Electronic Supplementary Material (ESI) for Lab on a Chip.

Supplementary Information

A High-Efficiency Superhydrophobic Plasma Separator

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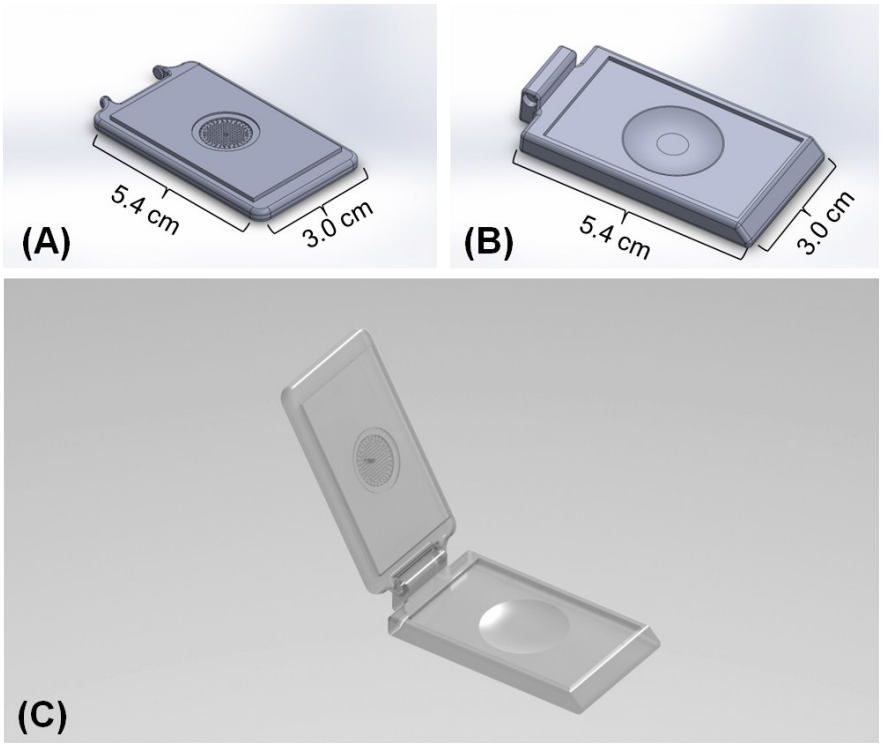

Fig. S1: A schematic illustration of the 3D-printed top cover (A) and 3D-printed bottom substrate (B). (C) A schematic illustration of an assembled plasma separator.

