

Cell Docking, Movement and Cell-Cell Interactions of Heterogeneous Cell Suspensions in a Cell Manipulation Microdevice

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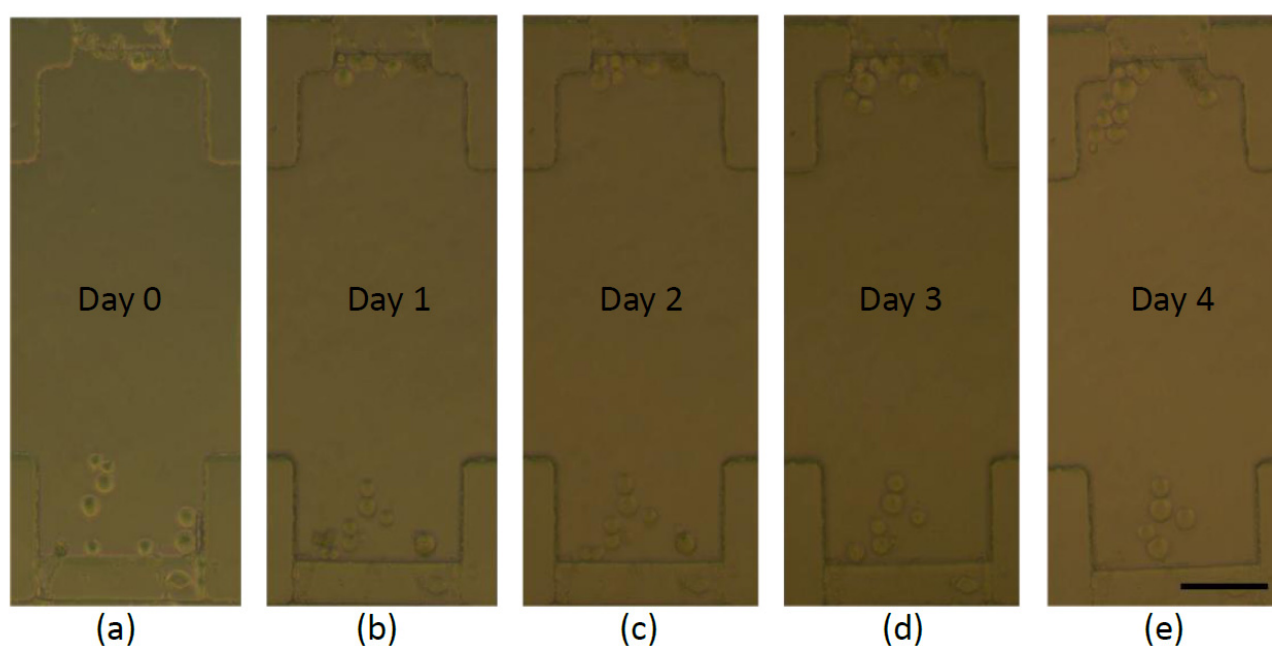
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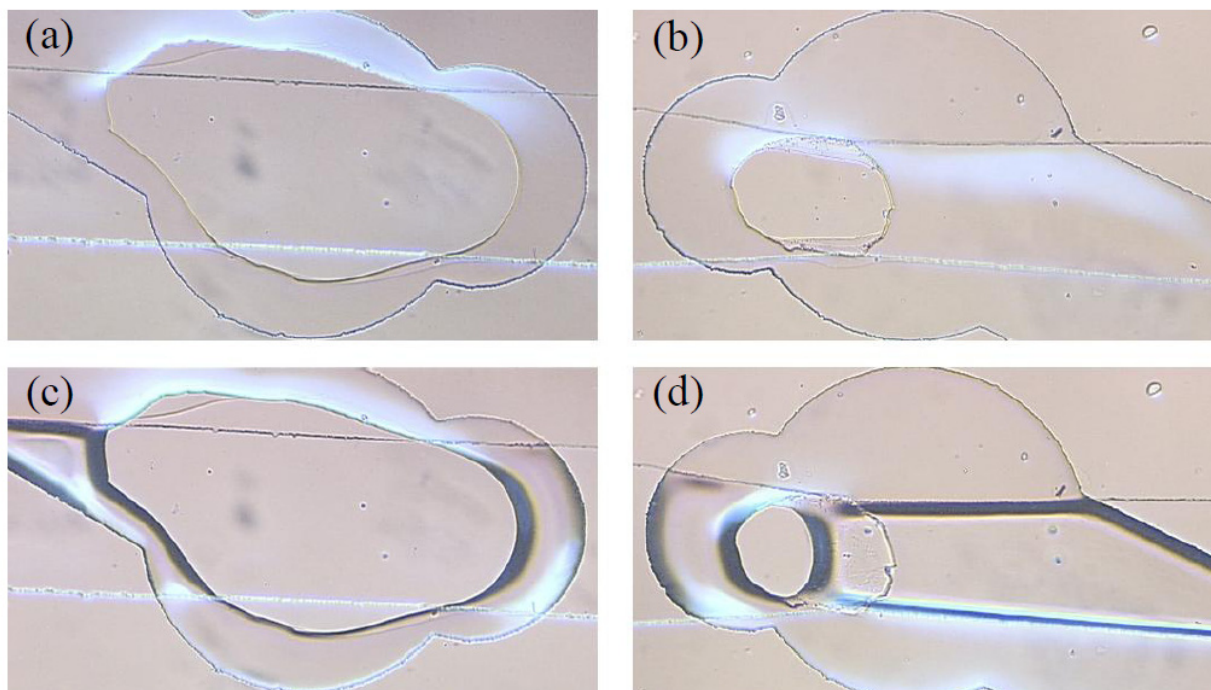
1. Cell Culture in the Micro Device

Figure S1. A series of images showing the culture of the K562 cells at fourth day after seeding. (a–e) The images of cell growth during culture from seeding to 4 days. In the experiment, none of K562 cells was determined by trypan blue staining.



2. Air Valves Pressurization

Figure S2. Air valves were pressed down by pneumatic pressures in central channel to form a micro environment as reaction zone. The air valves bonding on the micro channel are located in back (a) and front (b) of reaction zone. (c–d) While the air valves are pressurized, the PDMS membranes are pressed down to block the channel.



3. Computation of Dynamic Pressure, Major Loss and Minor Loss

Table S1. The calculation of dynamic pressure, major loss and minor loss for flow through contraction channel.

Left inlet flow rate ($\mu\text{L/h}$)	Dynamic pressure $\frac{V_{in}^2}{2} - \frac{V_{out}^2}{2}$ ($10^{-6} \text{ m}^2/\text{s}^2$)	Major loss h_l ($10^{-6} \text{ m}^2/\text{s}^2$)	Minor loss h_{lm} ($10^{-6} \text{ m}^2/\text{s}^2$)
10	0.4	73.9	0.2
20	3.2	209.8	1.6
30	12.0	405.0	6.1
40	25.6	591.7	12.9

Supporting Information Movies

Supplementary movie 1:

Cell loading movie of target cells K562 docked beside bottom gap.

Supplementary movie 2:

Cell loading movie of effector cells NK92 docked beside top gap.

Supplementary movie 3:

Cell movement in the micro reaction zone by microfluidic manipulation.

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