Electronic supplementary information
A pneumatic pressure-driven multi-throughput microfluidic circulation culture system

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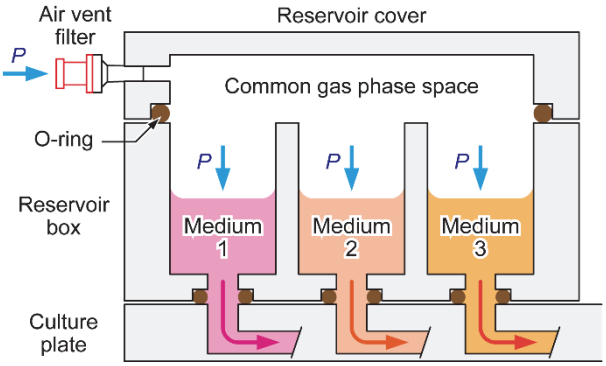

Fig. S1 Schematic of simultaneous delivery of multiple liquids by using a single pneumatic pressure source. The pressure applied to the liquid reservoir via a sterile air vent filter simultaneously drives multiple liquids in multiple wells.

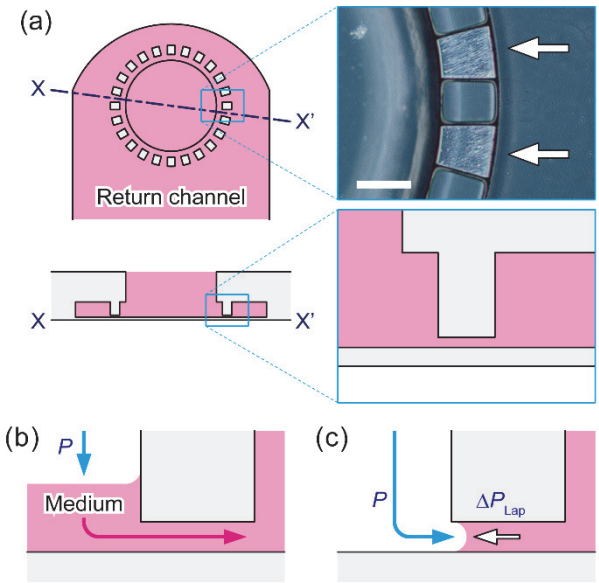

Fig. S2 Schematic of the structure and function of a "Laplace valve." (a) Top and cross-sectional illustrations of the Laplace valve inserted in the storage reservoir–side aperture of the return channel, and microscope image of a bottom view of the valve, indicated by arrows. Scale bar: 300 µm. (b) Medium passes through the thin microchannel when pneumatic pressure (P) is applied to the storage reservoir. (c) When all of the medium has passed through the thin microchannels, gas flow into the these microchannels is prevented if P is lower than the Laplace pressure (ΔP_{Lap}).

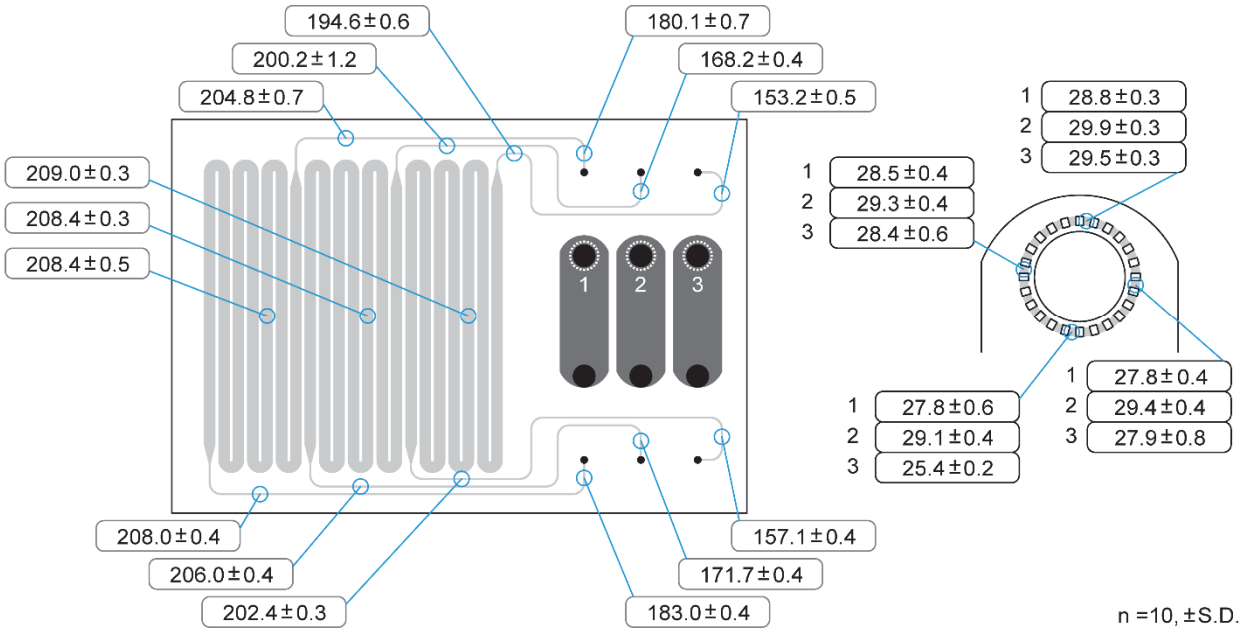

Fig. S3 Heights of microchannels, as measured by laser interferometry.