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

Supplementary Information

Personalized Gel-Droplet Monocyte Vaccines for Cancer Immunotherapy

*Yishen Tian, Chunmiao Xu, Jiao Feng, Yueyue Hangfu, Kai Wang, and Zhi-Ling Zhang**

College of Chemistry and Molecular Sciences, Wuhan University, Wuhan, 430072, P. R. China.

*Corresponding author: Professor Zhi-Ling Zhang

Full postal address: College of Chemistry and Molecular Sciences, Wuhan University, Wuhan, 430072, P. R. China.

Email: zlzhang@whu.edu.cn

Phone: 0086-27-68756759

Fax: 0086-27-68754067

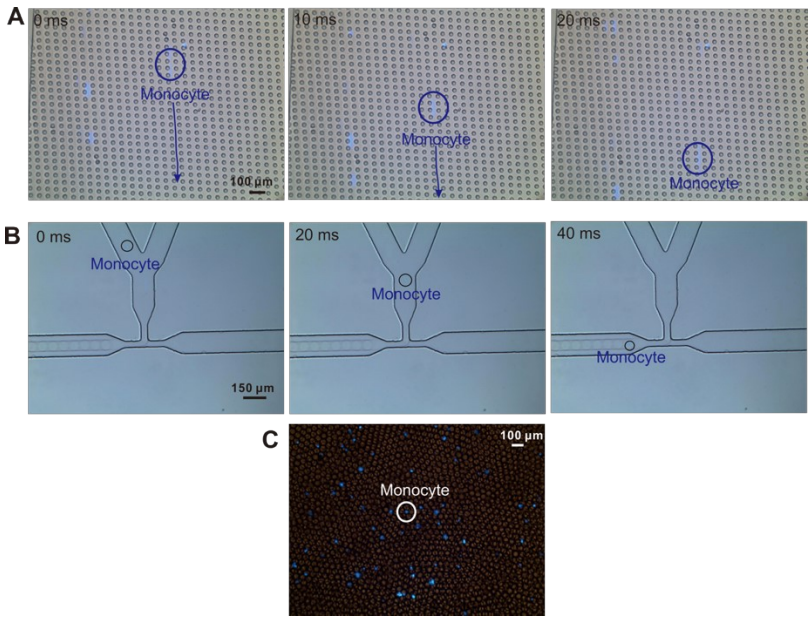

Figure S1. (A) Image of monocytes passing through the DLD section. (B) Images of monocyte encapsulated using microfluidic droplet technology. (C) Image of gel-droplet encapsulated monocyte at the output II. Monocytes use Hoechst 33342 stain.

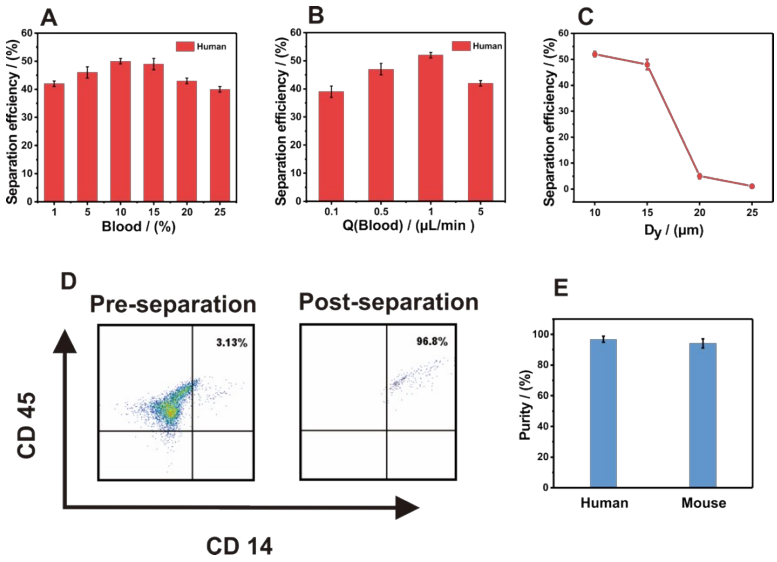

Figure S2. (A) Separation efficiency of monocytes at different dilution of human blood, at constant flow rates (1 μL/min). (B) Separation efficiency of monocytes at different human blood flow rates. (C) Separation efficiency of hunman monocytes at different D_y sizes at a constant flow rate (1 μL/min). (D) Flow cytometry plots of human blood before and after isolation. (E) Sorting purity of monocytes from human blood and mouse blood, respectively.

