

Electronic supplementary Information

On-chip hydrogel arrays individually encapsulating acoustic formed multicellular aggregates for high throughput drug testing

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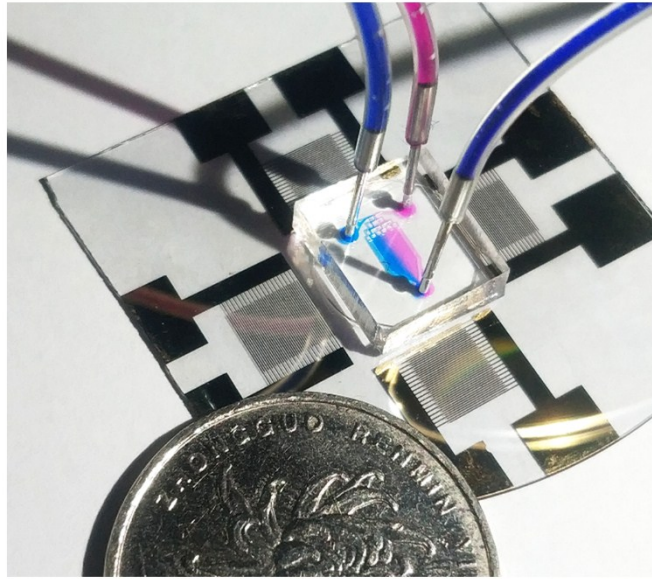


Figure S1. The fabricated device.

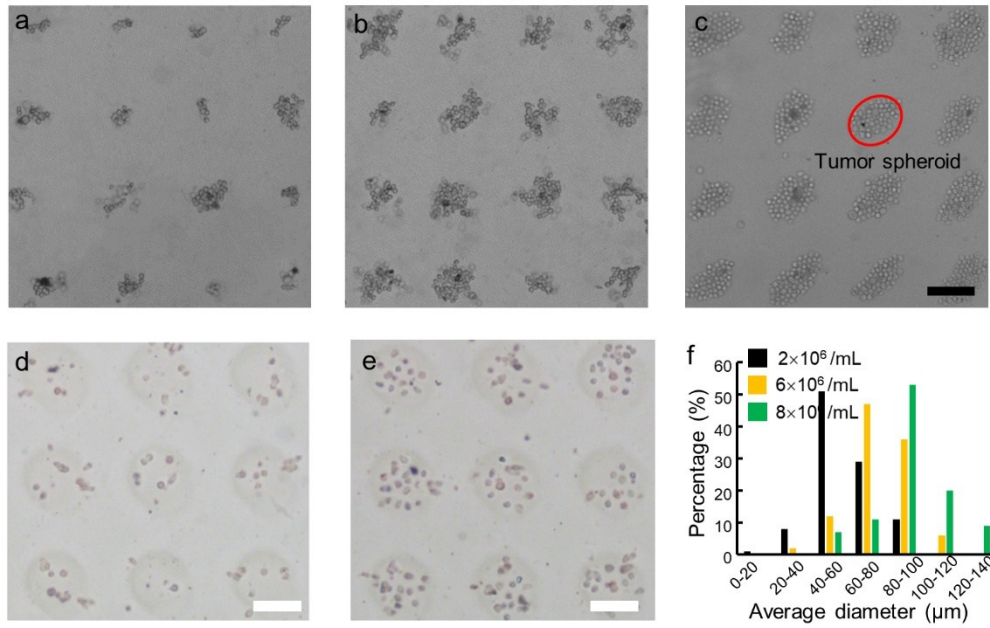


Figure S2. (a-c) Cell aggregates with each unit composed of different number of THP-1 cells is captured by microscope, by controlling cell concentrations. With the average number increase, the formed aggregates tend to form uniform spheroid like shape. Scale bar: 100 μm . (d-e) When the SSAW is absence, the cells (concentration of 2×10^6 and 1.2×10^7 cells/mL, respectively) are randomly encapsulated in these pillars, and lack adhesion between cells. Scale bar: 80 μm . (f) The size distribution of the formed aggregates at different concentrations.

