Electronic Supplementary Material (ESI) for Lab on a Chip.

Supplemental materials

Mobile imaging platform for digital influenza virus counting

Author

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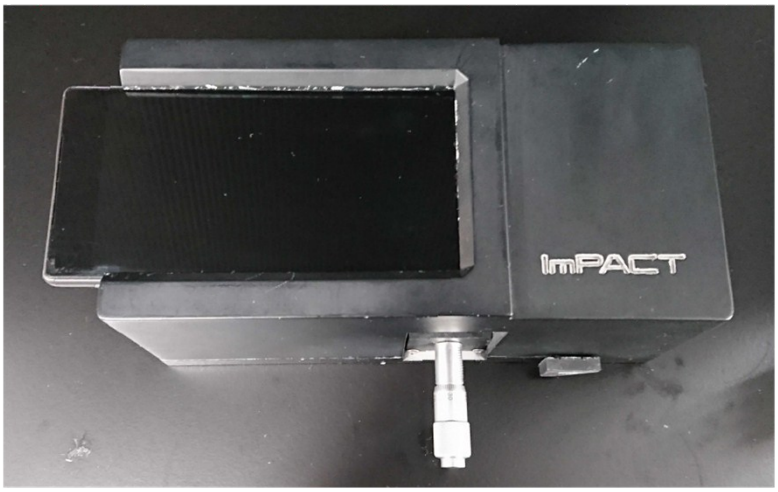
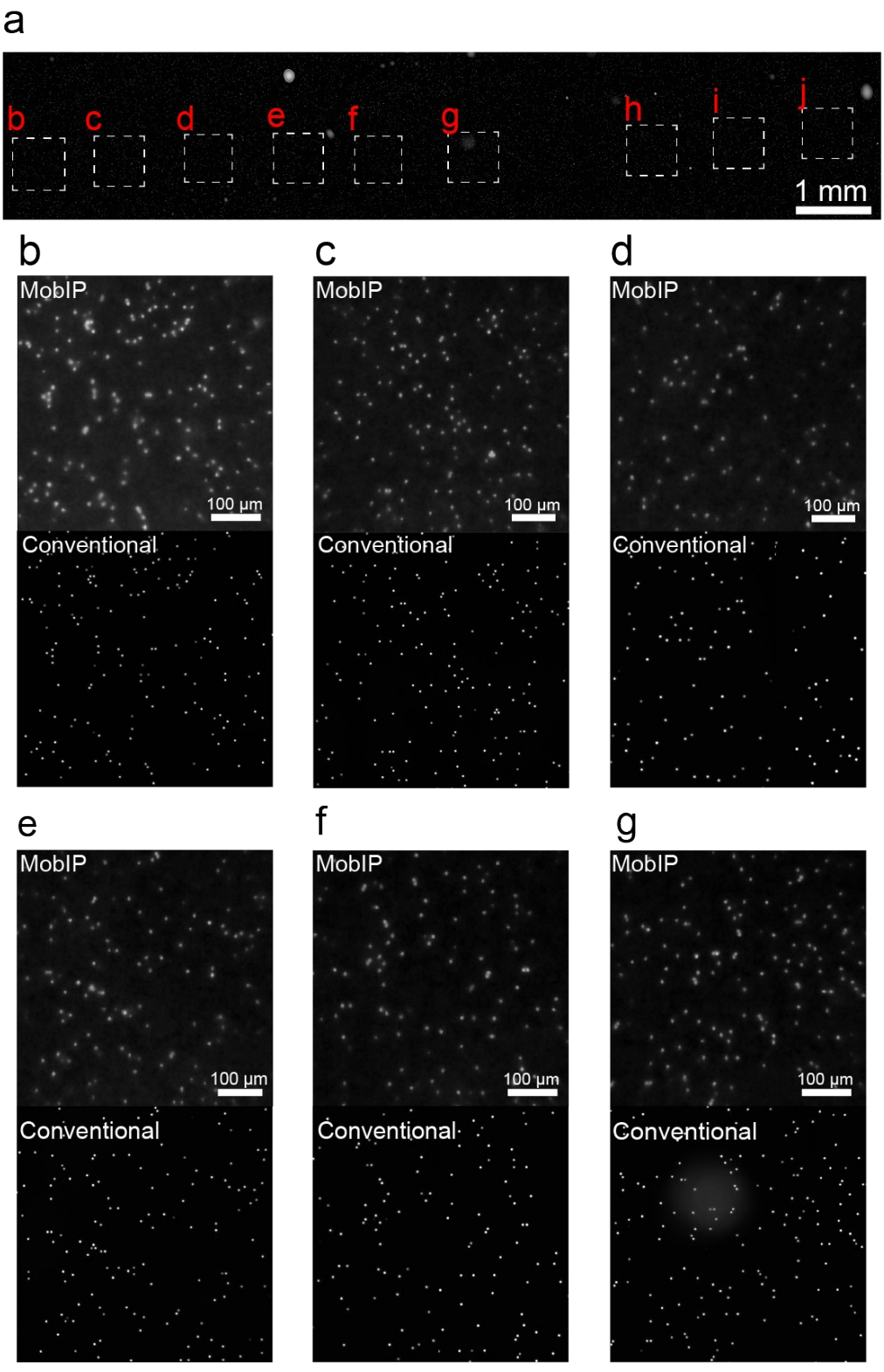


Supplemental Figure 1. Picture of mobile imaging platform (MobIP) based on smartphone.

