**Electronic Supporting Information**

# 3D Nanochannel Array Electroporation for High-throughput Cell Transfection with High Uniformity and Dosage Control

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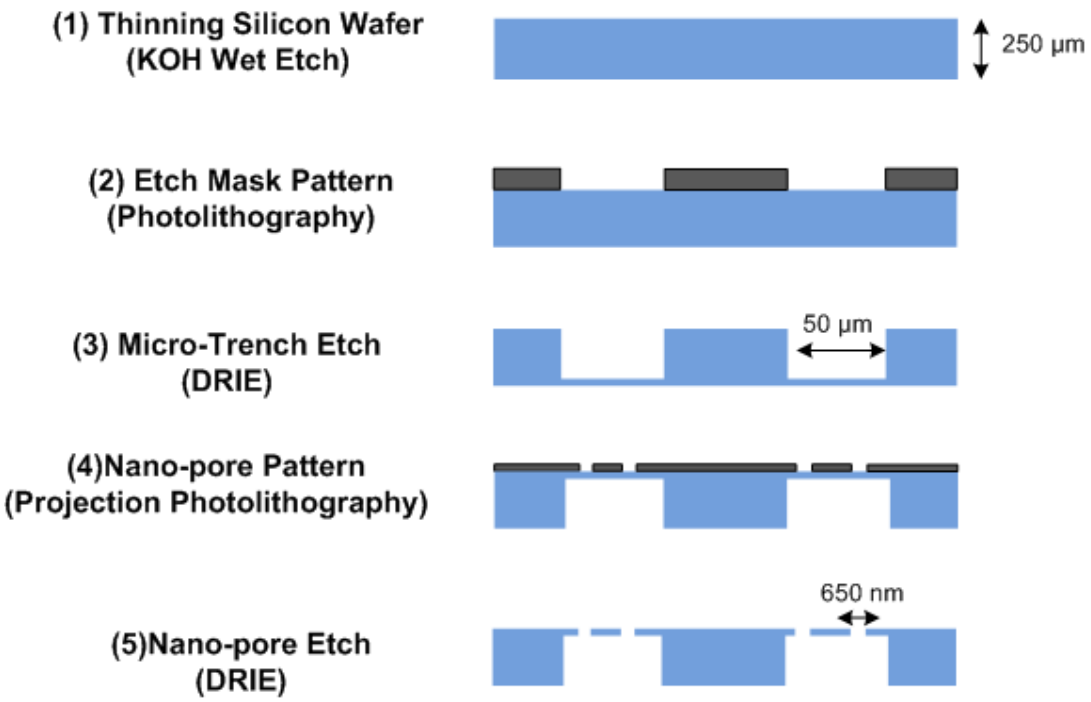


**Fig. S1 The fabrication procedure of the silicon 3D NEP chip.** The microchannel-nanochannel array chip is mainly implemented with projection photolithography and DRIE techniques.