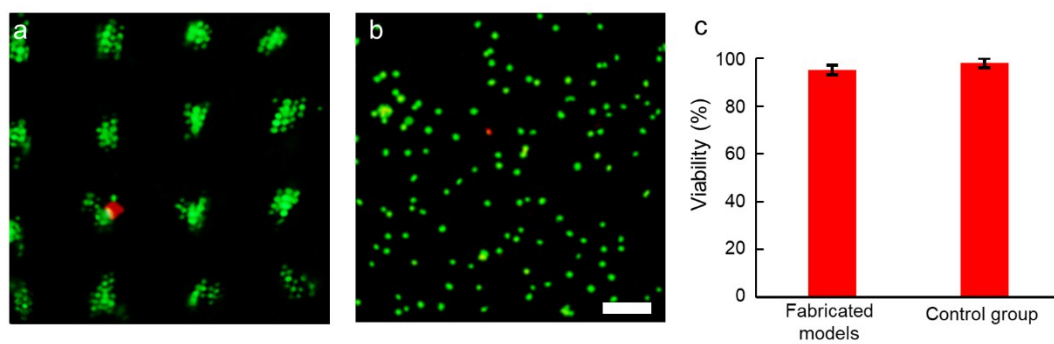


Figure S3. (a-b) Live/dead stain of the fabricated models and unprocessed samples using calcein-AM/PI solution. Scale bar: 100 μ m. (c) The statistical result of the viability test.

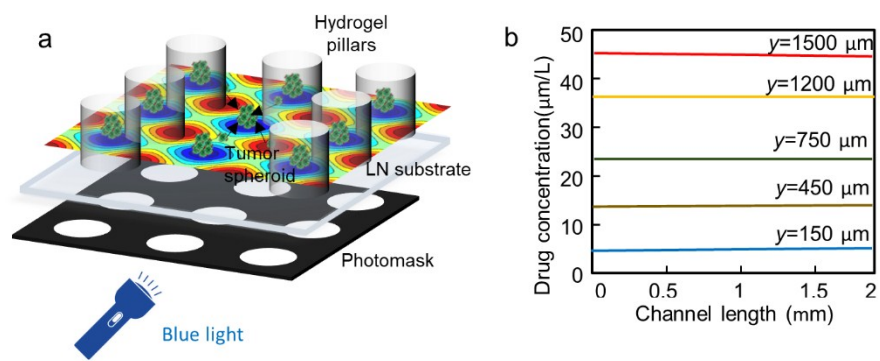


Figure S4. (a) The schematic of the fabricating of the hydrogel pillar arrays using selective area exposure. The distance between adjacent PNs can be changed by using SAWs with different wavelength, and the photomask is accordingly designed, so that aggregates with different size can be achieved. (b) The profile of drug concentrations along the flow direction in the hydrogel pillar array.

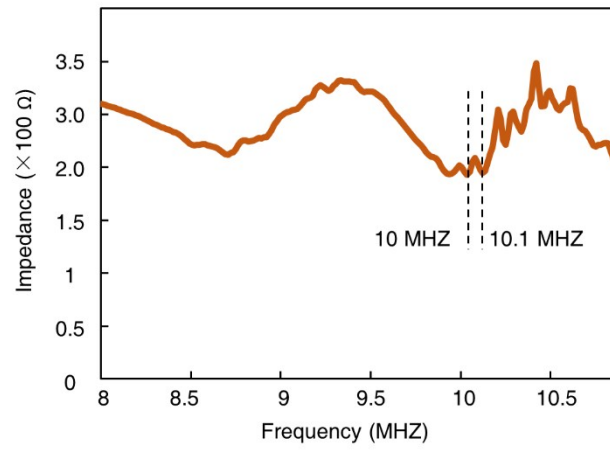


Figure S5. The impedance of the fabricated SAW device at different frequencies, when frequency is 10 and 10.1 MHz, the impedance have two valley.