Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Supporting Information

Sendai virus acts as a nano-booster to excite dendritic cells for enhancing the efficacy of CD47-directed immune checkpoint inhibitors against breast carcinoma

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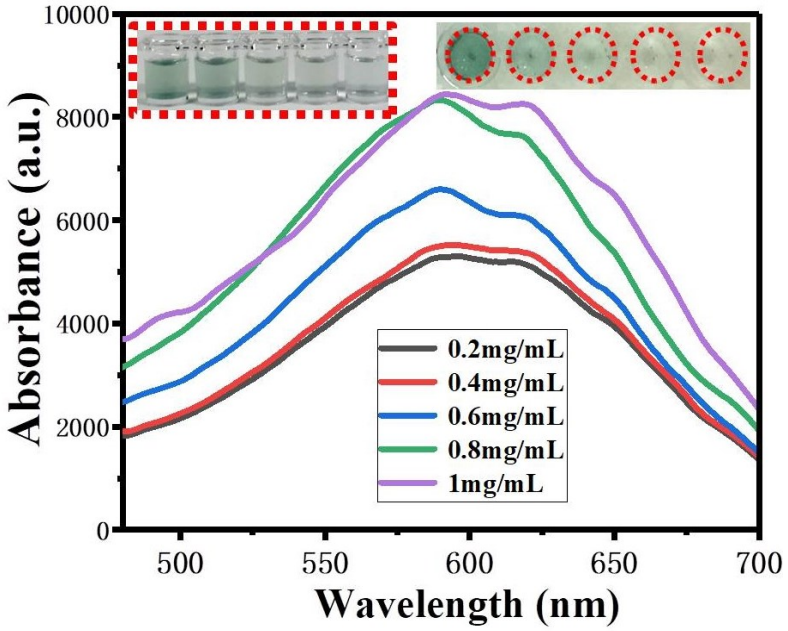
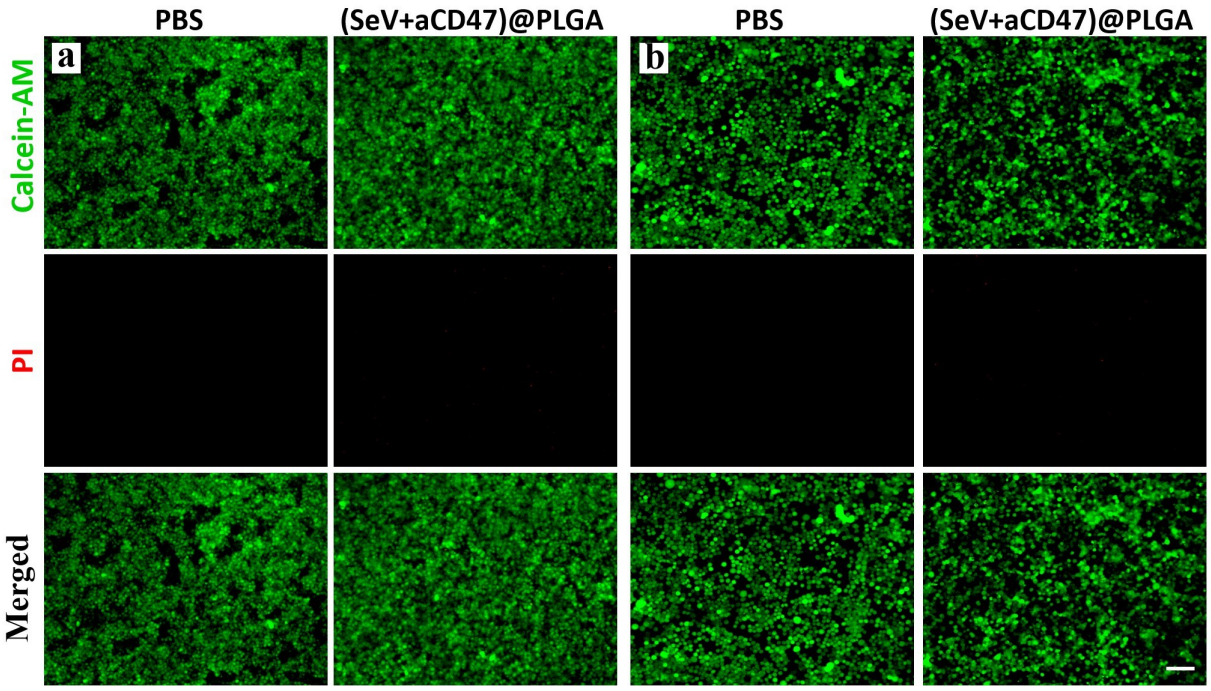
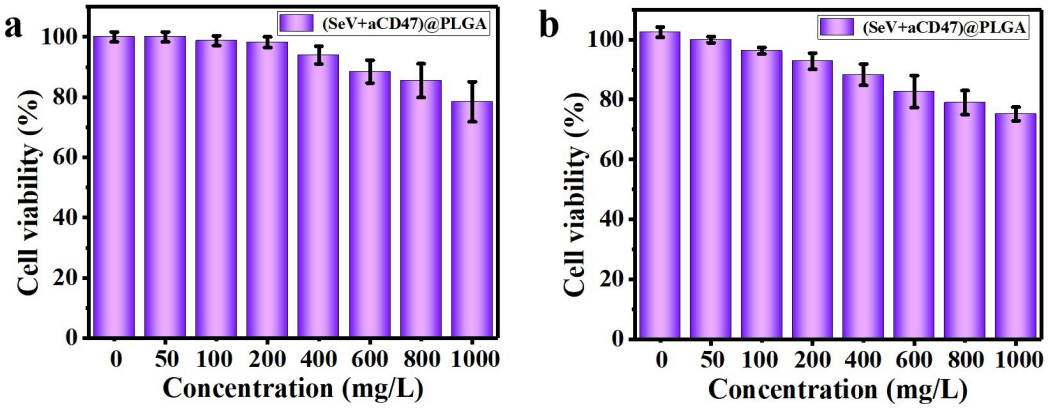
[1]These author contributed equally to this work.



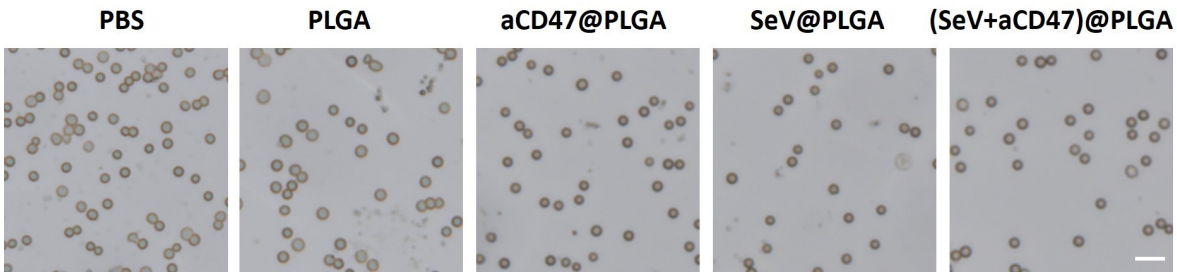
Supplementary Fig. 1. The UV-vis absorption spectrum of different (SeV+aCD47)@PLGA concentrations. The illustration was the macro photo.



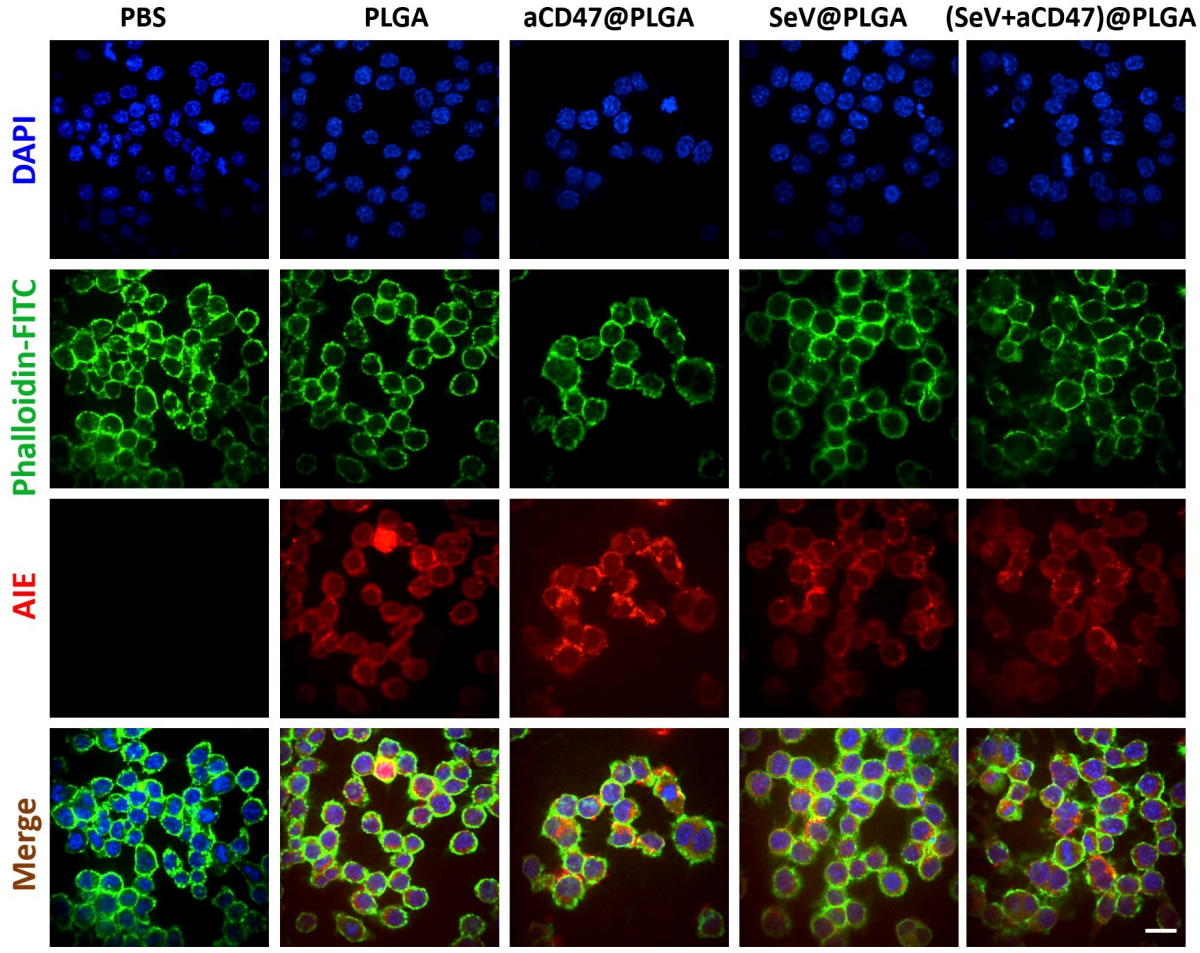
Supplementary Fig. 2. The biocompatibility of the (SeV+aCD47)@PLGA nanoparticles in (a) DC 2.4 cells and (b) RAW 264.7 cells. The green fluorescent dye, calcein-AM, was used to label the live cells and the results were visualized by fluorescence microscope. The scale bars were 200 μm.



