

Supplementary Material (ESI) for Lab on a Chip

This journal is © The Royal Society of Chemistry 2010

Hydrophoretic high-throughput selection of platelets in physiological shear-stress range

Sungyoung Choi,^a Taeyun Ku,^b Seungjeong Song,^a Chulhee Choi^{a,b} and Je-Kyun Park^{a,c*}

^a Department of Bio and Brain Engineering, College of Life Science and Bioengineering, Korea Advanced Institute of Science and Technology (KAIST), 335 Gwahangno, Yuseong-gu, Daejeon 305-701, Republic of Korea.

^b Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), 335 Gwahangno, Yuseong-gu, Daejeon 305-701, Republic of Korea

^c KAIST Institute for the NanoCentury, 335 Gwahangno, Yuseong-gu, Daejeon, 305-701, Republic of Korea.

* Correspondence should be addressed to J.-K.P. (jekyun@kaist.ac.kr). Phone: +82-42-350-4315.

Fax: +82-42-350-4310.

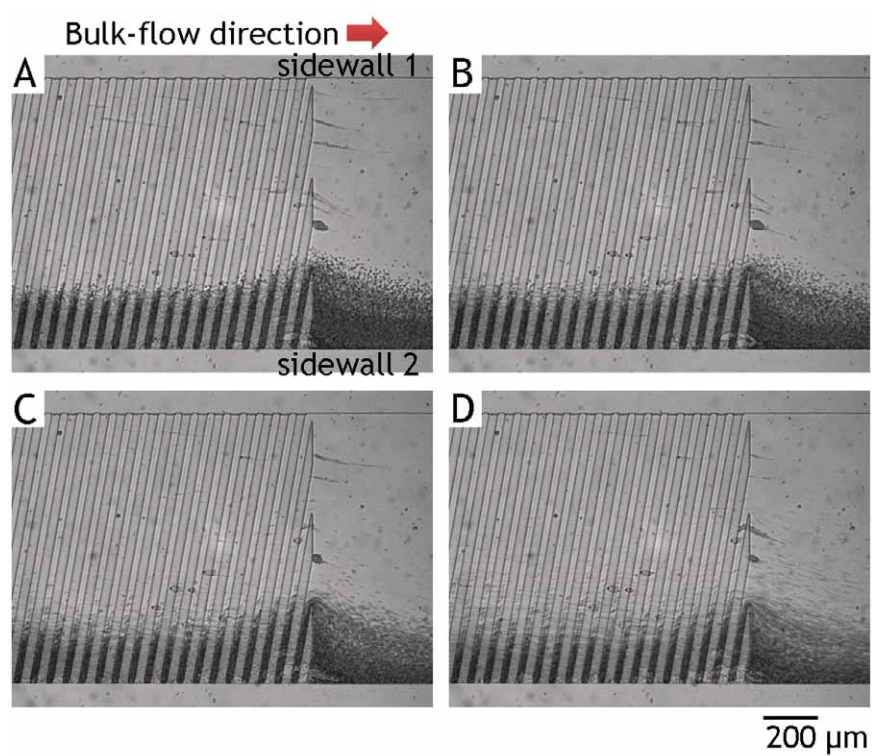


Fig. S1 Flow-rate independence of hydrophoretic ordering. Red blood cells (RBCs) initially in random distributions are focused to the sidewall 2: (A) for 1 $\mu\text{L min}^{-1}$, (B) for 5 $\mu\text{L min}^{-1}$, (C) for 10 $\mu\text{L min}^{-1}$, and (D) for 20 $\mu\text{L min}^{-1}$.

