Supporting Information

Rapid and Easy Extracellular Vesicle Detection on a Surface-Functionalized Power-Free Microchip toward Point-of-Care Diagnostics

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Keywords:

Surface-functionalized power-free microchip; electron beam-induced graft polymerization; Point-of-care diagnostics; Extracellular vesicles; Cancers

EV detection on an anti-CD63 antibody-impregnated bare PDMS microchip

- As a control for EV detection on the surface-functionalized power-free microchip, EV detection was conducted on an anti-CD63 antibody-impregnated bare PDMS microchip.

- The microchannels of a bare PDMS microchip were filled with 1 μg/mL of anti-CD63 antibody solution and the microchip was incubated at 310 K for 2 h in 100% humidity. This process impregnated the anti-CD63 antibody onto the microchannel surface by physical adsorption.

- After washing in ultrapure water, the microchip was degassed for 1 h and EV detection was conducted on the microchip by LFDA with same conditions as for EV detection on the SF-PF microchip.

- There was no statistically significant difference in the signal-to-blank ratios between EV-blank and blank-blank.

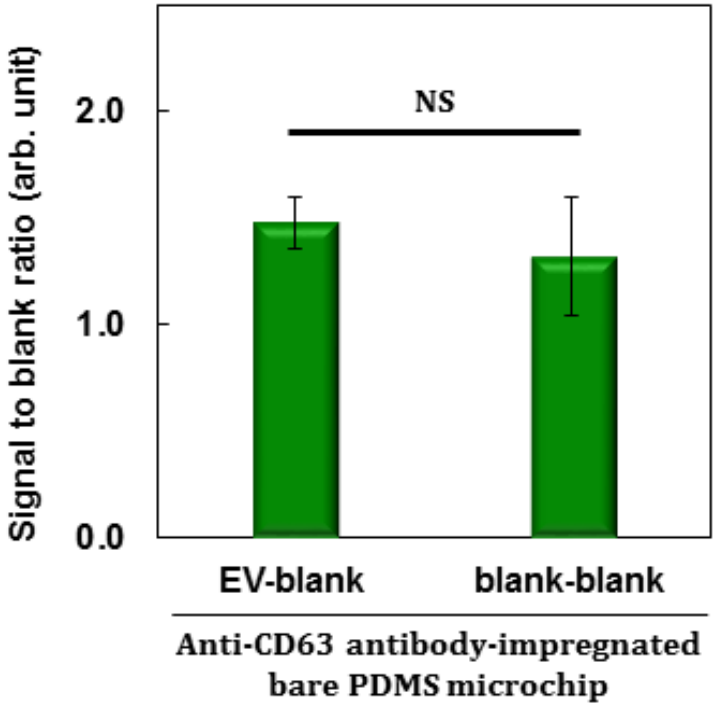

Figure S1. Statistical evaluation of the EV detection on an anti-CD63 antibody-impregnated bare PDMS microchip.

Protocol for EV detection by laminar flow-assisted dendritic amplification on the SF-PF microchip

- Blocking: blocking buffer (1% Roche Blocking Reagent, 0.02% (w/v) sodium dodecyl sulfate, 5× saline sodium citrate, and 0.05% Tween 20; Roche, Basel, Switzerland) was injected into the microchannel for 3 min.

- EV capture: one microliter of the target EV-containing PBS solution and 1.0 µL of biotinylated 10 nM anti-CD63 antibody in PBS were injected into the microchannel for 5 min to obtain the antibody-EV-antibody complex.

- Signal amplification: two amplification reagents, fluorescein isothiocyanate-conjugated streptavidin (5.0 µg/mL) and biotinylated anti-streptavidin (20 µg/mL), were injected into the microchannel.

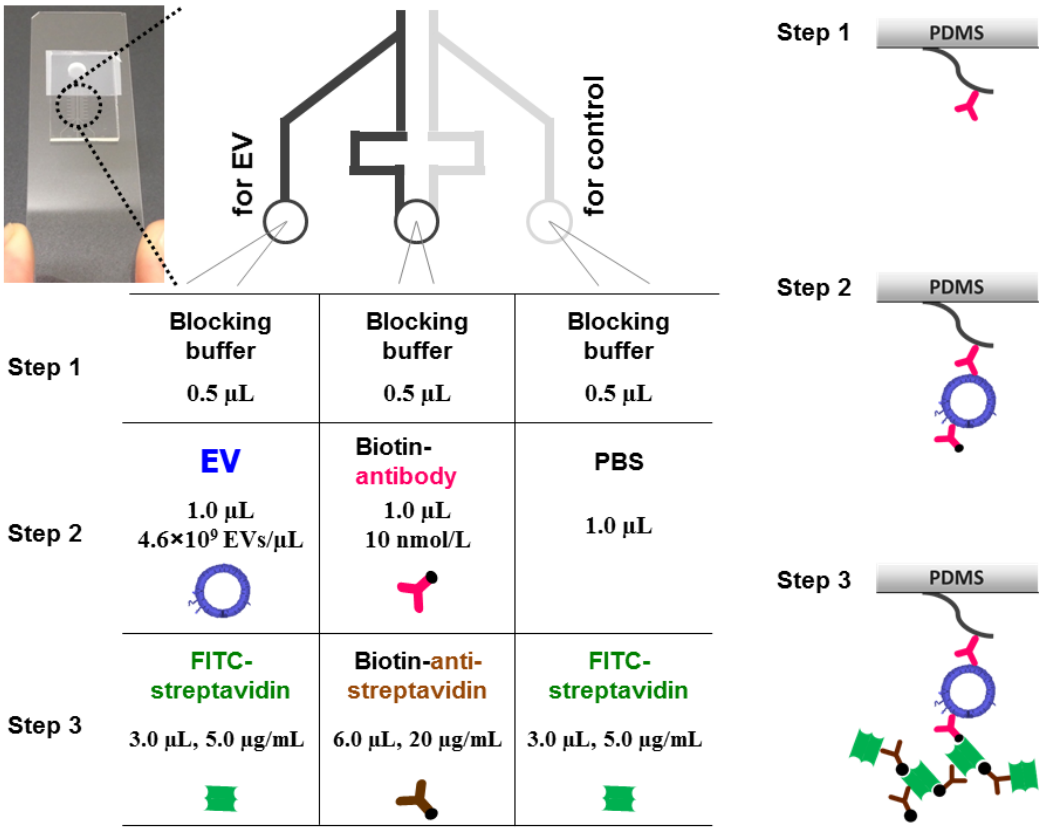

Figure S2. EV detection protocol: laminar flow-assisted dendritic amplification on the SF-PF microchip.