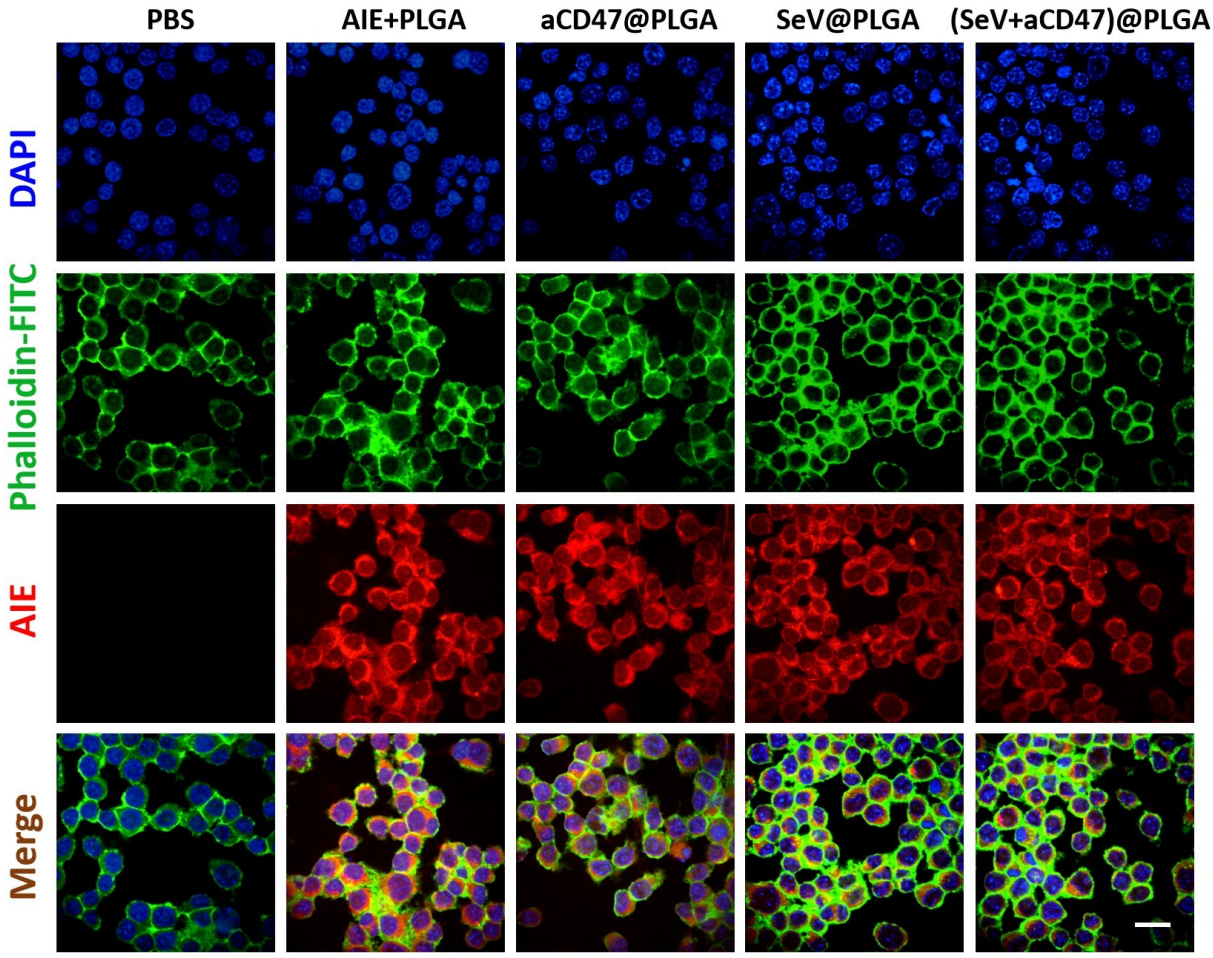
Supplementary Fig. 3. Cytotoxicity data of (SeV+aCD47)@PLGA nanoparticles tested by MTT in (a) DC 2.4 cells and (b) RAW 264.7 cells.



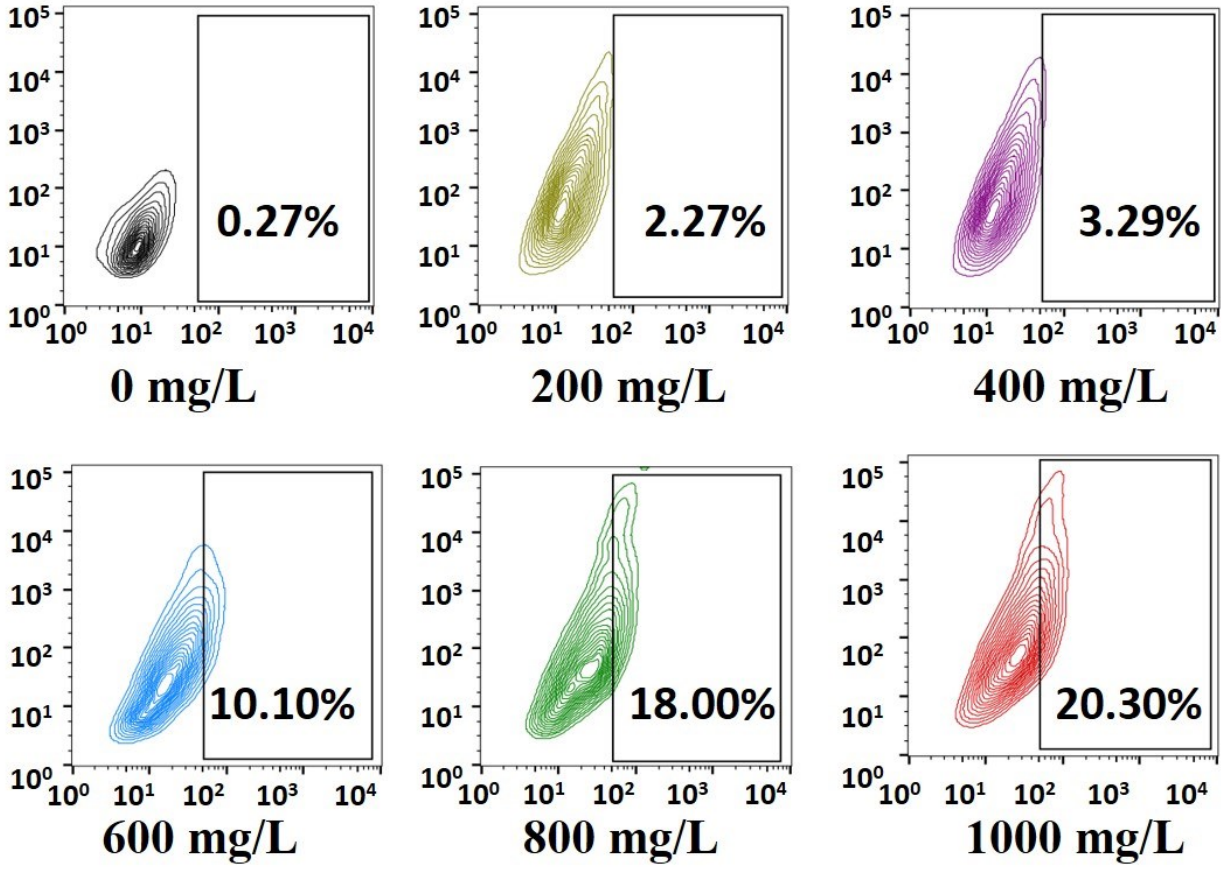
Supplementary Fig. 4. Evaluation of erythrocyte safety from BALB/c mice by PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles incubated for 1h. The scale bars were 100 μm.



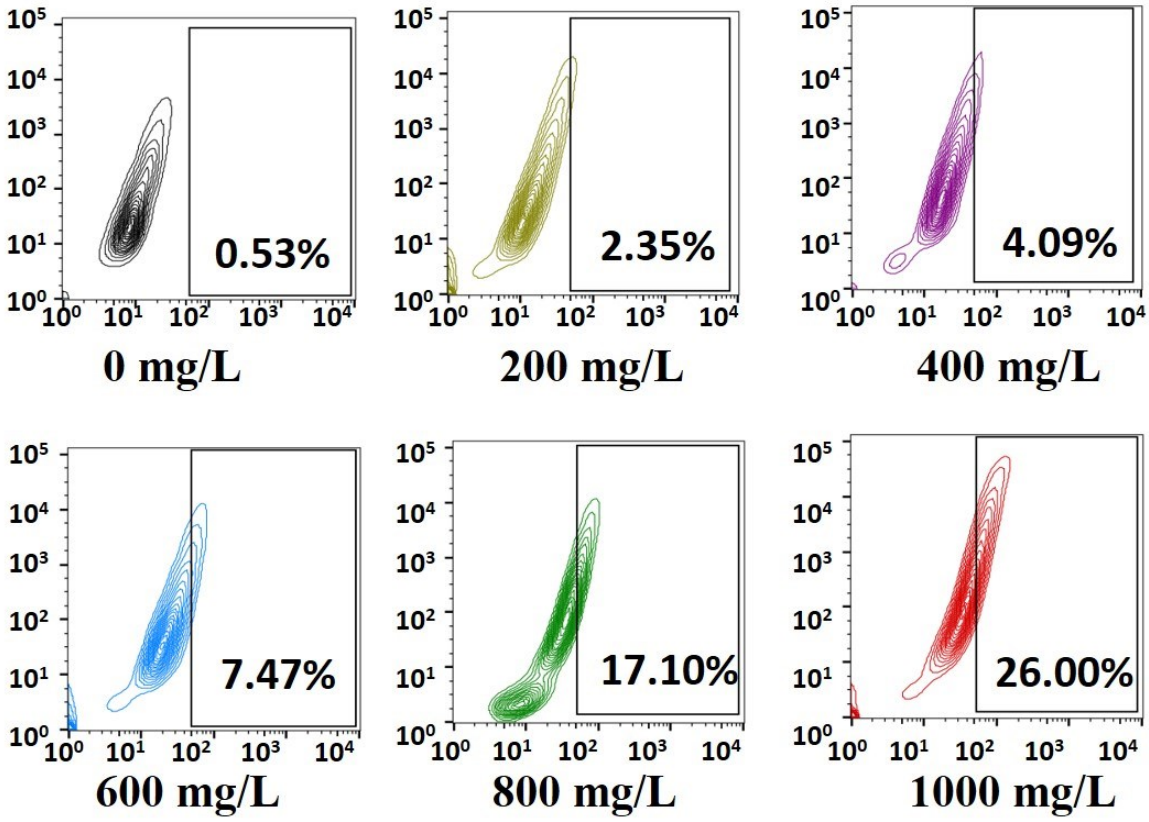
Supplementary Fig. 5. The endocytosis of PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles incubated with dendritic cells (DCs) for 4h and the results were visualized by laser scanning confocal microscope. The scale bars were 50 μm.