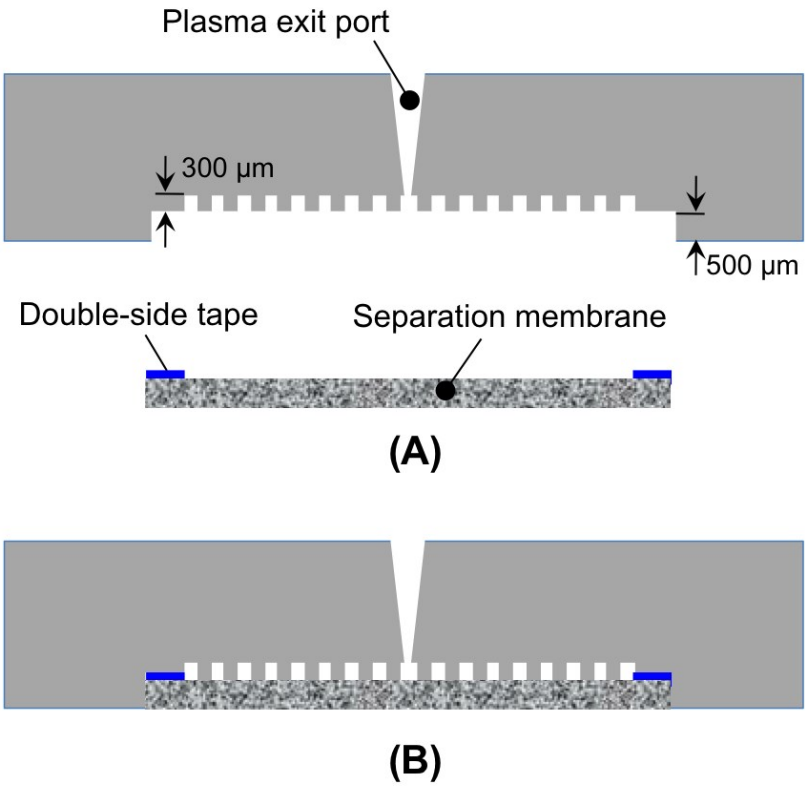

Fig. S2: A cross-section illustration of the top cover before (A) and after (B) assembling the separation membrane.

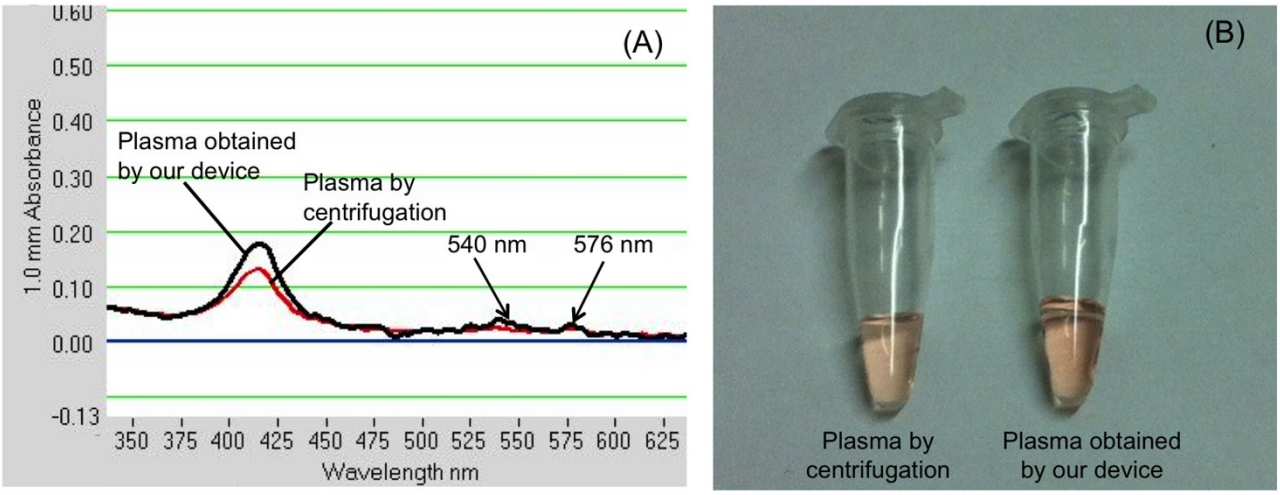

Fig. S3: (A) The absorbance spectra of plasma extracted by our superhydrophobic plasma separator (black) and by benchtop centrifugation (red). (B) Optical images of plasma isolated with our device and centrifuged plasma.

Blood cell sedimentation by gravity

To observe cell gravitational sedimentation, we designed and fabricated a simple microscope cover slip/double-sided tape hybrid device (**Fig. S4 (A)**). In this experiment, one blood droplet was first sandwiched between two microscope cover slips (Fisher Scientific, No. 12-544-E) under the assistance of double-sided tape spacers (~150 μm thickness) (3M™ Double Coated Tape 9500PC Clear). Then, the device was placed vertically and the blood sedimentation process was recorded by a USB microscope (Dino-Lite USB Digital Microscope) (**Fig. S4(A)). Fig. S4(B)** is a sequence of images of blood at 0, 2 and 5 minutes after gravitational sedimentation. The longer the sedimentation time, the clearer the blood cell/plasma interface is.