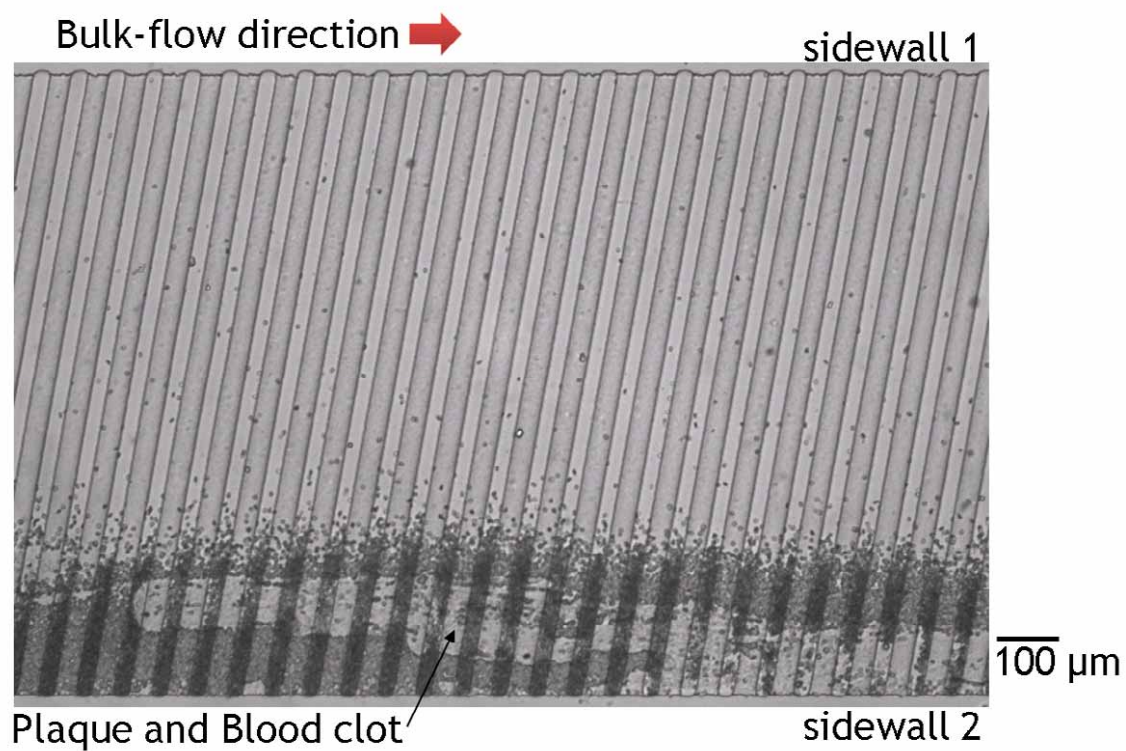


Fig. S2 Hydrophoretic sorting of plaque and blood clot. Plaques and blood clots move at an angle to the bulk flow and are focused to the sidewall 2.

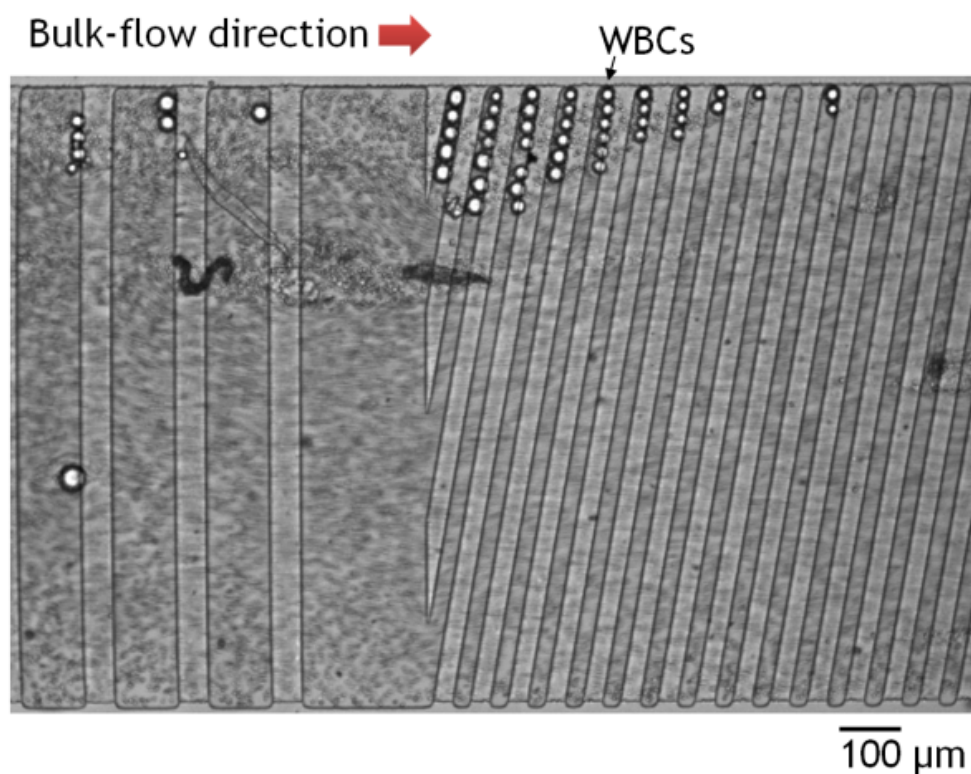


Fig. S3 White blood cells (WBCs) ($D > 8 \mu\text{m}$, where D is the diameter of the cell) resting in the entrance of the hydrophoresis channel. WBCs are too large to pass through the obstacles. In contrast, smaller WBCs ($D \leq 8 \mu\text{m}$) freely pass through the obstacles and move at an angle to the bulk flow by hydrophoresis. However, the trapped cells did not show any significant disturbance to the separation process.