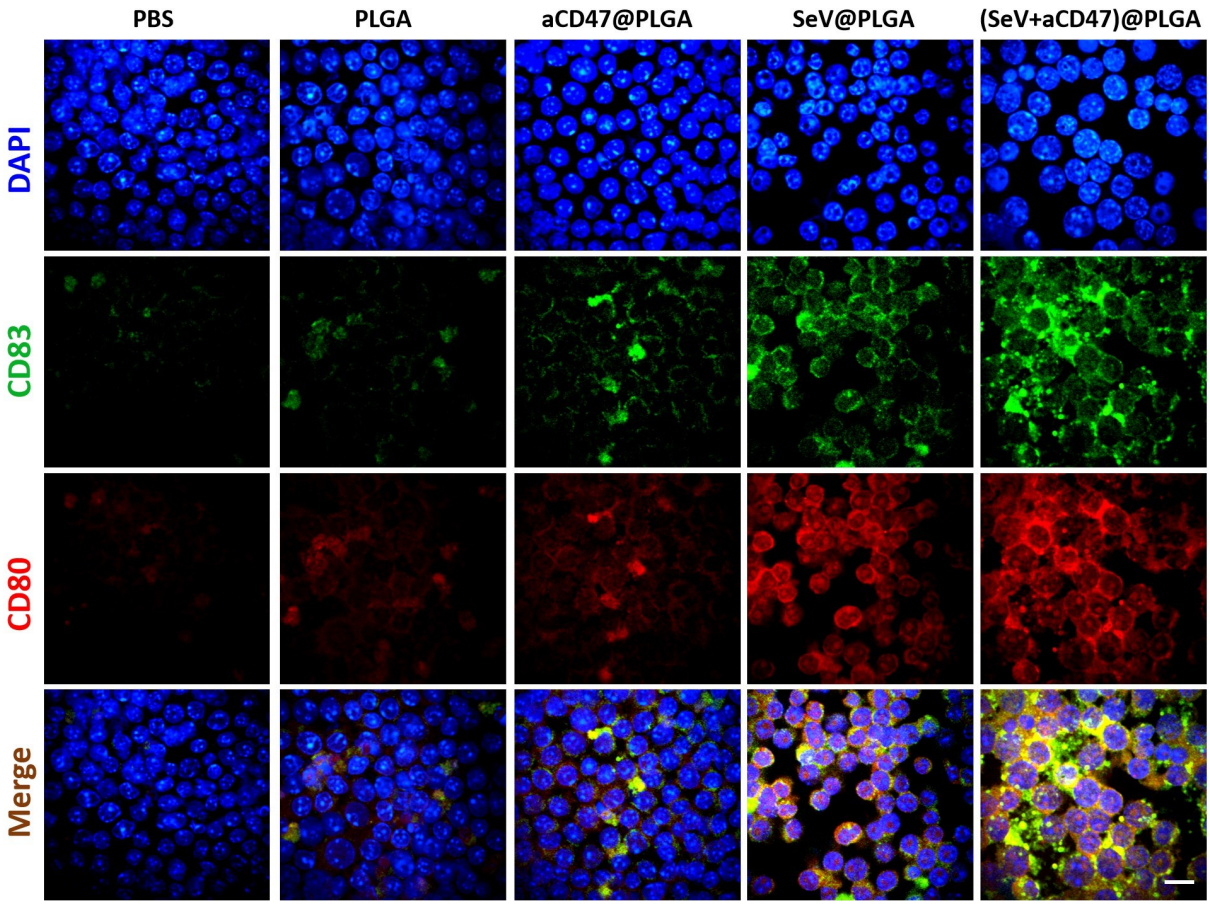
Supplementary Fig. 6. The endocytosis of PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles incubated with RAW 264.7 cells for 4h and the results were visualized by laser scanning confocal microscope. The scale bars were 50 μm.



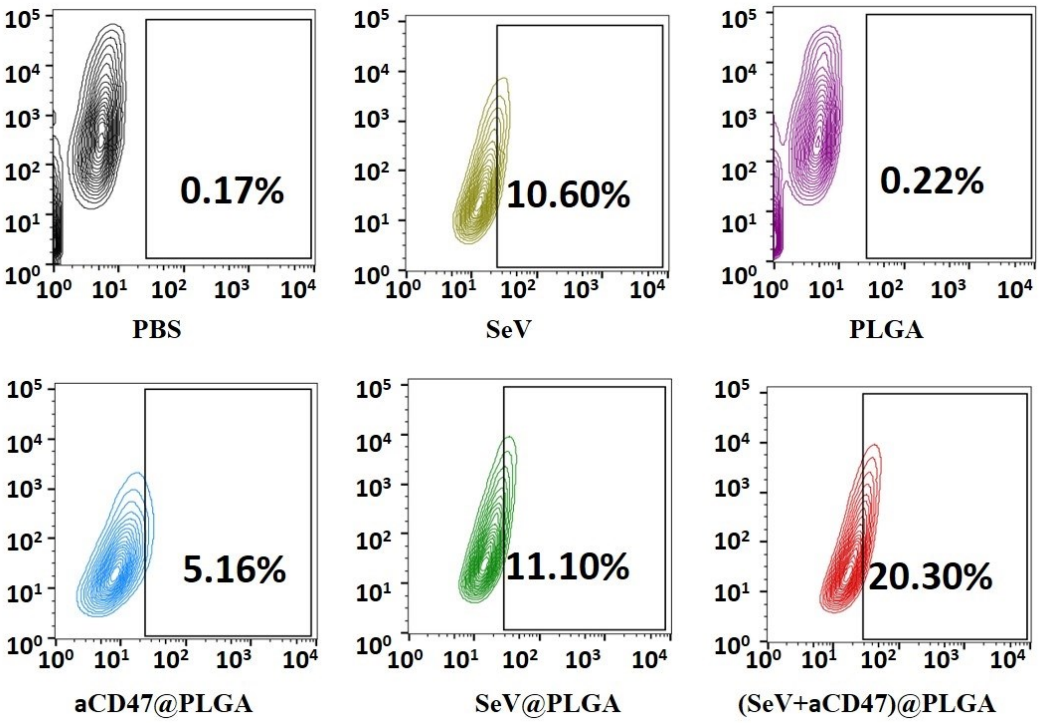
Supplementary Fig. 7. The CD 80 molecules on the DC 2.4 cells were detected by flow cytometry (FCM) for per 10,000 cells after 48 h of different concentrations of (SeV+aCD47)@PLGA nanoparticles treatment.



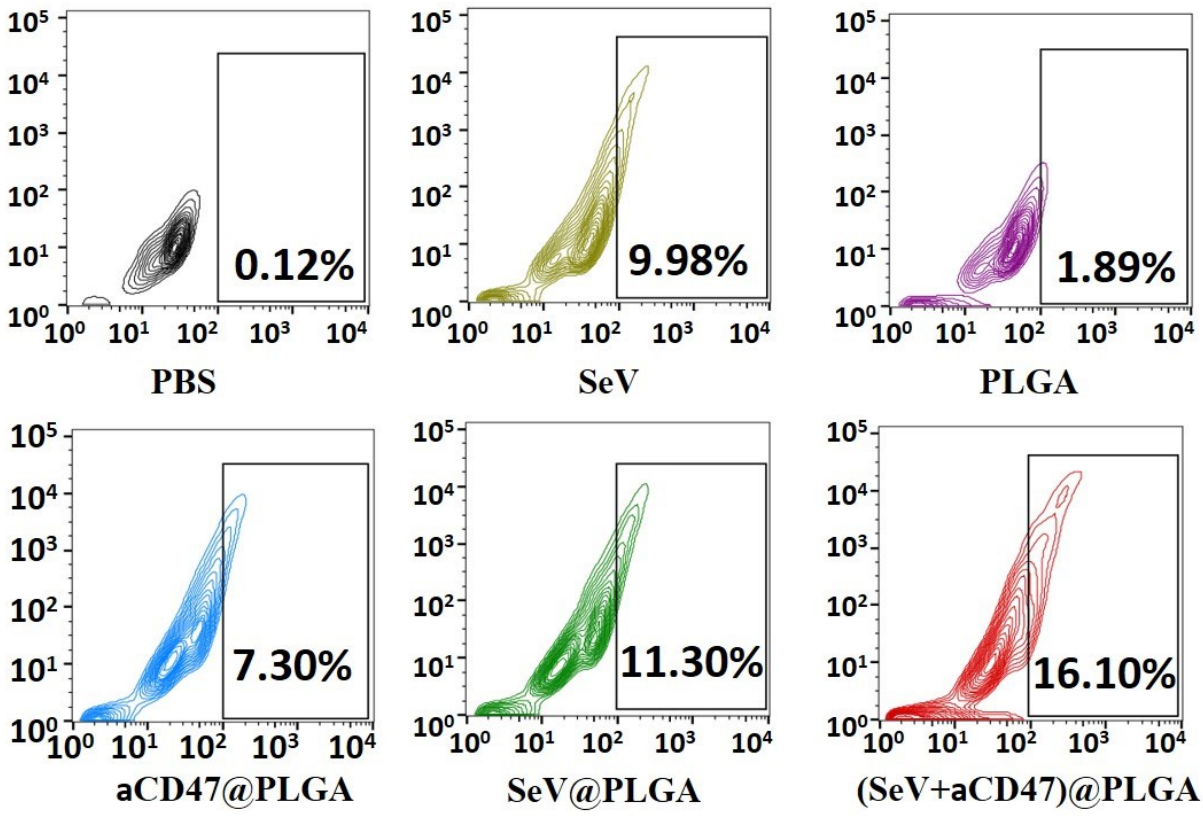
Supplementary Fig. 8. The CD 83 molecules on the DC 2.4 cells were detected by flow cytometry (FCM) for per 10,000 cells after 48 h of different concentrations of (SeV+aCD47)@PLGA nanoparticles treatment.