The black platform cover and other optical/mechanical components were 3D-printed. The size of the MobIP was 23 x 10 x 7 cm (length x width x height)


a
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1 mm
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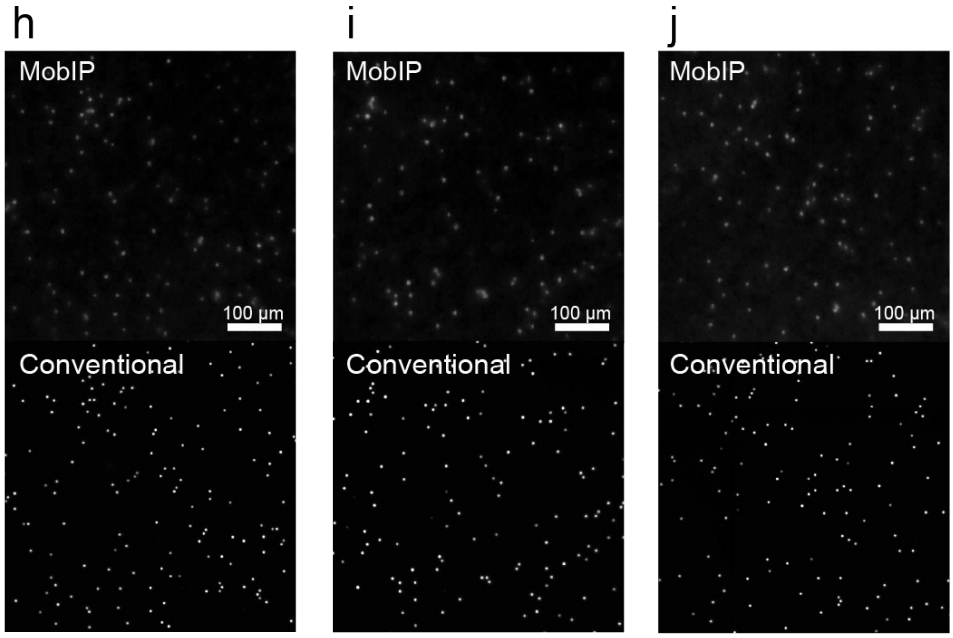
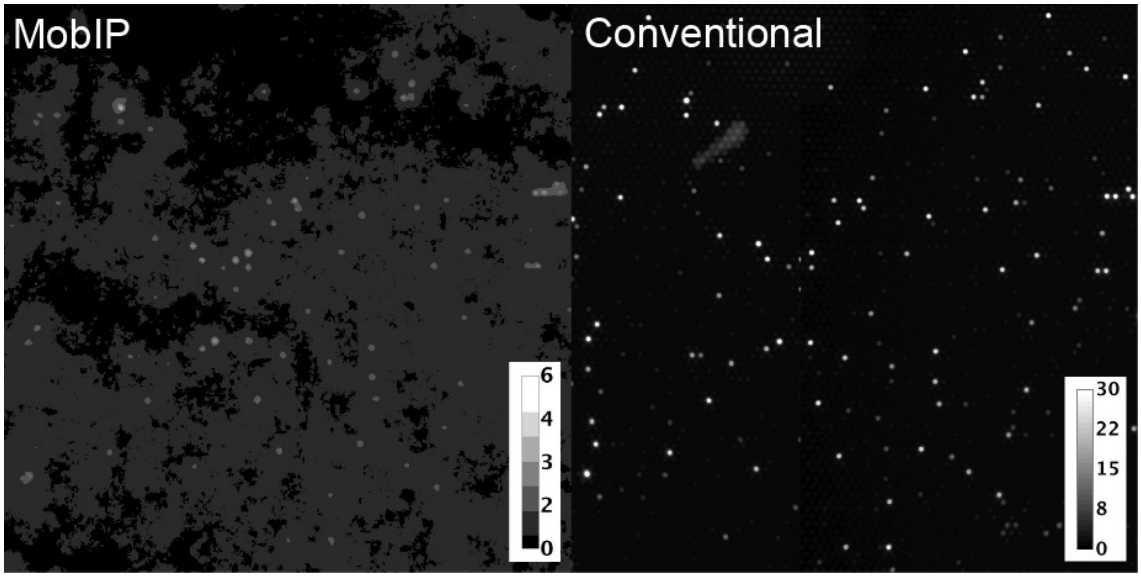