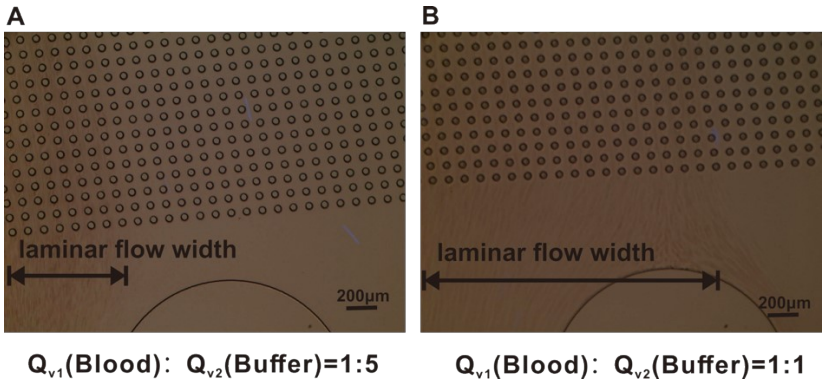

Figure S3. Difference of laminar flow widths. (A) Q_{v1}: Q_{v2} = 1:5. (B) Q_{v1}: Q_{v2} = 1:1.

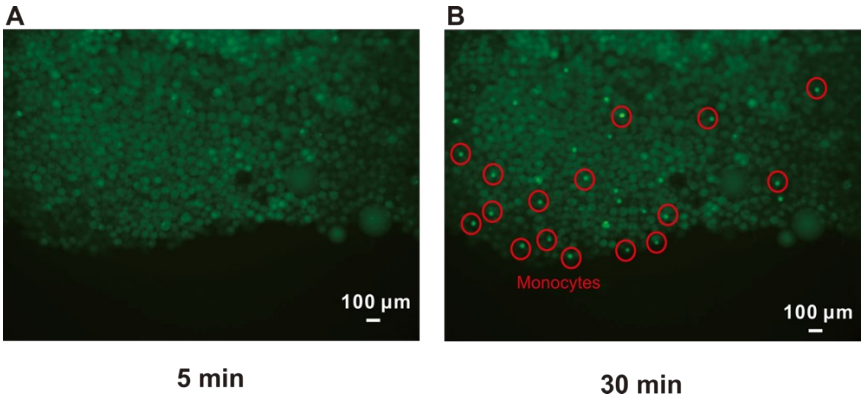

Figure S4. (A) Images of FITC-OVA uptake by monocyte at 5 min. (B) Images of FITC-OVA uptake by monocyte at 30 min. The red circle shows monocyte.

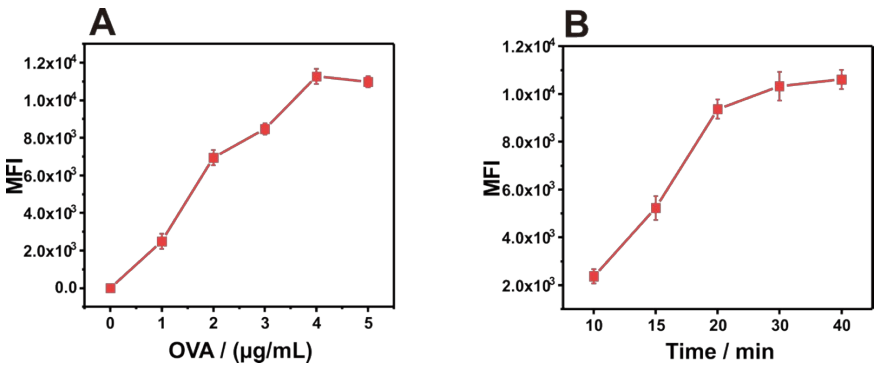

Figure S5. Antigen uptake by human monocyte. (A) MFI of the human monocyte at different concentration of OVA. (B) MFI of human monocytes at different times.

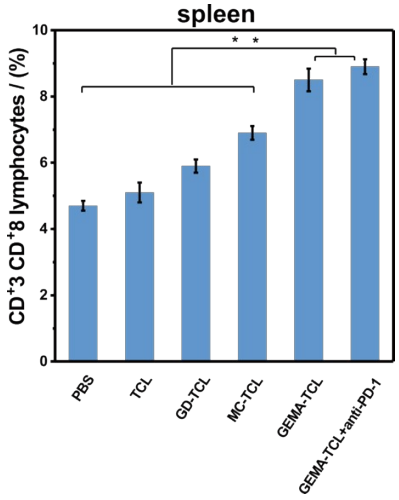

Figure S6. The percentage of $CD3^+$ $CD8^+$ T cells in the spleen. Values represent mean ± SDs (n = 4) from at least three independent experiments. *p < 0.05, **p < 0.01.