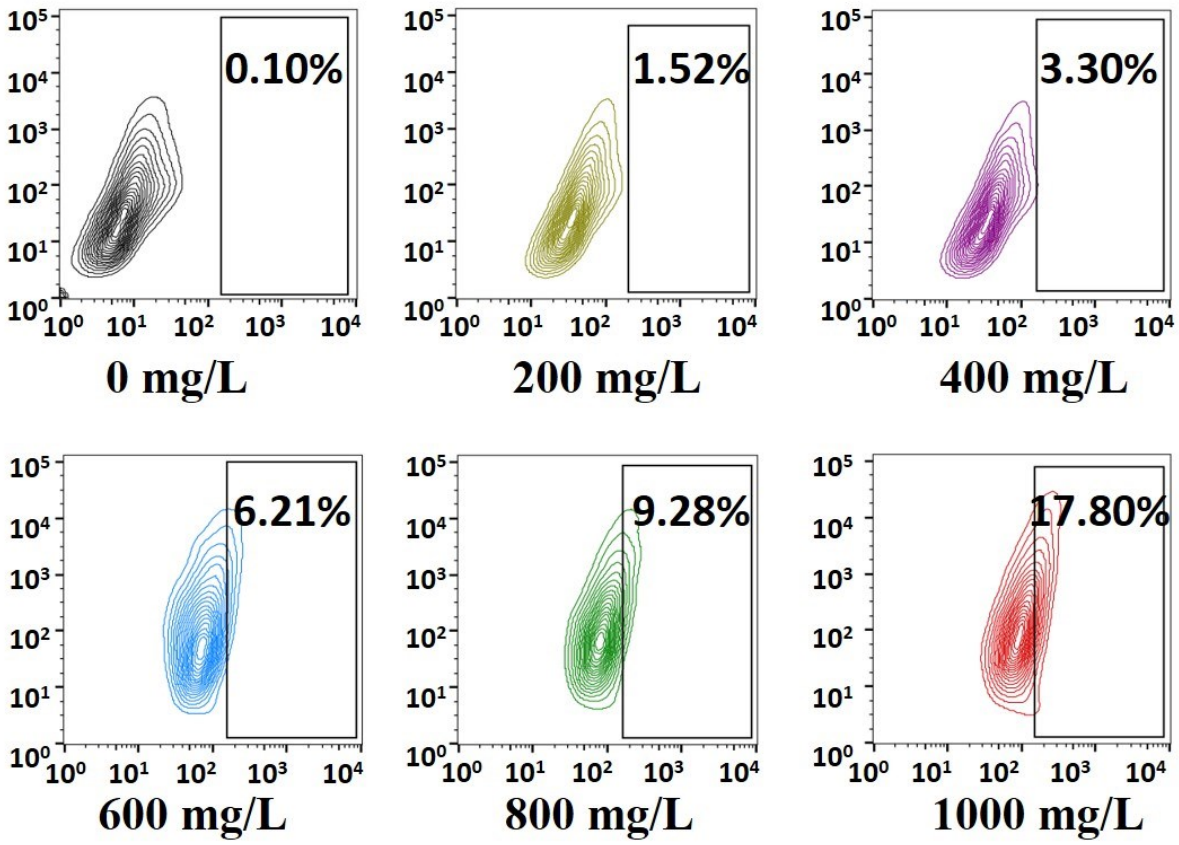
Supplementary Fig. 9. The CD 80 and CD 83 molecules on the DC 2.4 cells were detected by immunofluorescence staining after 48 h of PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles treatment and the results were visualized by laser scanning confocal microscope. The scale bars were 50 μm.



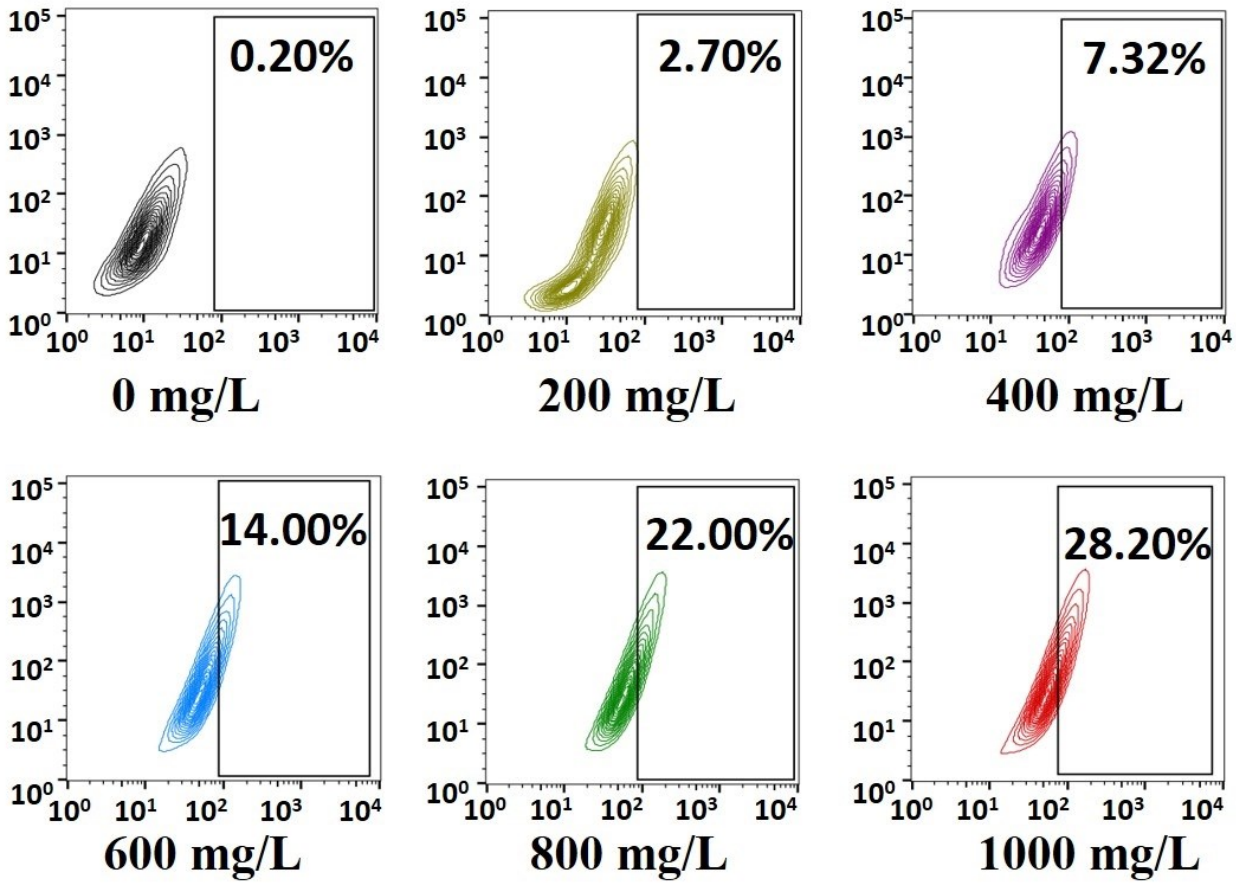
Supplementary Fig. 10. The F4/80 molecules on the RAW 264.7 cells were detected by flow cytometry (FCM) for per 10,000 cells after 48 h of different concentrations of (SeV+aCD47)@PLGA nanoparticles treatment.



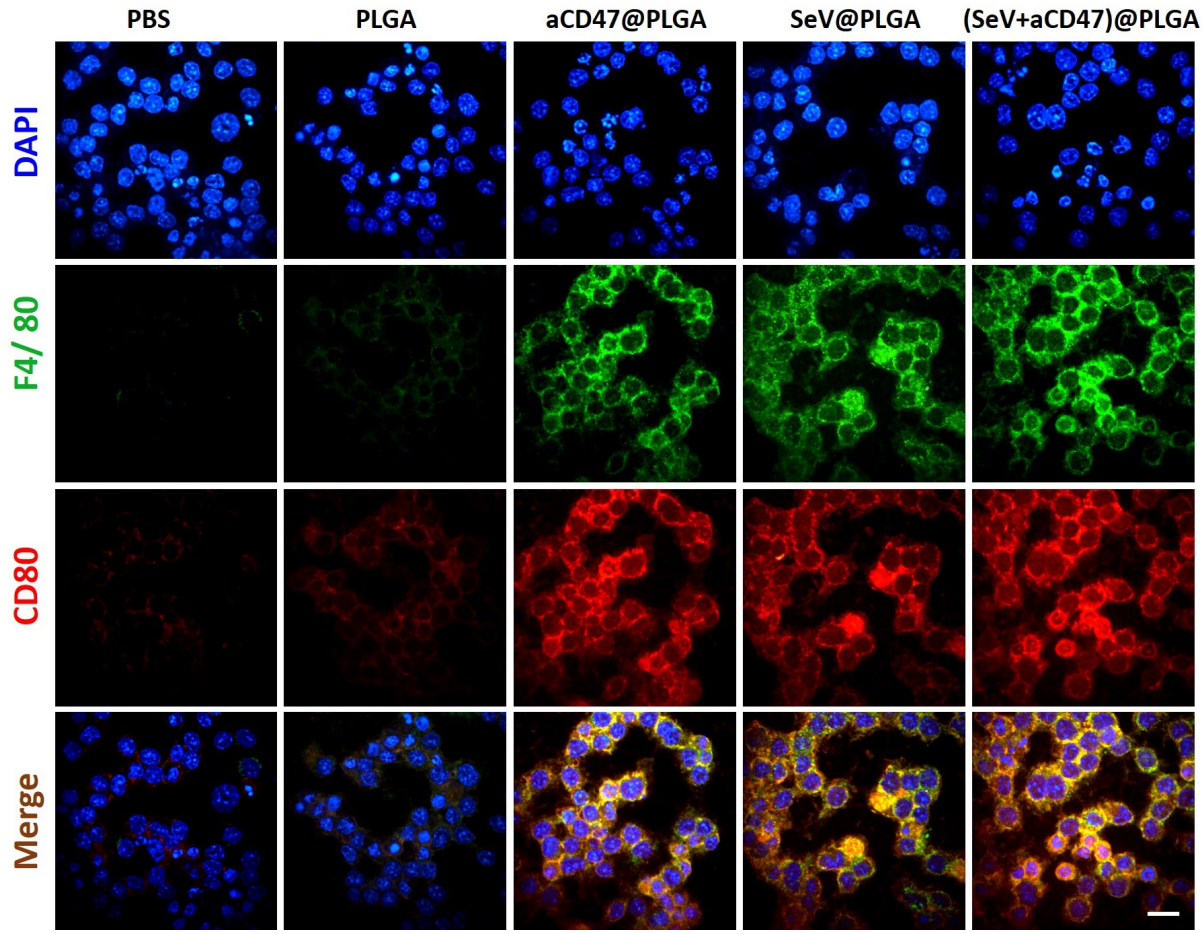
Supplementary Fig. 11. The CD 80 molecules on the RAW 264.7 cells surface were detected by flow cytometry (FCM) for per 10,000 cells after 48 h of PBS, SeV, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles treatment.



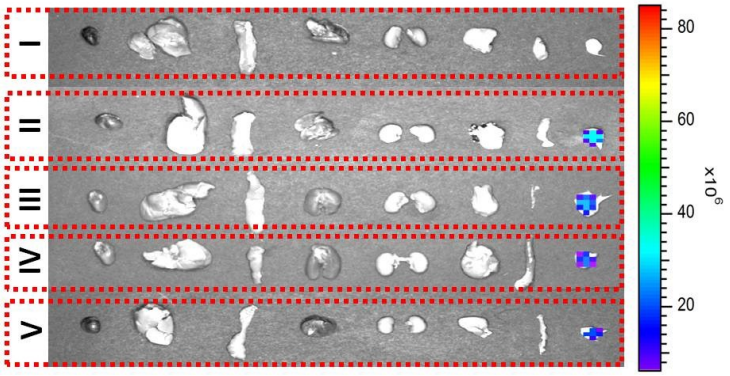
Supplementary Fig. 12. The F4/80 molecules on the RAW 264.7 cells were detected by flow cytometry (FCM) for per 10,000 cells after 48 h of different concentrations of (SeV+aCD47)@PLGA nanoparticles treatment.