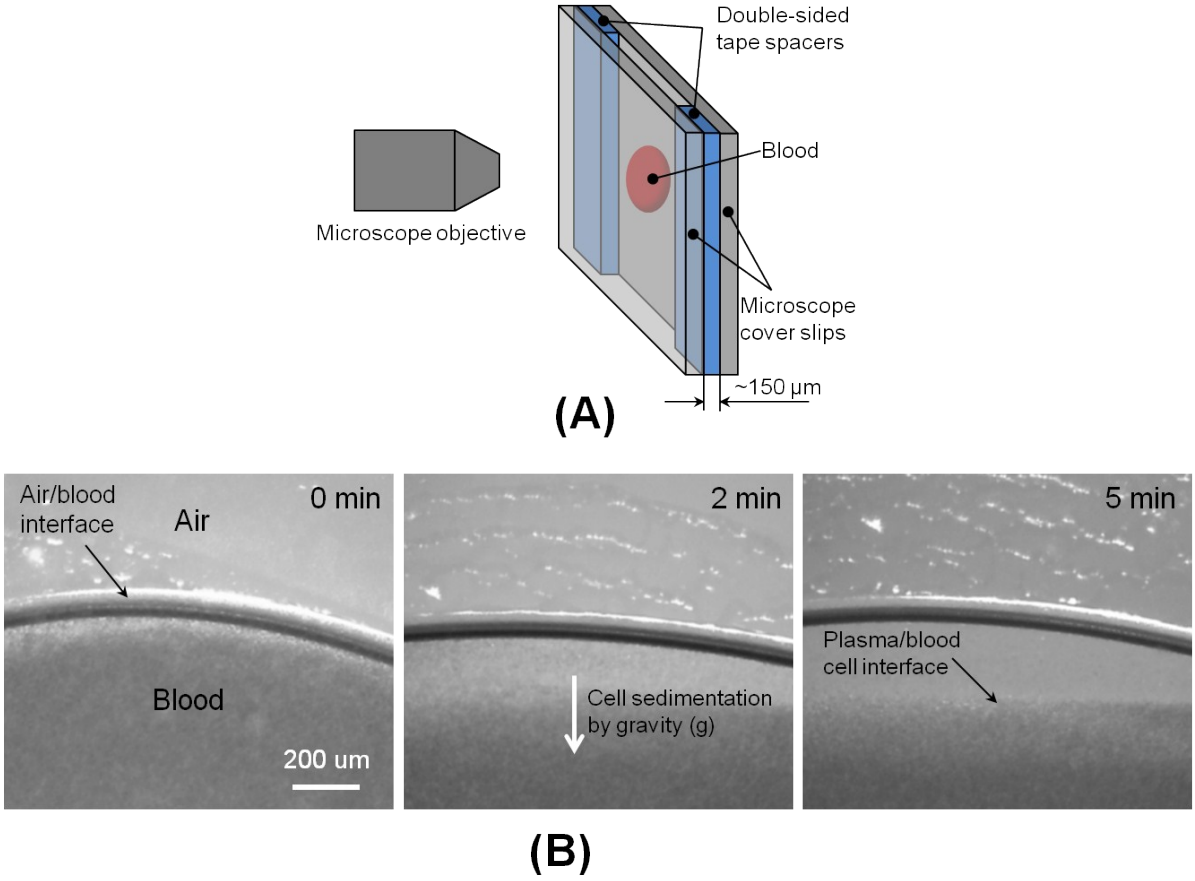

Fig. S4: (A) An experimental setup to observe blood cell sedimentation by gravity. (B) A sequence of images illustrating the blood cell gravitational sedimentation.

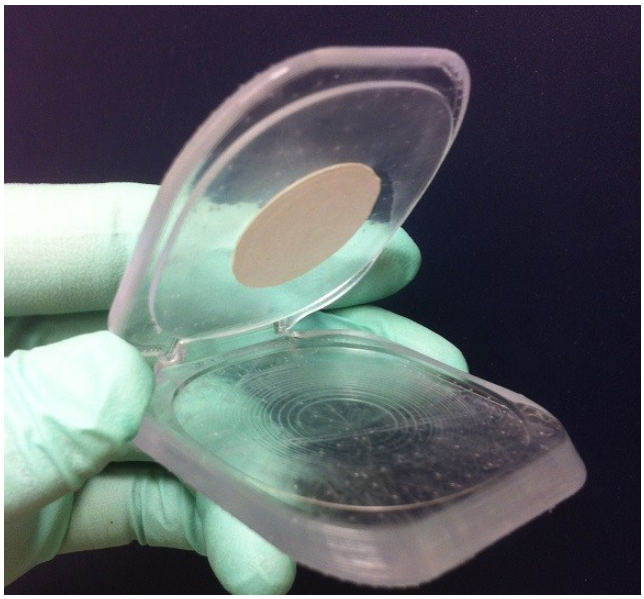

Fig. S5: A photograph of a modified superhydrophobic plasma separator that processes 800 µL of whole blood.