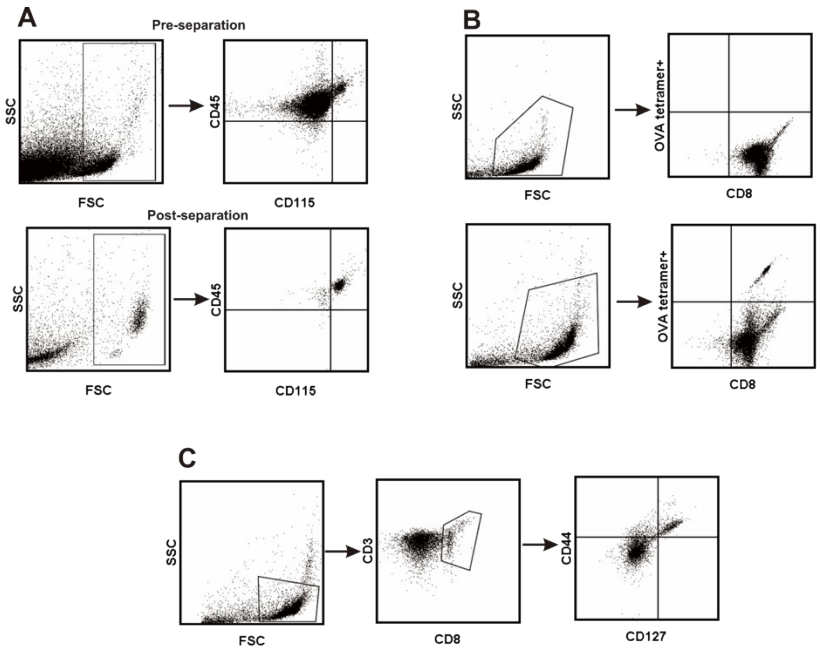

Figure S7. Gating strategies used for flow cytometry analysis of immune cells. (A) Gating strategy to analyze monocytes ($CD45^+$ and $CD115^+$) from peripheral blood of mice. (B) Gating strategy to analyze OVA-specific $CD8^+$ T ($CD8^+$ and OVA-$tetramer^+$) from the spleen in mice. (C) Gating strategy to analyze central memory T-cells (T_{CM}, $CD44^+$ $CD127^+$) from the spleen in 4T1 tumor-bearing mice.

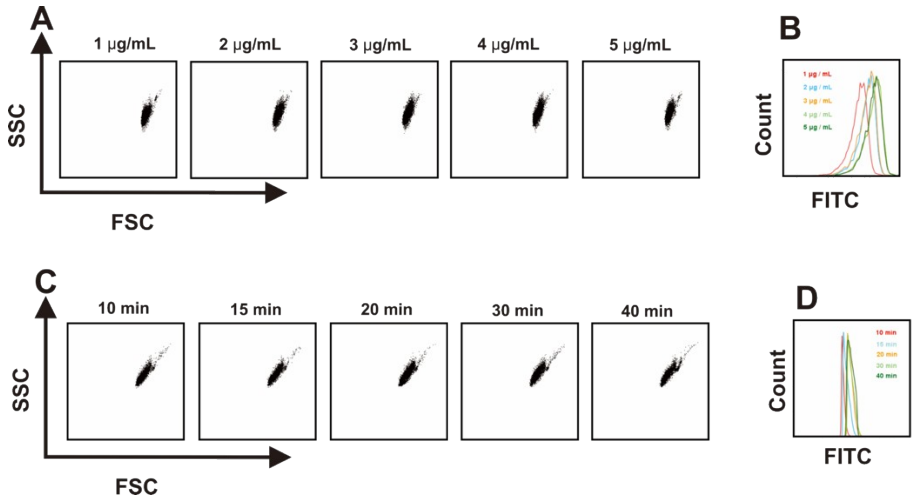

Figure S8. (A) Scatter plots of the monocyte at different concentration of FITC-OVA. (B) Histograms of the monocyte at different concentration of FITC-OVA. (C) Scatter plots of monocytes at different times. (D) Histograms of monocytes at different times.