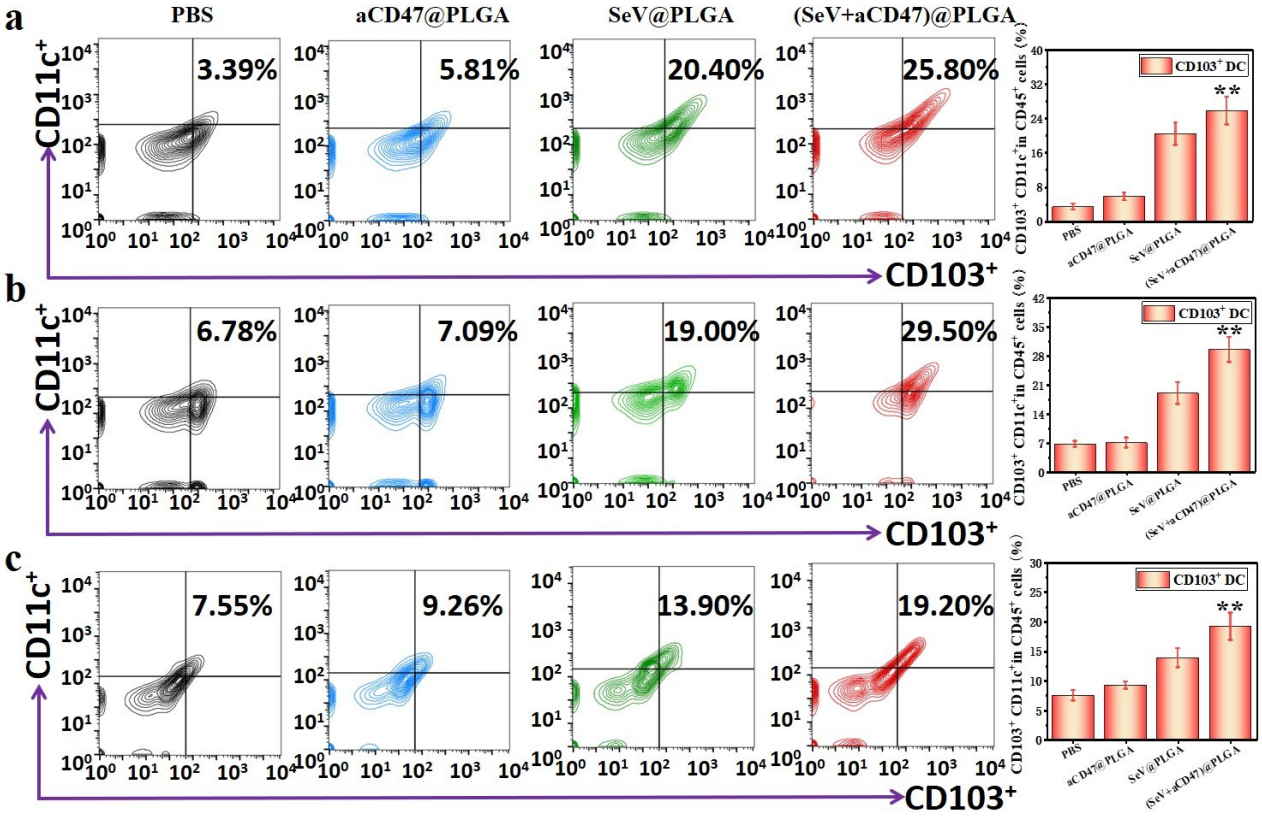
Supplementary Fig. 13. The CD 80 molecules on the RAW 264.7 cells were detected by flow cytometry (FCM) for per 10,000 cells after 48 h of different concentrations of (SeV+aCD47)@PLGA nanoparticles treatment.



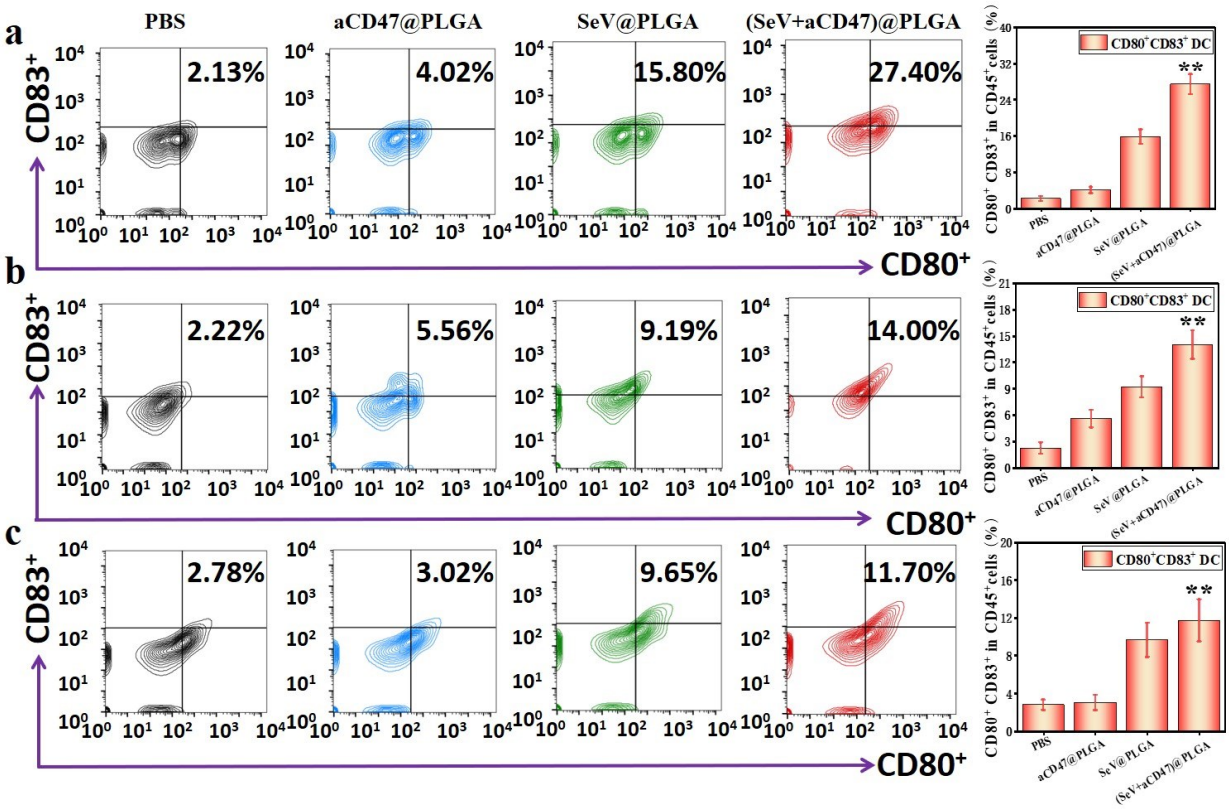
Supplementary Fig. 14. The F4/80 and CD 80 molecules on the RAW 264.7 cells were detected by immunofluorescence staining after 48 h of PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles treatment and the results were visualized by laser scanning confocal microscope. The scale bars were 50 μm.



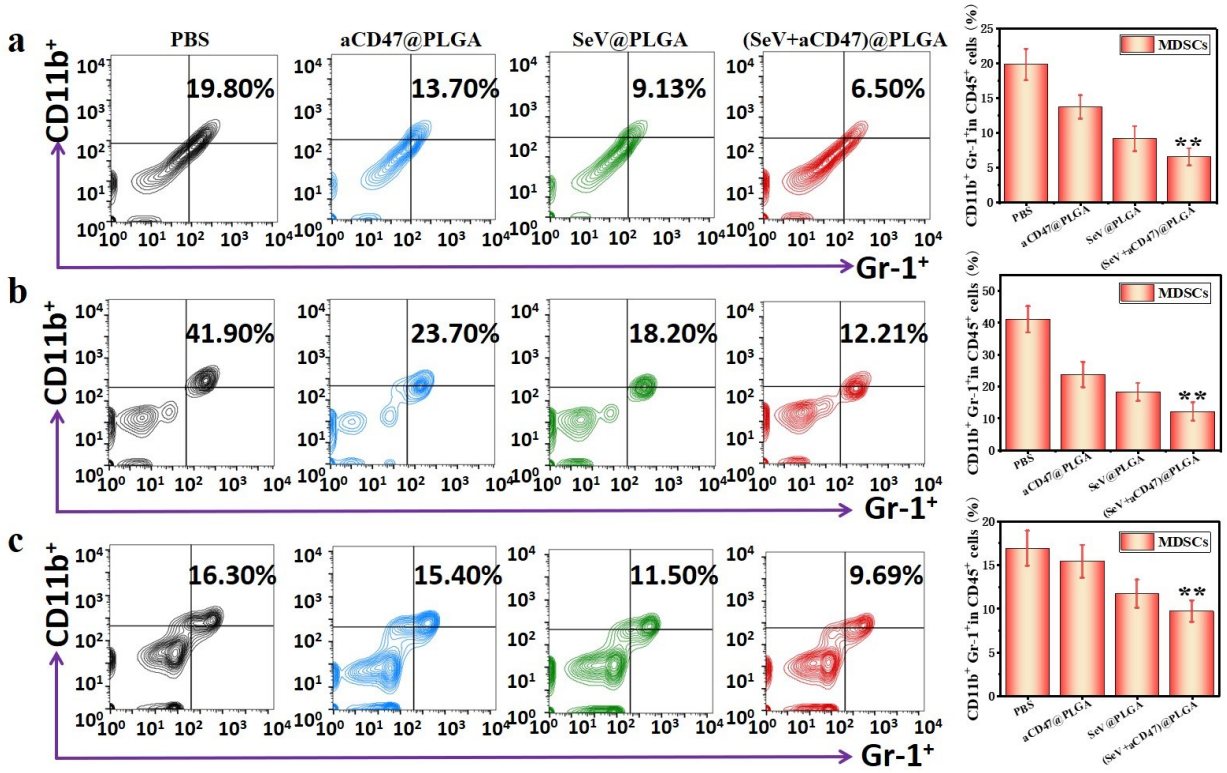
Supplementary Fig. 15. The fluorescence images of isolating the main organs and tumor from the 4T1-bearing mice treatmented with (I) PBS, (II) PLGA, (III) aCD47@PLGA, (IV) SeV@PLGA and (V) (SeV+aCD47)@PLGA nanoparticles by an in vivo imaging system (IVIS).



