

Deterministic Lateral Displacement Microfluidic Chip for Minicell Purification

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Error! Reference source not found. represents the flow with red line and marks on the microscopy image for particles larger than critical diameter while the green line represents the particles smaller than critical diameter. On the right is the actual figure taken from channel of a Chip B with 50 μm post size and it can observe that the elongated bacterial cells are shifting on an upward DLD trajectory as predicted.

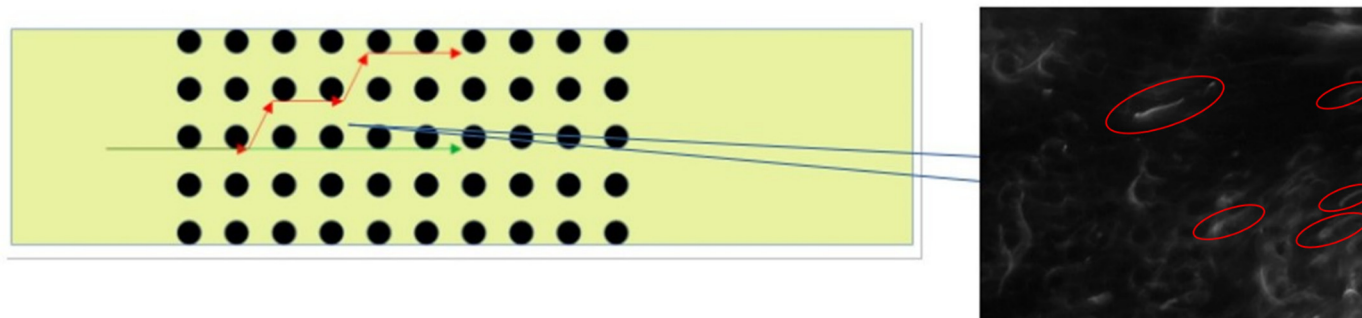


Figure S1. Wild-type cells DLD flow through the post areas.

In order to show that the flow rate does not affect the efficiency of chips, we tested different flow rates of 10 $\mu\text{l}/\text{min}$, 25 $\mu\text{l}/\text{min}$ and 10 $\mu\text{l}/\text{min}$ on both Chip A and B to see the effect of higher shear on the separation efficiency. The results proved that the efficiency is independent of the flow rate. The efficiency and standard deviation is shown in **Error! Reference source not found.** However, higher flowrates lead to faster accumulation of cells which is of great benefit to clinical trials with high-throughput sample solutions.

Figure S2 shows the left to right flow of the solution at the top half of the horizontal main channel which is characterised by the parental cells moving towards the side channel, while the same is true for the bottom half. However, in the middle they following a bump mode.

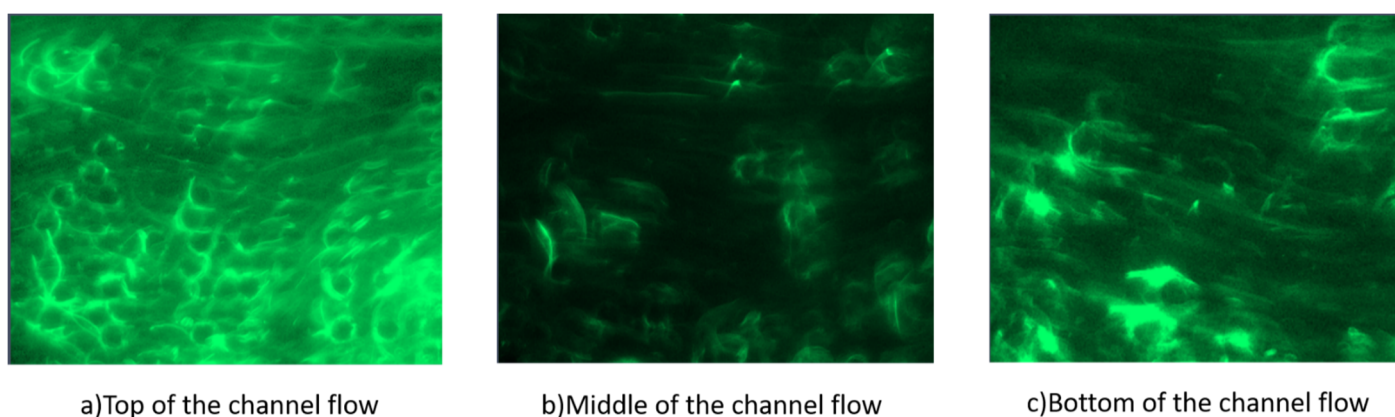


Figure S2. Microscopy images of the inlet-to-outlet flow (left to right) of the solution through the post area at a) top part of the channel, b) middle of the channel, and c) bottom part of the channel.

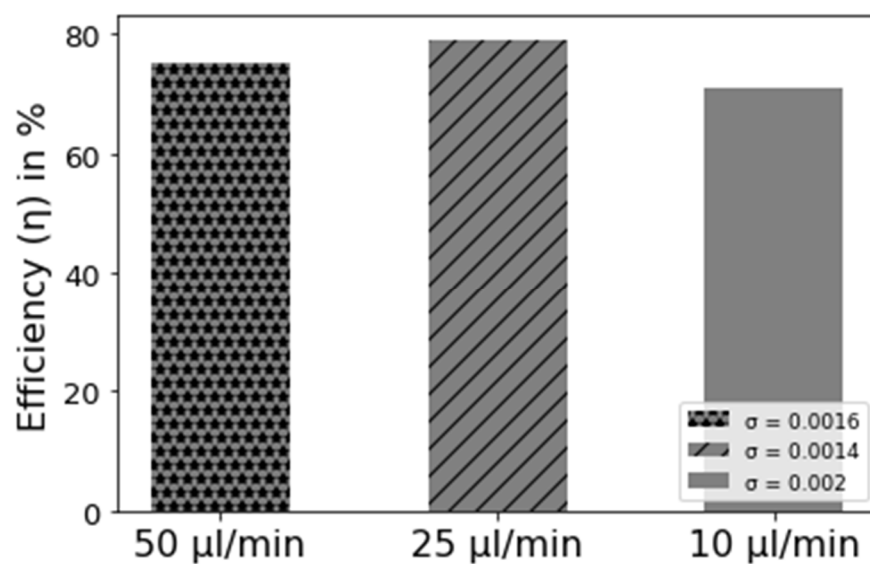


Figure S3. Effect of the flowrates on separation efficiency.