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

Supplementary Information for

Microfluidics within a Well: Injection-Molded Plastic Array 3D Culture Platform

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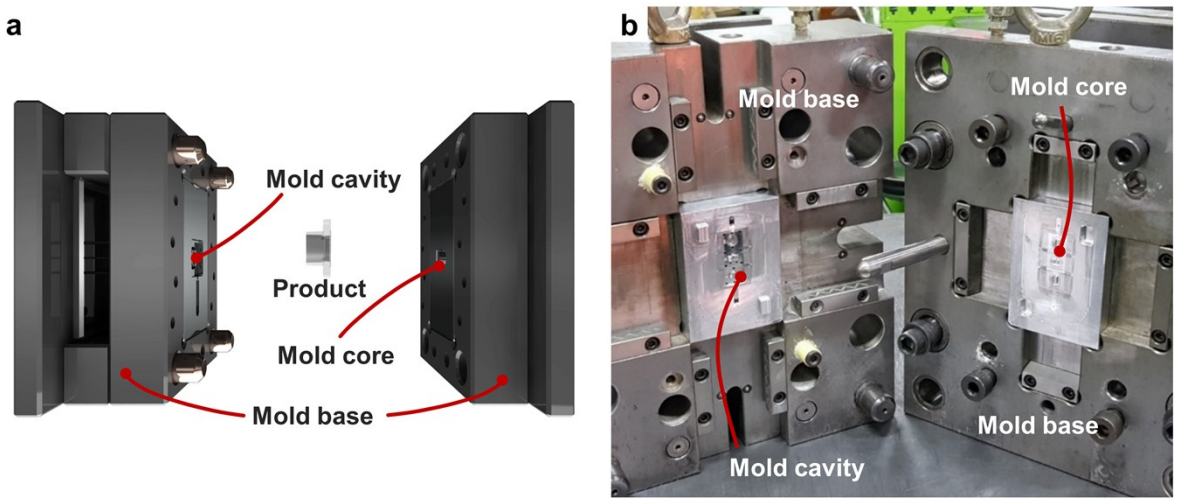

Fig. S1 Schematic drawing of the mold tool for injection-molding and a photograph of the actual mold tool used for molding IMPACT device. (a) The mold tool is composed of a core and a cavity having reversed phase of the product shape. Core and cavity is assembled to a mold base which functions as an interface with the molding machine and an ejection of product and cooling. (b) Mold core and cavity are completed by precise machining process and lapping process. In order to reduce the mold production cost, we made a device with three devices integrated by including 2 kinds of devices other than the device covered in this paper.

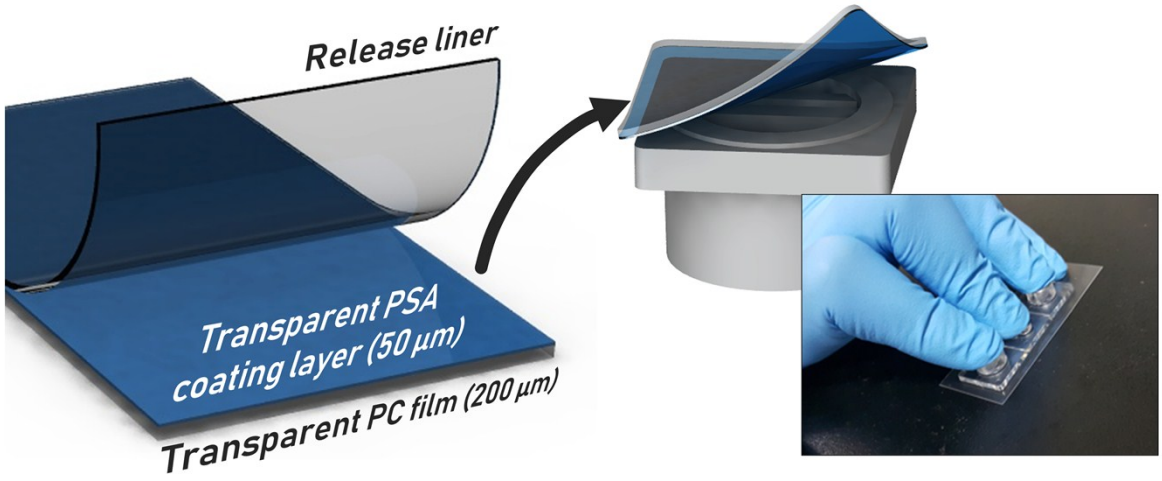

Fig. S2 Schematic of Pressure Sensitive Adhesive (PSA) coated Polycarbonate (PC) film and laminating process for sealing the device. Silicone-based PSA is coated on transparent PC and release liner film is laminated on it. We cut the film to the proper size, removed the release liner, and attached it to the bottom of the device. Then, the device was manually pressed with the film in contact with the flat table.