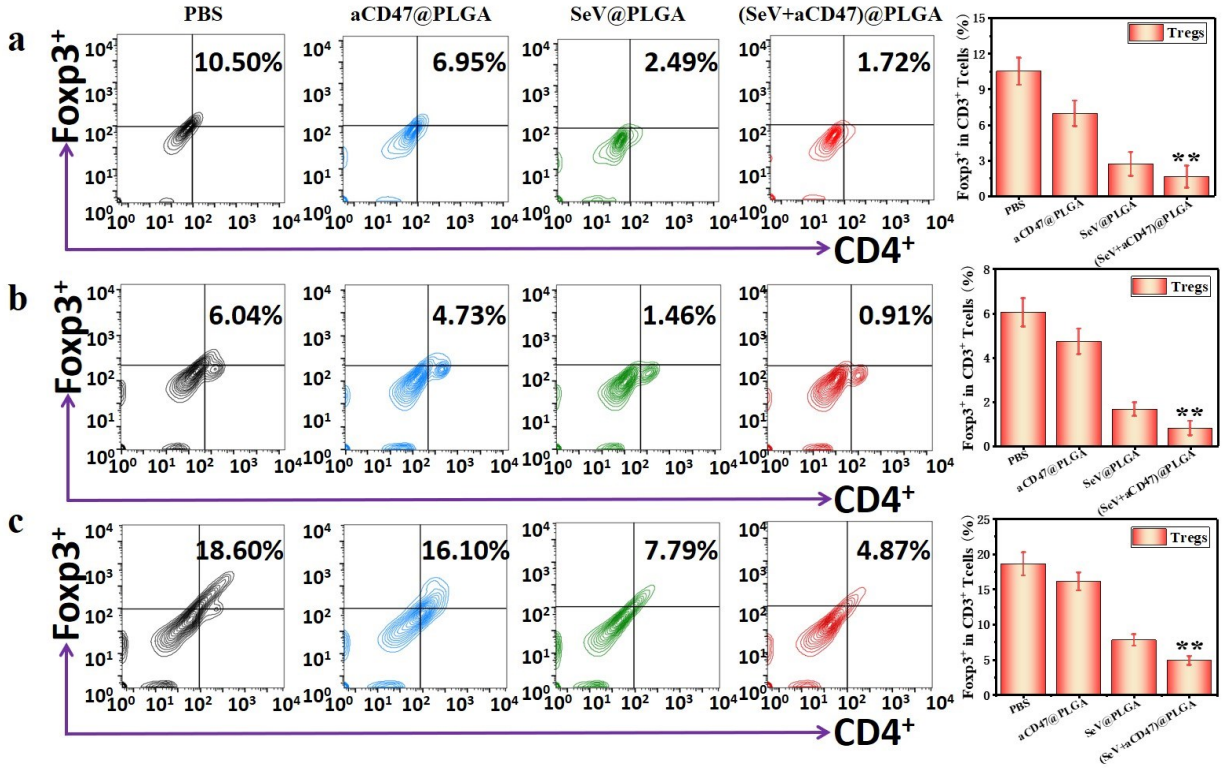
Supplementary Fig. 16. Flow cytometry for quantitative detection of $CD103^+$ dendritic cells gating on $CD45^+CD11c^+$ cells throughout the body. a) lymph gland, b) spleen and c) blood.



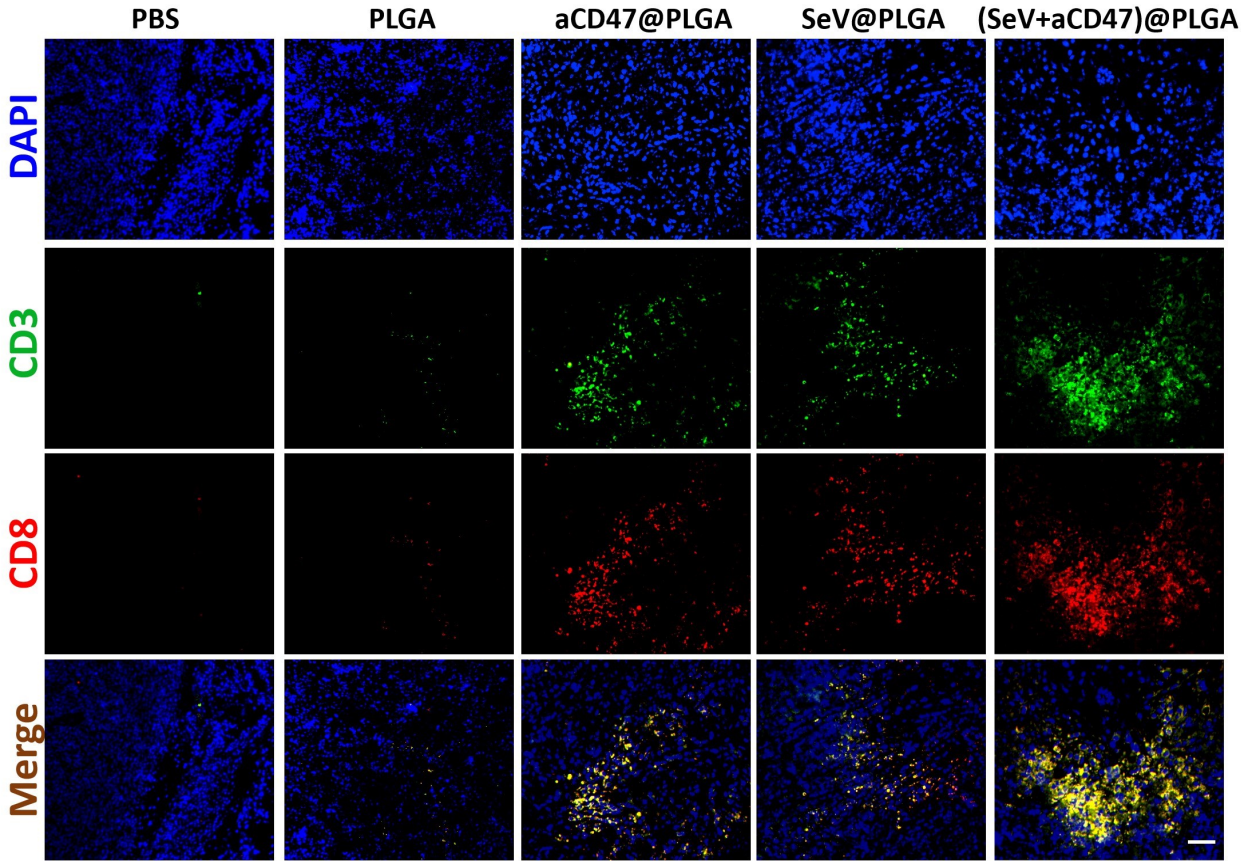
Supplementary Fig. 17. Flow cytometry for quantitative detection of $CD80^+CD86^+$ dendritic cells gating on $CD45^+CD11c^+$ cells throughout the body. a) lymph gland, b) spleen and c) blood.



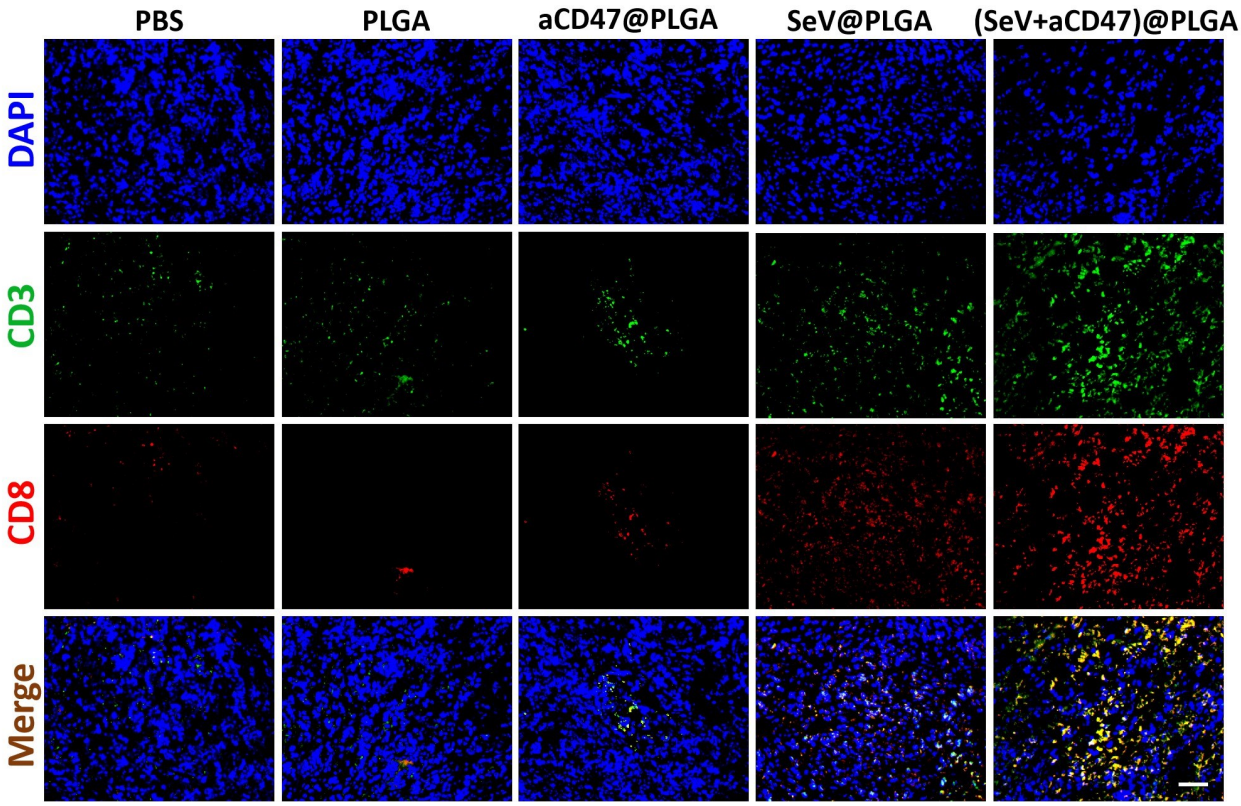
Supplementary Fig. 18. Flow cytometry for quantitative detection of MDSCs ($CD11b^+Gr\text{-}1^+$) gating on $CD45^+$ cells throughout the body. a) lymph gland, b) spleen and c) blood.



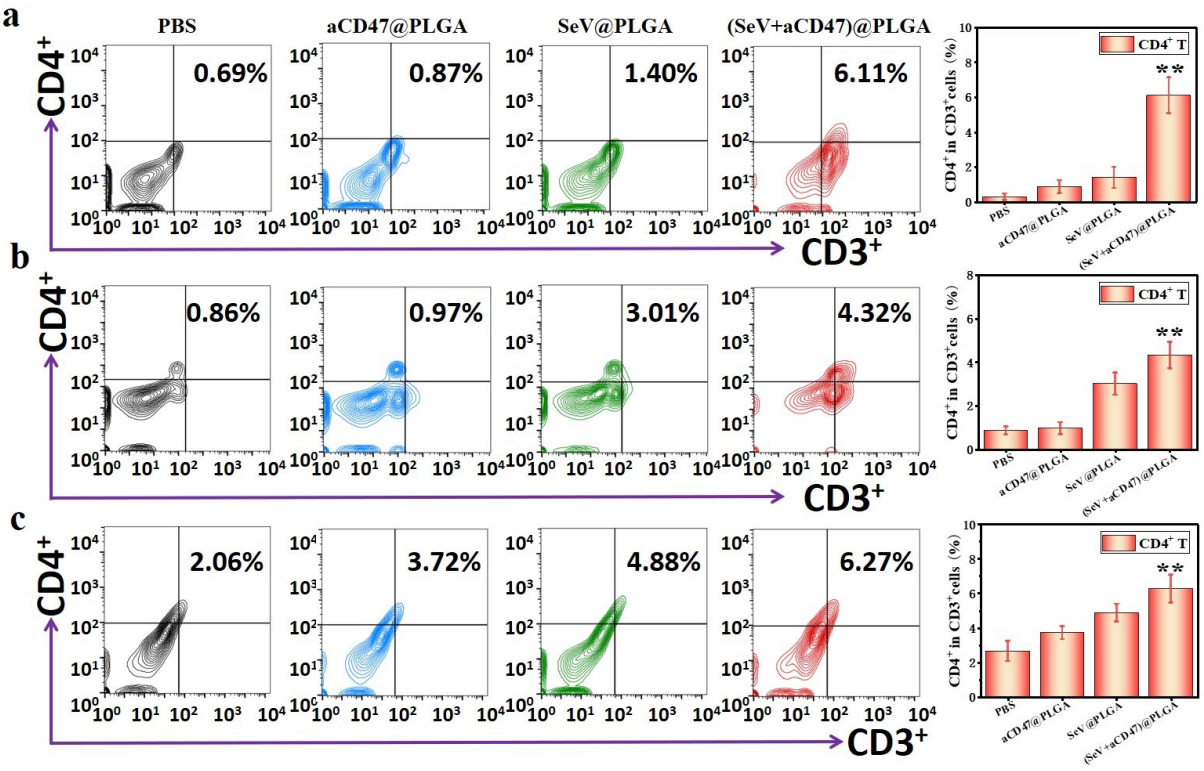
Supplementary Fig.19. Flow cytometry for quantitative detection of Tregs ($Foxp3^+CD4^+$) gating on $CD3^+$ cells throughout the body. a) lymph gland, b) spleen and c) blood.



