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

Supplementary Data

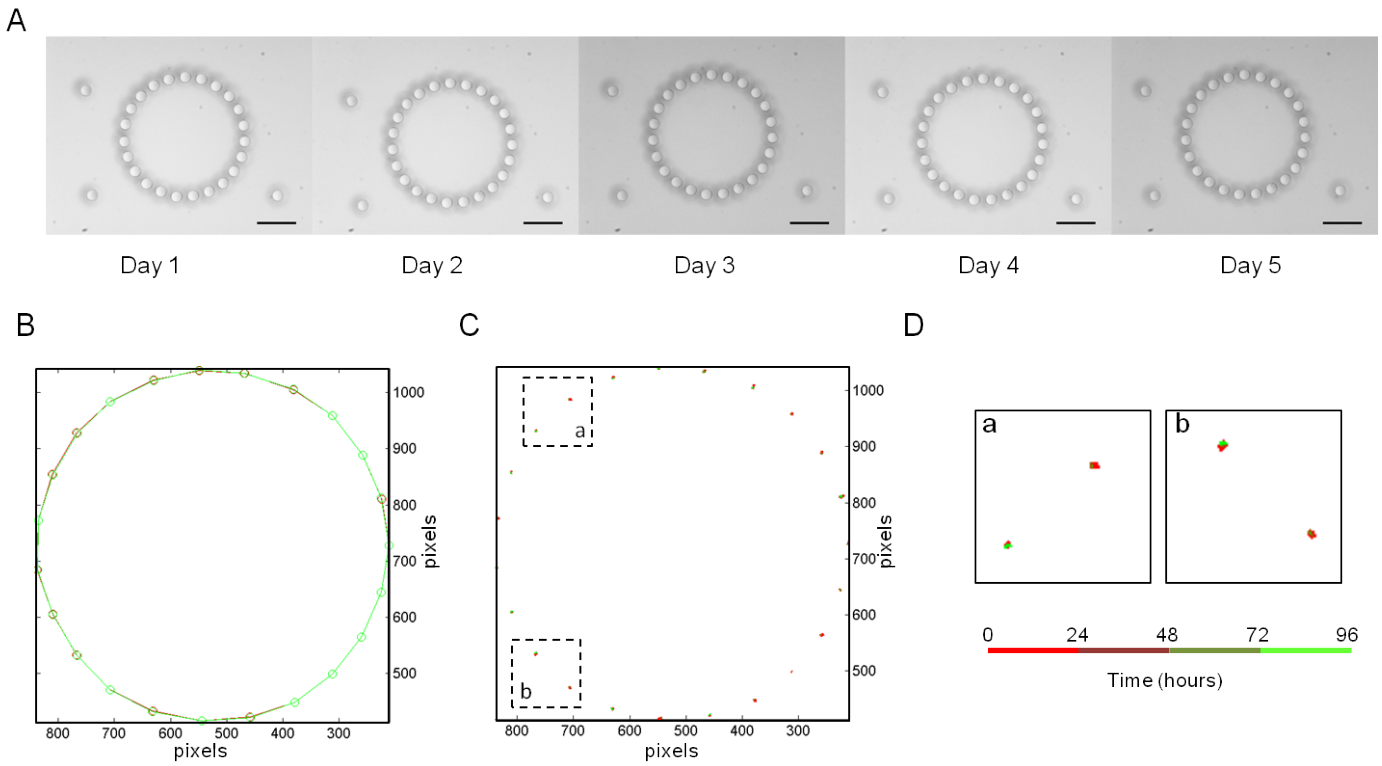

Fig 1. The microdevice is mechanically stable under cell culture conditions**. (A)** Transmitted light microscopy images of a PDMS microdevice without any spheroid followed during 5 days. **(B, C, D)** top pillar tracking showing the absence of any significant pillar displacement over this period. Scale bar: 100µm.

SU-8 fabrication process

The lithography process involved two steps. First, a 10 µm thick layer of SU-8 3005 photoresist was spin coated onto a silicon wafer, soft baked for 7 min at 95°C, followed by UV flood exposure for 7 s, postbaked for 3 min at 95°C and then finally exposed to plasma oxygen treatment at 200W for 1 minute. This bottom layer was used to insure the attachment of the second layer to the Si wafer. A second layer of SU-8 3050 with a thickness of 300 µm was spin coated in two steps, on top of the first layer. For obtaining a total thickness of 300 µm, we spin coat twice at 800 rpm. The first layer was spin coated and baked at 95°C for 3h. The second layer wass spin coated on the first one, then baked at 95°C for 7h. The wafer was then placed in vacuum contact with the chromium/glass optical mask that contained the desired patterns and exposed to UV light using a

UV filter (λ=365 nm), for 36 s (576 mJ/cm^2) in a Suss Microtec MA6 Optical aligner. The wafer was then postbaked for 3 min at 95°C and the photoresist was developed in PGMEA (propylene glycol methyl ether acetate), under agitation and primary vacuum for 2 hours. Once the development of the cavities was completed, the wafer was washed with isopropyl alcohol and hard baked (1 min at 65°C; ramped to 125°C (10°C/min); 6 min at 125°C; ramped back to room temperature, (5°C/min). Four SU-8 molds with the optimal process were fabricated and were found to be functional for all the devices with the size variations described in the paper (30 µm minimal diameter, 5 µm minimal spacing). Each SU-8 mold can be used several times. Occasionally, upon use we observe missing pillars in some PDMS devices. We have produced up to now more than 150 PDMS replica used for cell culture. This gives an estimation of the lifetime of a SU-8 mold around 50 moldings before the appearance of some defects.