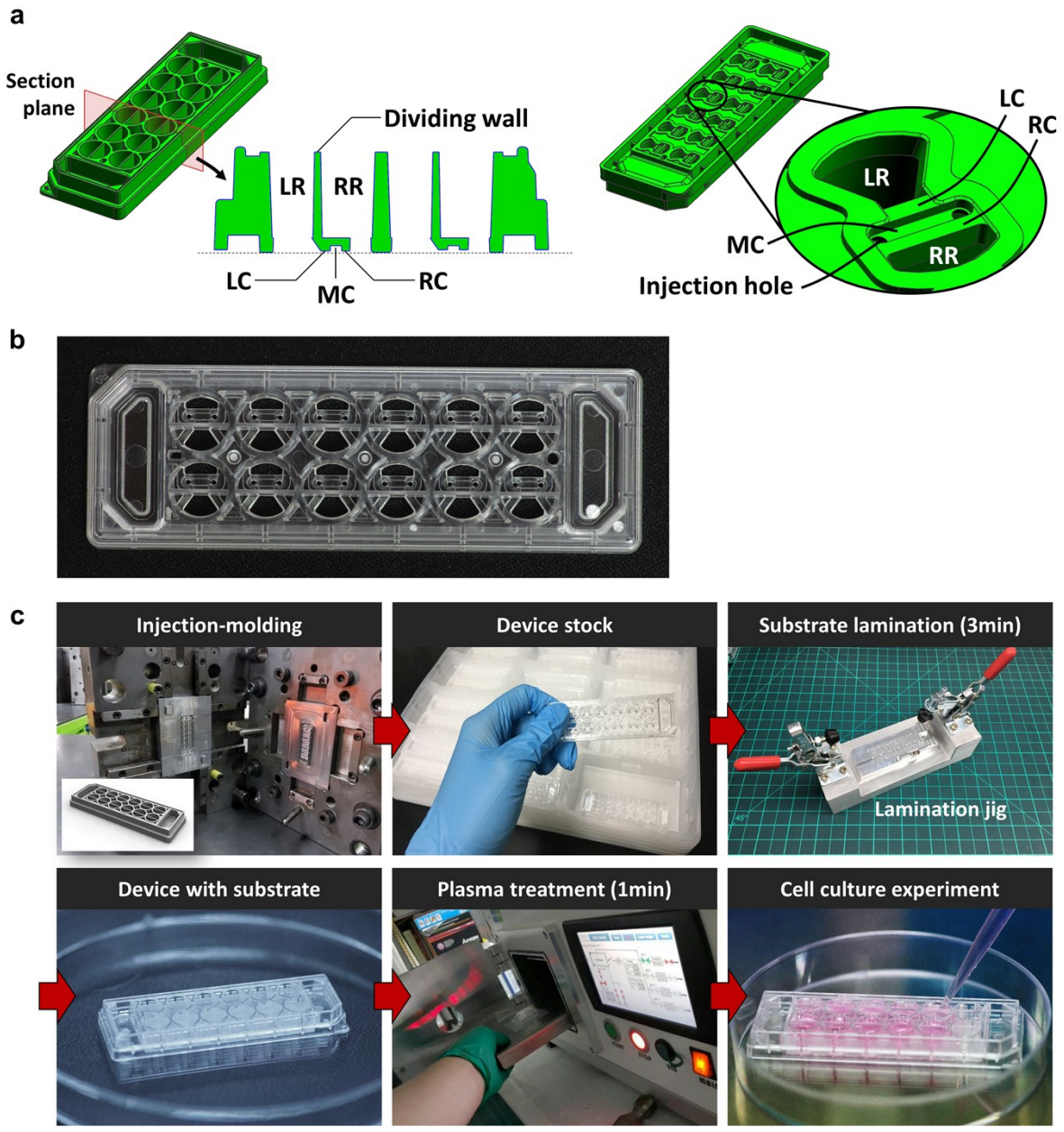

Fig. S3 The additional 12-well IMPACT device following 96-well plate form factor was redesigned and manufactured. Injection-molding and liquid patterning design condensed 12 wells of 9 mm size in a 3x1 inch device. The basic structure is the same to single IMPACT device proposed and still follows the theoretical design rules in Fig. 3b. In addition, laboratory-scale manufacturing processes was established for the effective production of 12-well IMPACT devices. The device was used immediately for cell experiments after substrate lamination (3 minutes) and plasma treatment (1 minute). (a) The drawings of the 12-well IMPACT device. (b) Photograph of the 12-well IMPACT device. (c) Lab-scale fabrication process of IMPACT device for cell culture experiment.