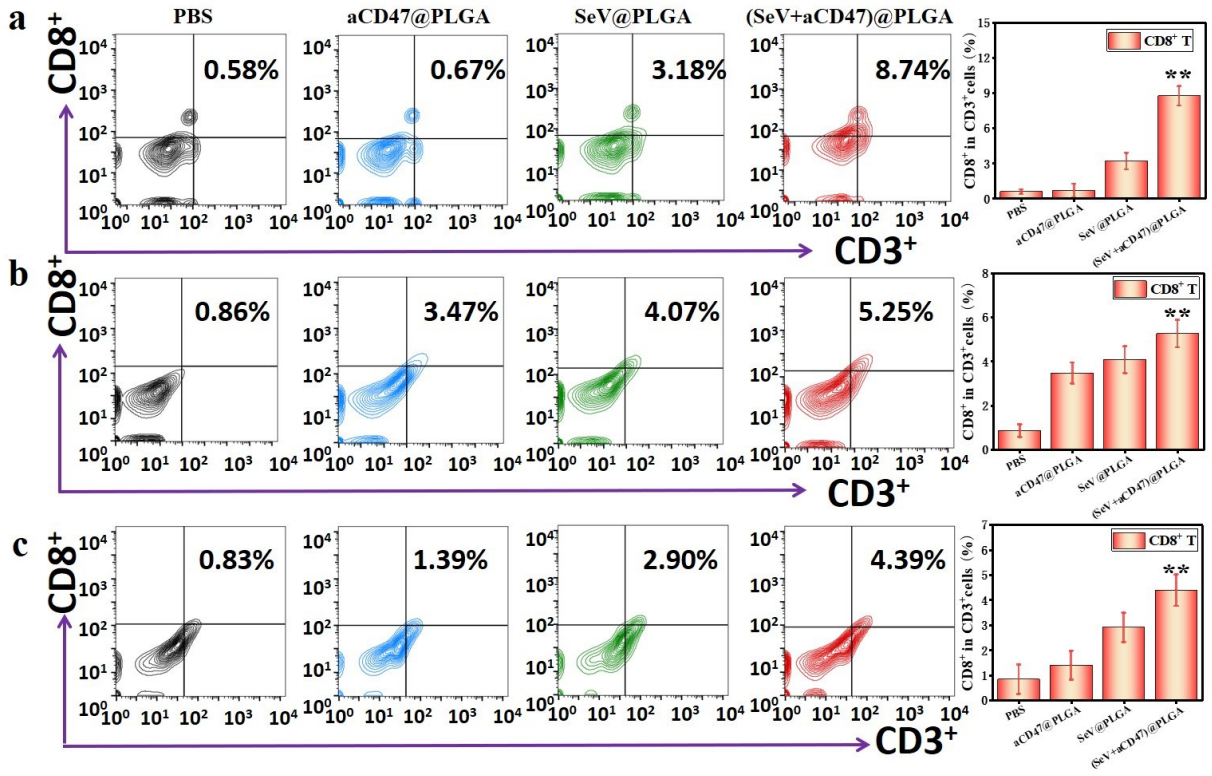
Supplementary Fig. 20. Immunofluorescence staining of local tumor sections after 7 days of PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles treatment for detecting the maturation of $CD8^+$ T cells and the results were visualized by fluorescence microscope. The scale bars were 200 μm.



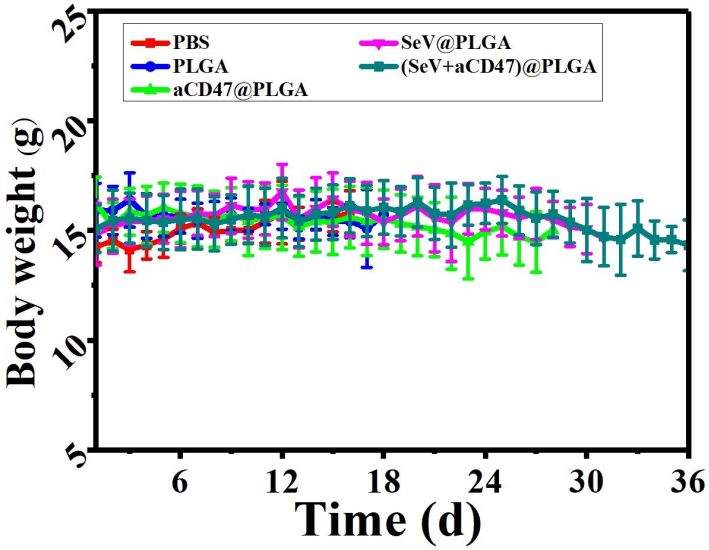
Supplementary Fig. 21. Immunofluorescence staining of distal tumor sections after 7 days of PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles treatment for detecting the maturation of $CD8^+$ T cells. The scale bars were 200 μm.



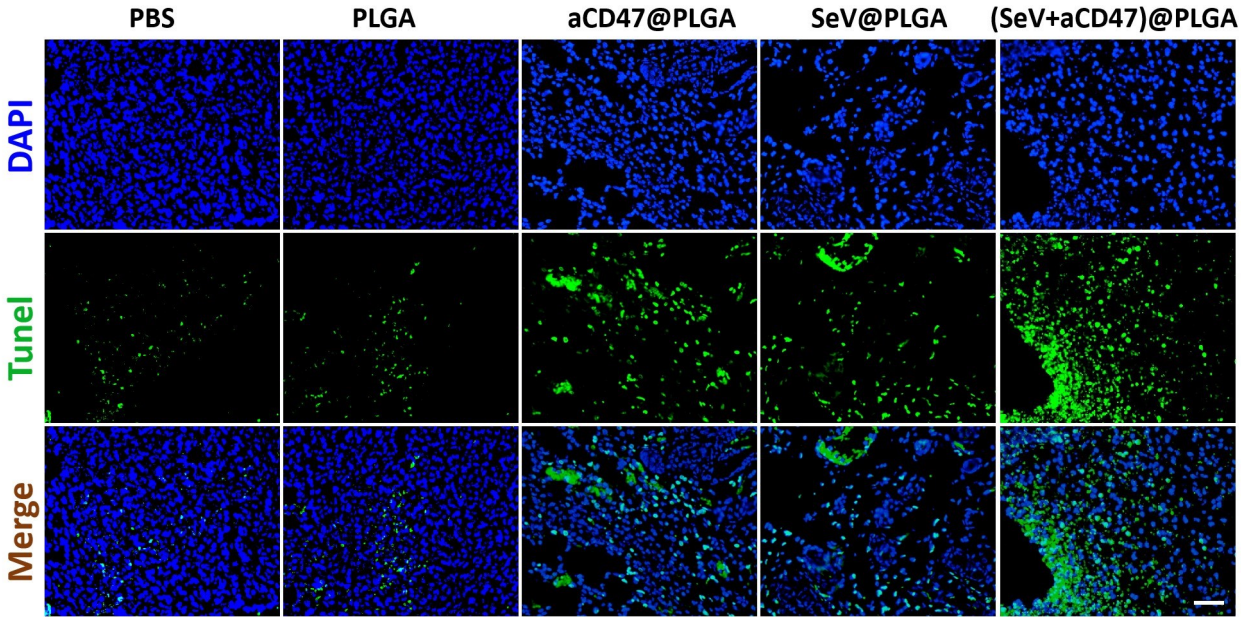
Supplementary Fig. 22. Flow cytometry for quantitative detection of Th cells ($CD4^+CD3^+$) gating on $CD3^+$ cells throughout the body. a) lymph gland, b) spleen and c) blood.



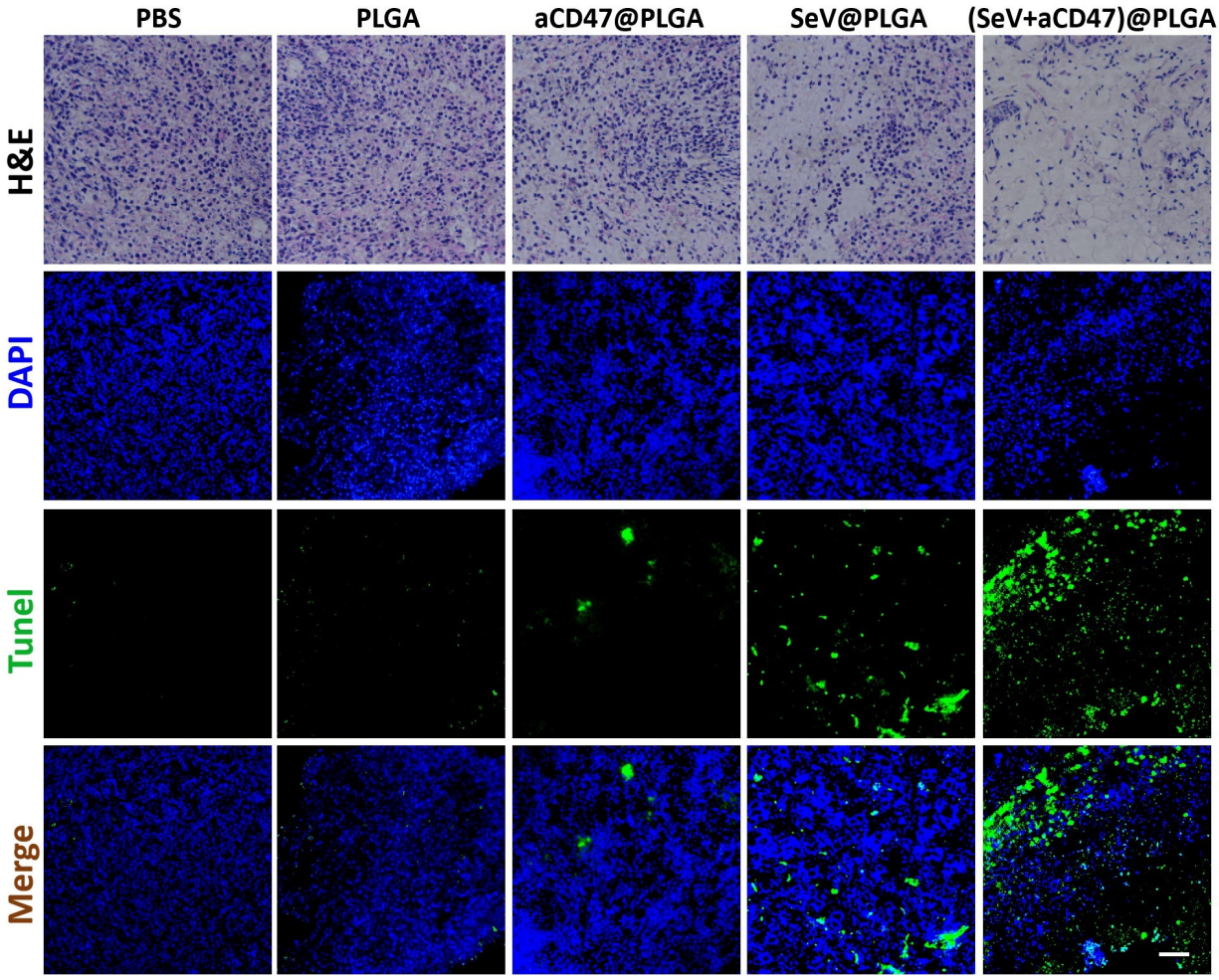
Supplementary Fig. 23. Flow cytometry for quantitative detection of CTL cells ($CD8^+CD3^+$) gating on $CD3^+$ cells throughout the body. a) lymph gland, b) spleen and c) blood.