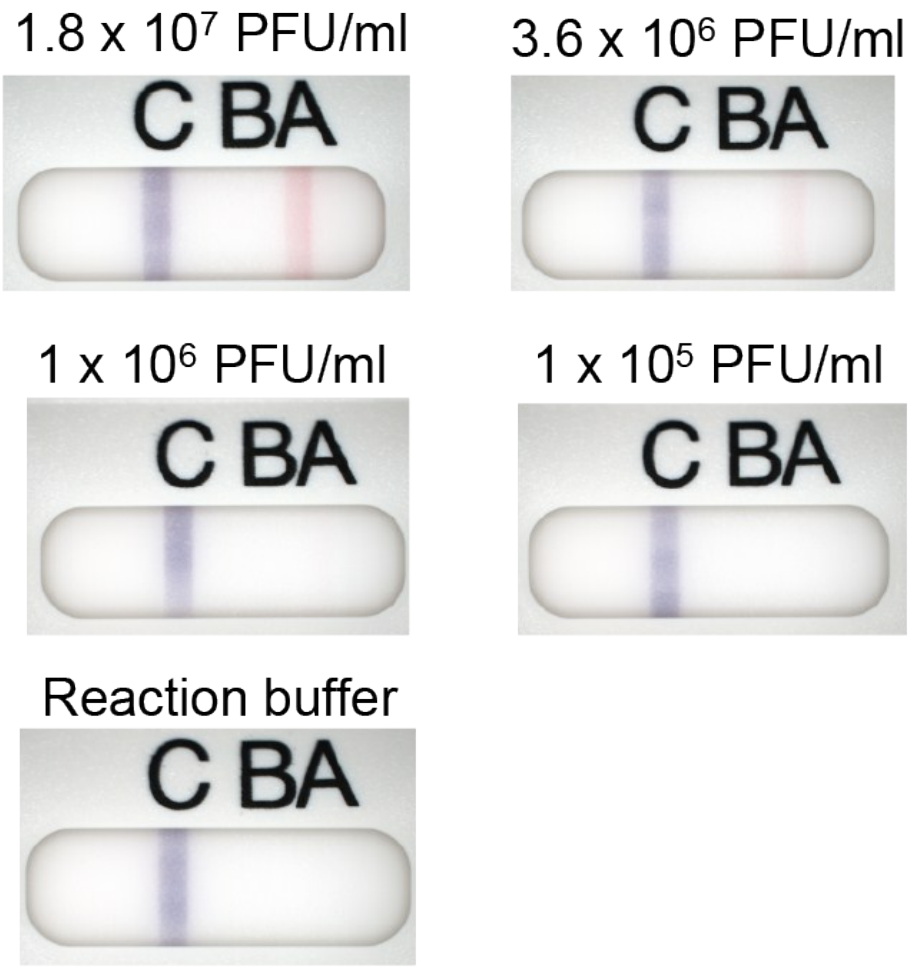
Supplemental Figure 2. Multiple point observation

(a) Whole image of a flow cell taken by conventional fluorescence microscopy (IX83; Olympus Co., Tokyo, Japan). (b-j) (Top) Multiple point fluorescence imaging was conducted using a mobile imaging platform (MobIP). Each image corresponds to a square white box in (a) observed by a smartphone mounted on the MobIP. Lateral movement was carried out using an actuator system controlled by microcomputer (Genuino 101). (Bottom) Magnification images highlighted by the dashed line square white box in (a). The sample was bovine alkaline phosphatase (*b*ALP) at 1 pM.



Supplemental Figure 3. Normalized images by median value of DIViC imaged with a MobIP

Normalized fluorescence images of Fig.3. The images of Fig.3 were normalized by median value among all pixel values of individual image.



Supplemental Figure 4. Influenza virus [A/PR/8/1934(H1N1)] detection with rapid influenza detection test (RIDTs)

RIDTs (QuickNavi Flu) were used according to each manufacturer's instructions. The influenza virus [A/PR/8/1934(H1N1)] was serially diluted to 1.8×10^7, 3.6×10^6, 1.0×10^6, and 1.0×10^5 PFU/mL with reaction buffer (diethanol amine, 4 mM $CaCl_2$). Subsequently, a nasal swab attached to each RIDT was soaked in the serially diluted solutions or the reaction buffer. After that, the swab was soaked in extraction buffer in an attached tube. To squeeze out the influenza virus from the swab, the tube was firmly pinched. Finally, a dispensing nozzle was attached to the top of the tube and the extraction buffer was dispensed onto the sample placement on each test kit. The result was imaged by MVX10 (Olympus Co., Tokyo, Japan).