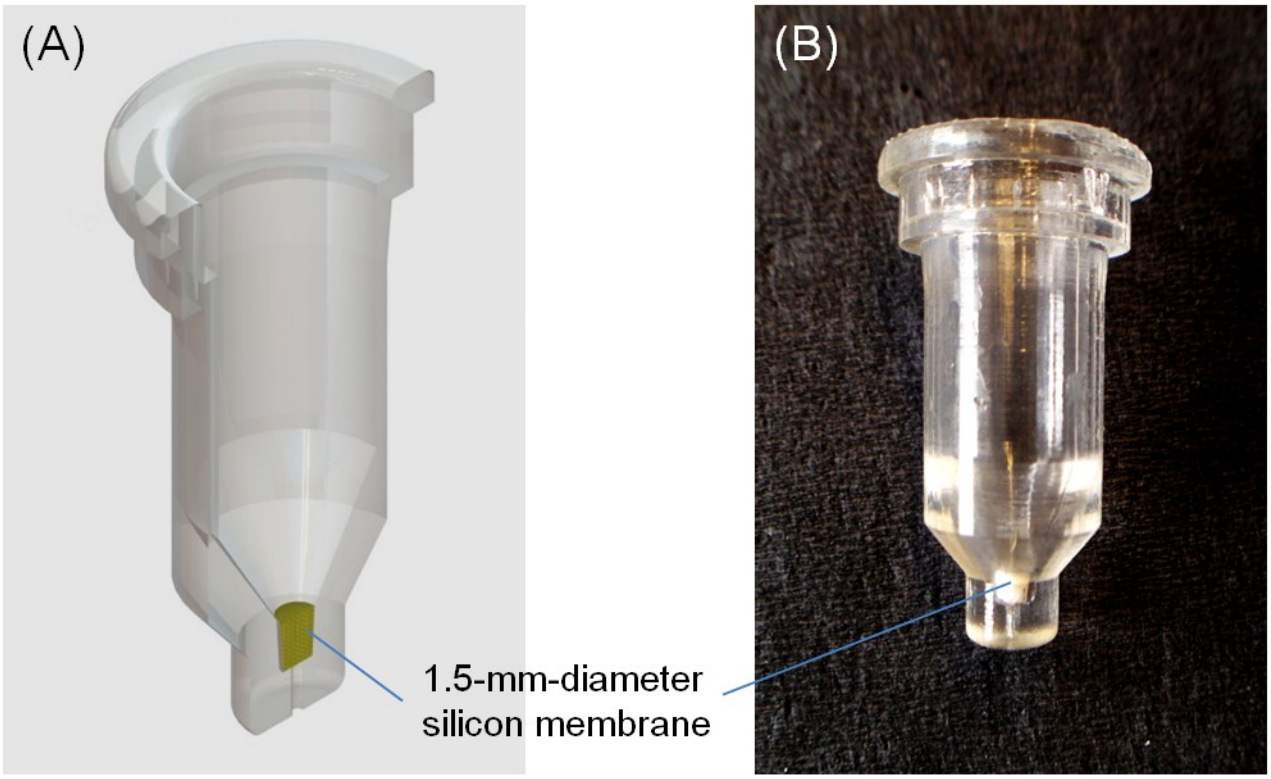

Fig. S6: 3D-printed tube with 1.5-mm-diameter silicon membrane for cell-free schistosome genomic DNA extraction: (A) schematic illustration of the 3D-printed tube and (B) a photograph of the 3D-printed tube.

Video S1: A movie illustrating the separation process carried out with our superhydrophobic plasma separator.