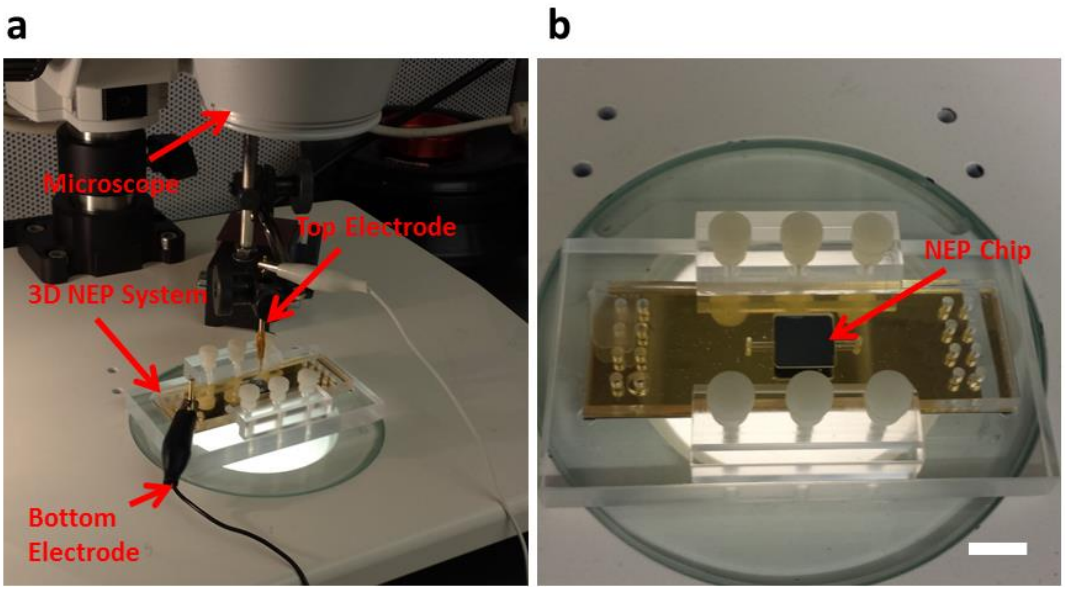


**Fig. S2. Photographs of the 3D NEP system. (a)** An overview of the components in 3D NEP system, including the top electrode, the bottom electrode, NEP chip, PMMA support platform, PDMS spacers. All of them are stacked on a PMMA substrate with several clamps. An upright microscope is used to observe the experiment. **(b)** Zoom-in view of the system showing the silicon NEP (1 cm by 1 cm) placed on the support platform. Scale bar: 10 mm.

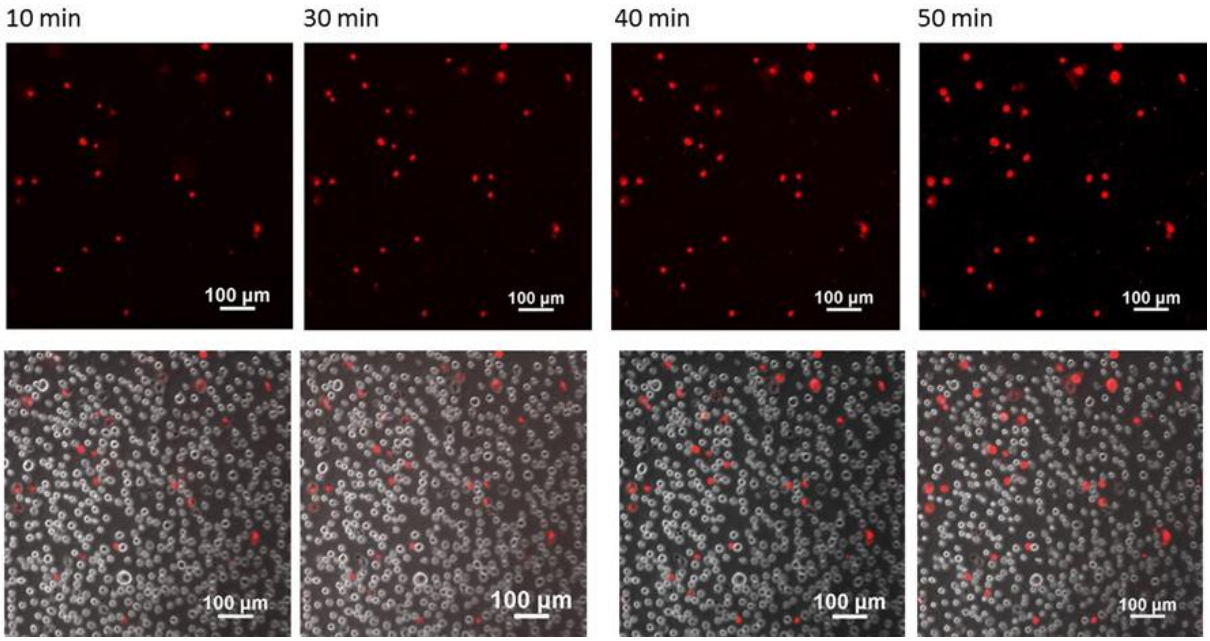


**Fig. S3 Time-elapse images illustrating a slow and random process in BEP for PI delivery.** The upper panel shows gradually increased number of transfected cells as well as fluorescence intensities. The lower panel consists of merged images with phase contrast and red fluorescence, showing the low efficiency of BEP in this experiment.