

SUPPLEMENTARY INFORMATION

Supplementary Table 1. Occurrences of CMC operation failures by various blockers.

	FBS	Pluronic F127	BSA-T20	Teflon	PEG	PLL-PEG	Trypsin
Blood cell adhesion	No	YES	YES	No	No	No	No
Blood agglutination	No	No	YES	No	No	No	No
Air bubble congestion	YES (many)	YES	YES	No	No	No	No
Multiphase residues	No	No	No	YES	No	No	No
Arching effect	No	YES	No	YES	No	No	No
Scattered RBC patches	YES	YES	YES	No	YES (little)	No	No

Figure S1. Three terms were defined to quantify the performance of cell separation. PMN spread distance measures the distance for 70% of all PMNs from the channel bottom. PBMC spread distance measures the distance for 70% of all PBMCs from the top of PBMCs. PMN-PBMC separation measures the distance between the two regions of PMN spread distance and PBMC spread distance.

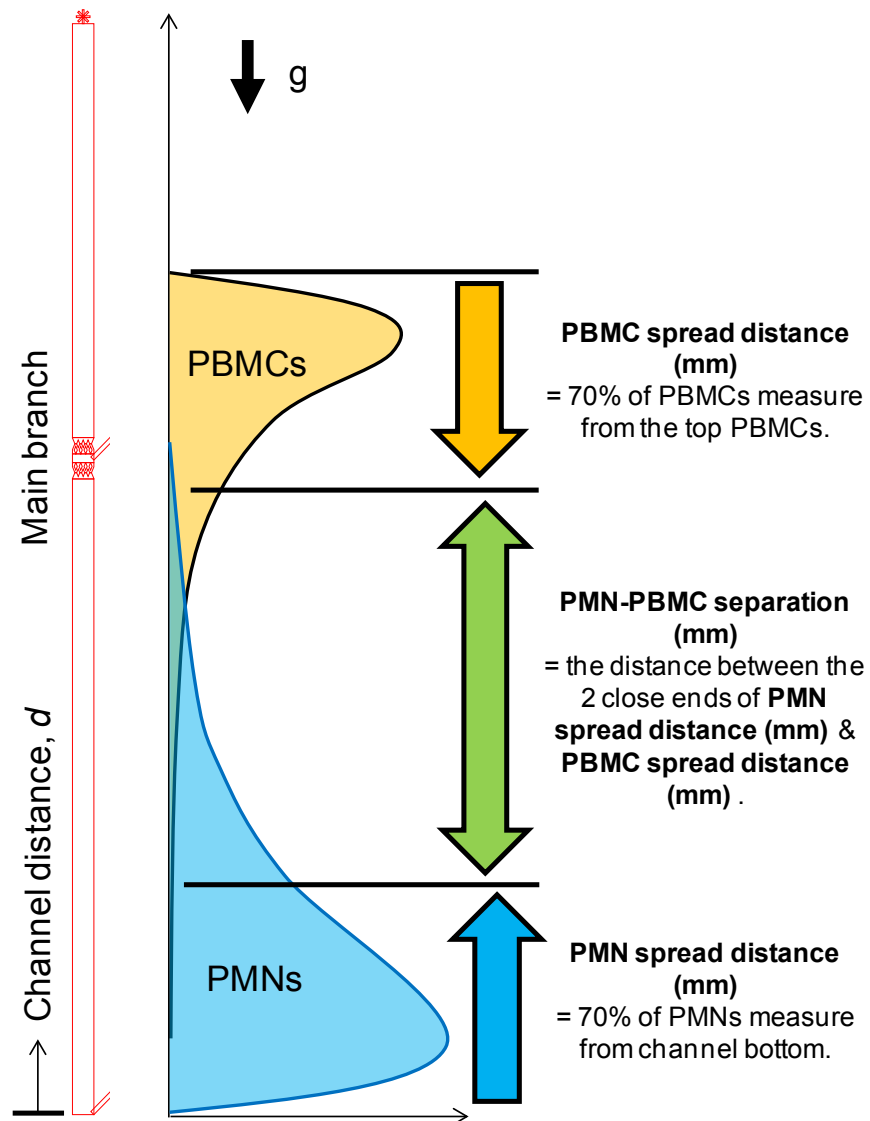


Figure S2. Autofluorescence of glass, PDMS, and blood. (a) Time-lapse photo series merging bright field and fluorescence images when polycarbonate (PC) and glass were excited. (b) Material autofluorescence under excitation. (c) Time-lapse photo series merging bright field and fluorescence images when Hoechst-stained blood on PS and PDMS were excited. (d) Signal to noise ratio (SNR) of Hoechst-stained WBCs under fluorescence excitation. Imaging condition: PC, glass, PDMS, and blood were under continuous excitation through a Hoechst filter cube. Images were taken every 20 s at exposure times of 1.3 s and 0.3 s for plots in **a-b** and **c-d**, respectively.

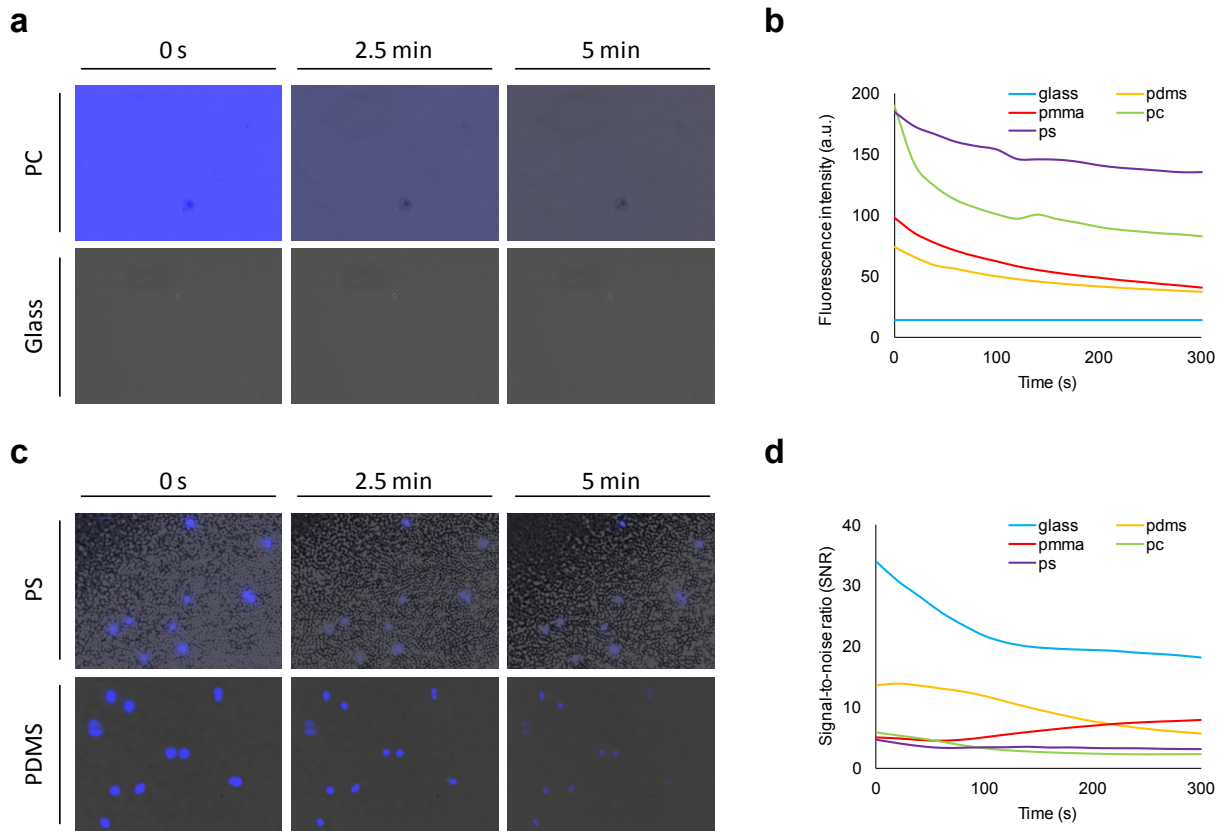


Figure S3. CMC sketch. (a) Overview. (b) Micropost barrier array.

