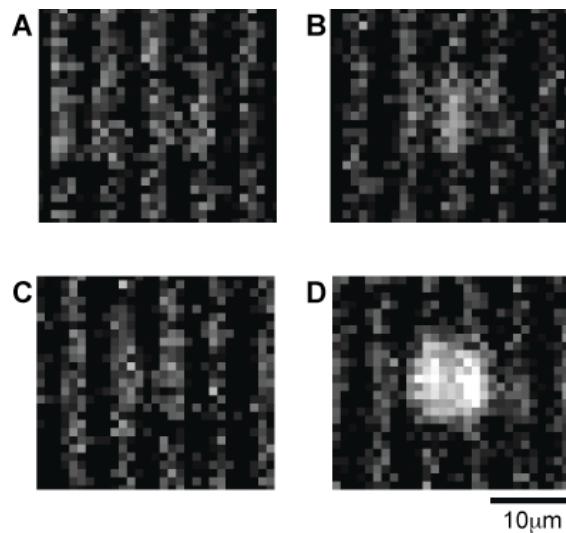
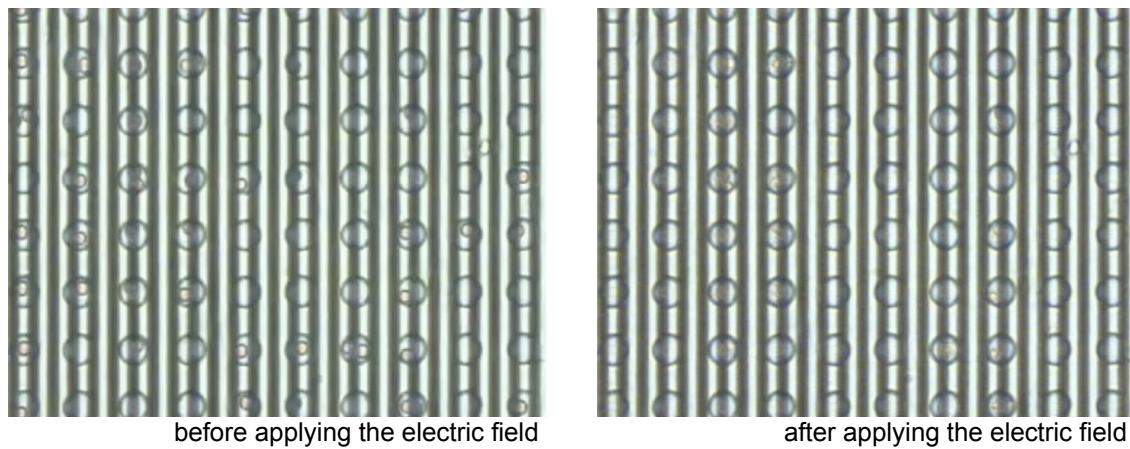


Fig. S6. Fluorescence images of microchambers measuring the caspase activity (Fig.5). No cell at (a) 0 min and (b) 30 min (●). Single cell at (c) 0 min and (d) 30 min (■). Reactions were incubated at 20°C.



Movie. S1. Electrical lysis of red blood cells in the microchamber array. A 0.2 second pulse of a 36.8Vpp, 2MHz AC signal was applied to the 3 μ m gap electrodes.