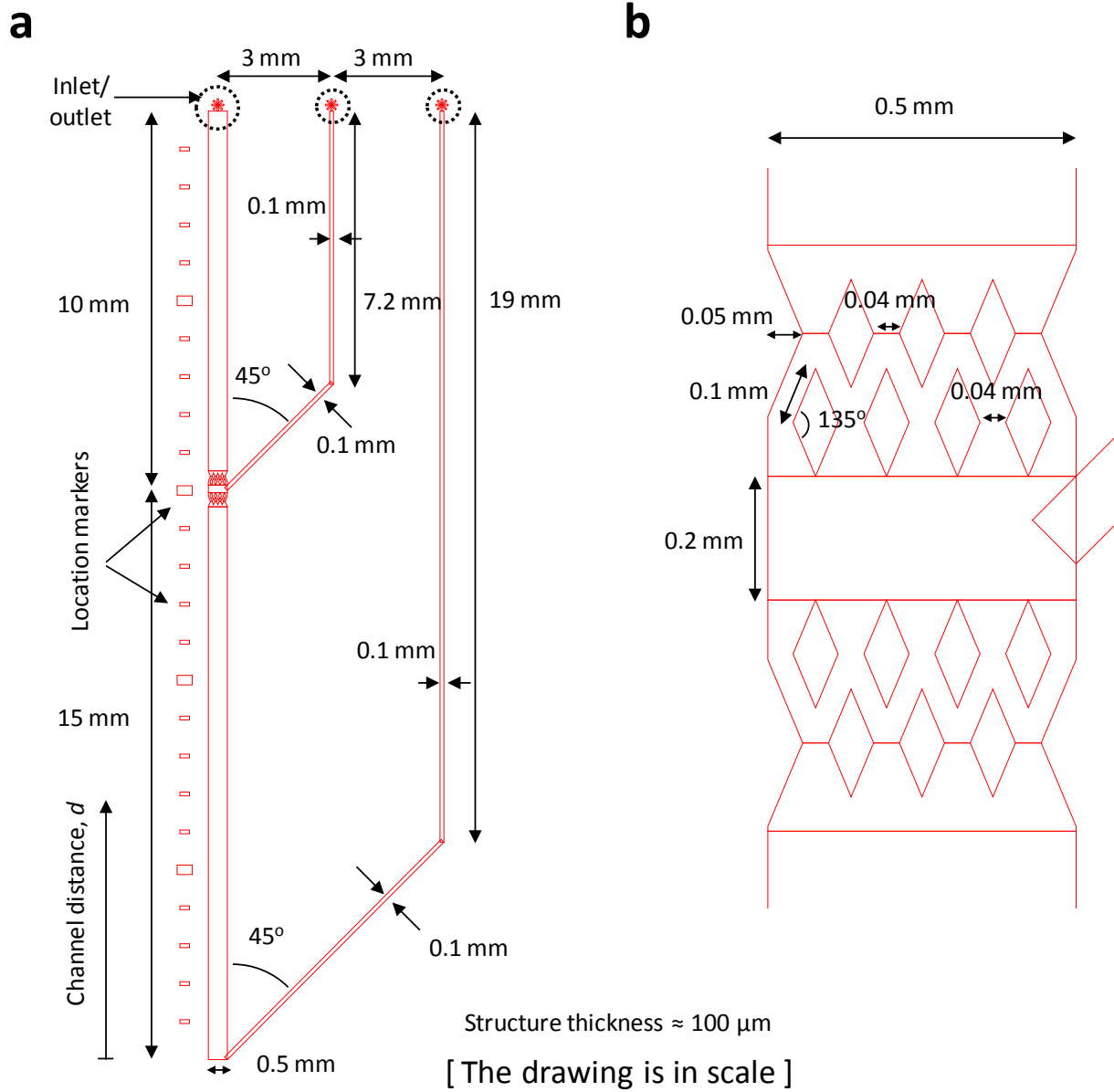


Figure S4. Positions of occurrences. (a) Phenomena leading to failed separation in the main branch, as shown in **Fig. 3a**. (b) Magnified photos near RBC sediments, barrier arrays, and main branches after successive blood centrifugation, as shown in **Fig. 4b**.