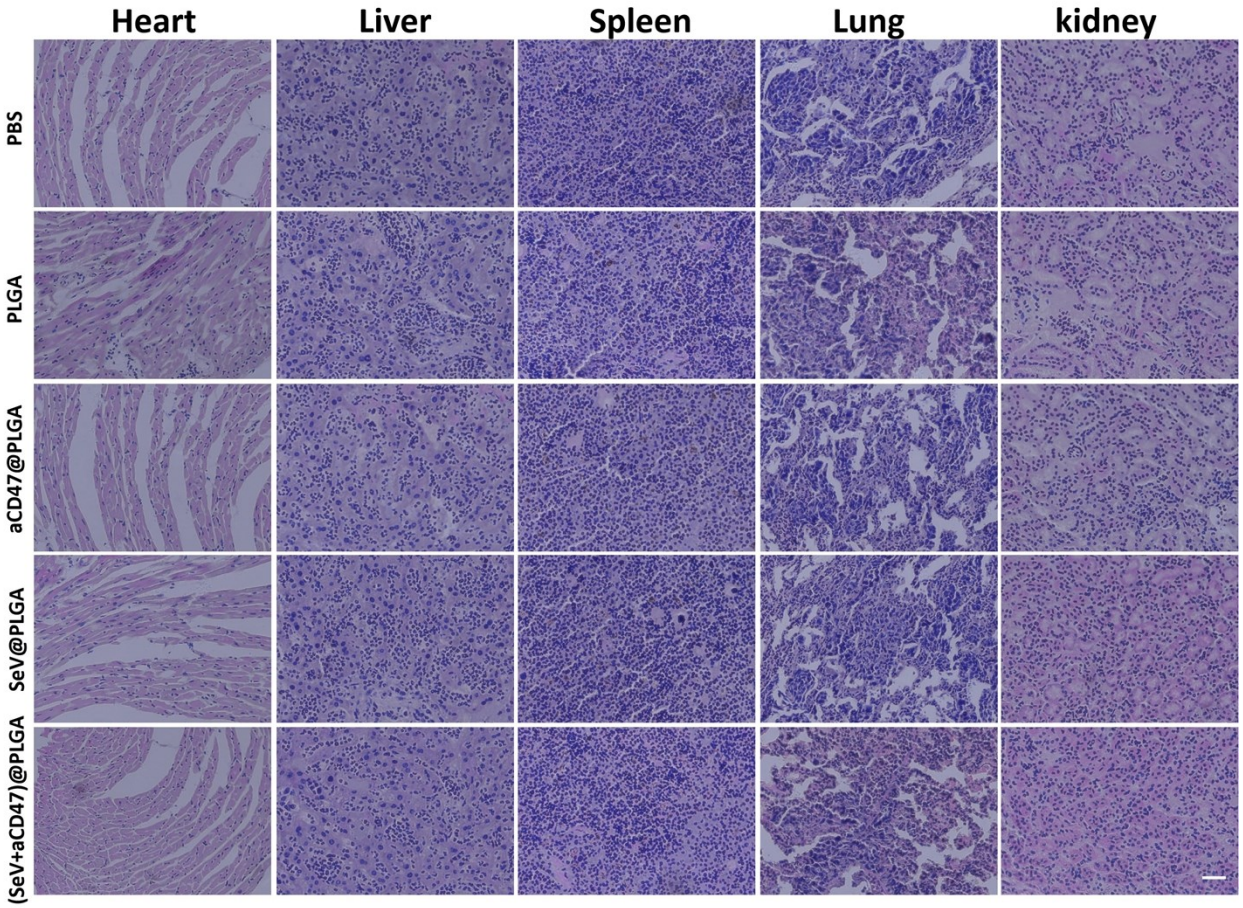
Supplementary Fig. 24. Changes in body weight of 4T1-bearing mice in PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles treatment groups.



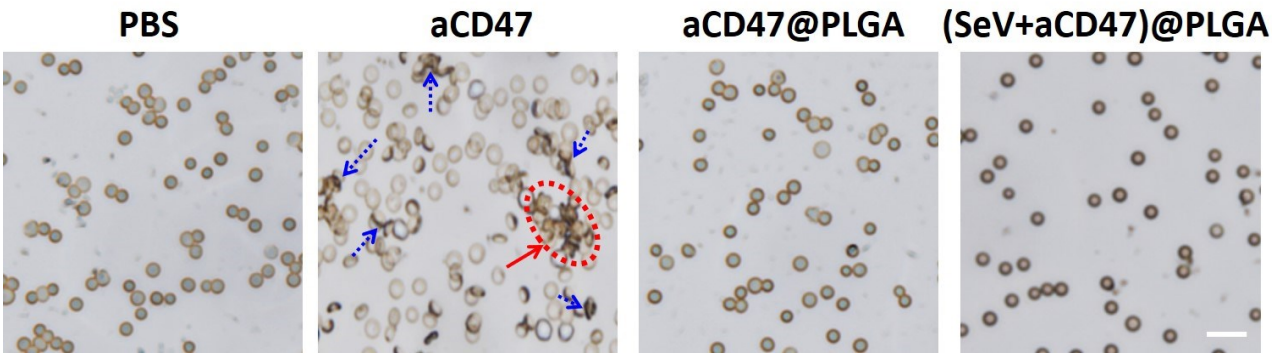
Supplementary Fig. 25. Tunel staining of local tumor sections after PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles treatments for 7 days and the results were visualized by fluorescence microscope. The scale bars were 200 μm.



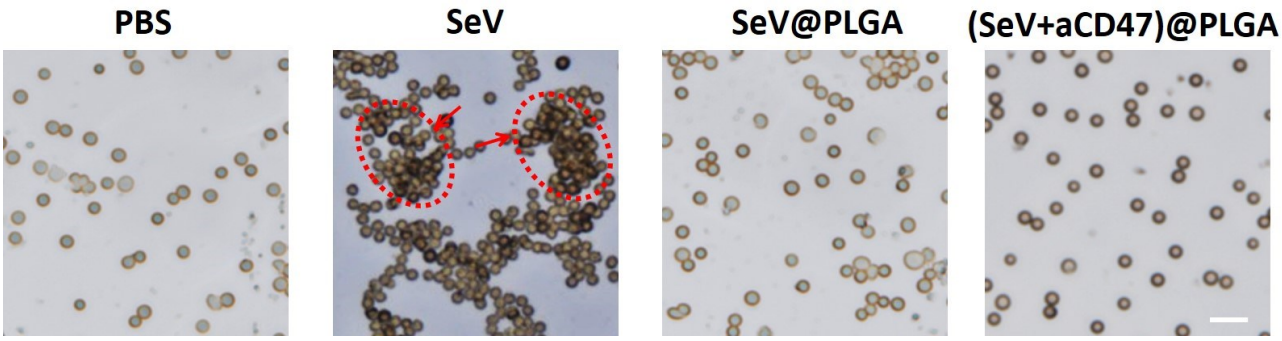
Supplementary Fig. 26. H&E and Tunel staining of distal tumor sections after PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles treatments for 7 days and the results were visualized by fluorescence microscope. The scale bars were 200 μm.



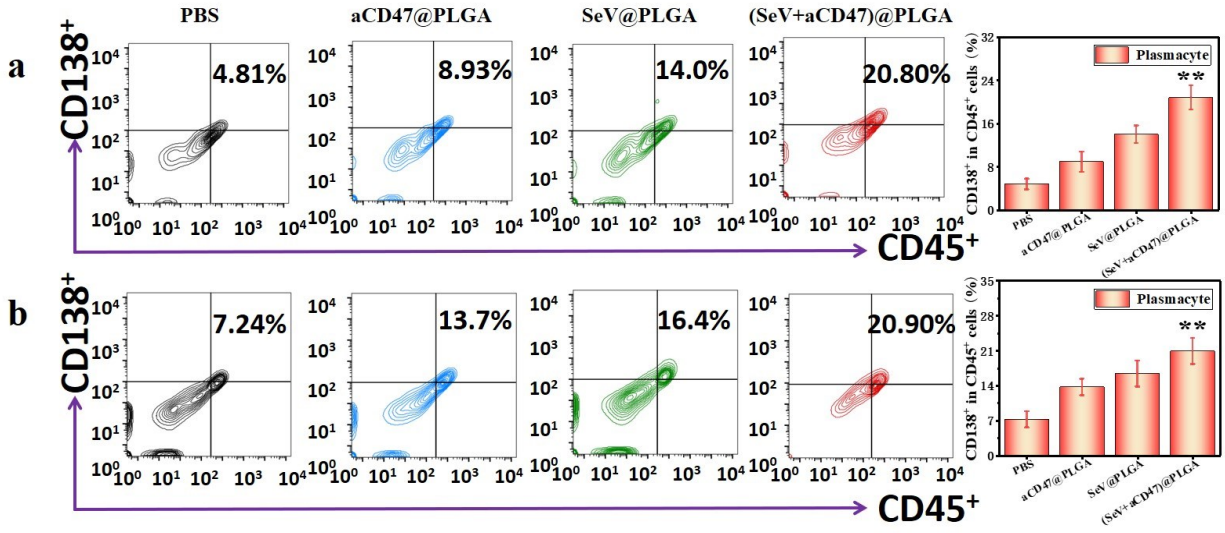
Supplementary Fig. 27. H&E staining of the main organs of the 4T1-bearing mice after the end of the treatment in PBS, PLGA, aCD47@PLGA, SeV@PLGA and (SeV+aCD47)@PLGA nanoparticles treatment groups. The scale bars were 200 μm.



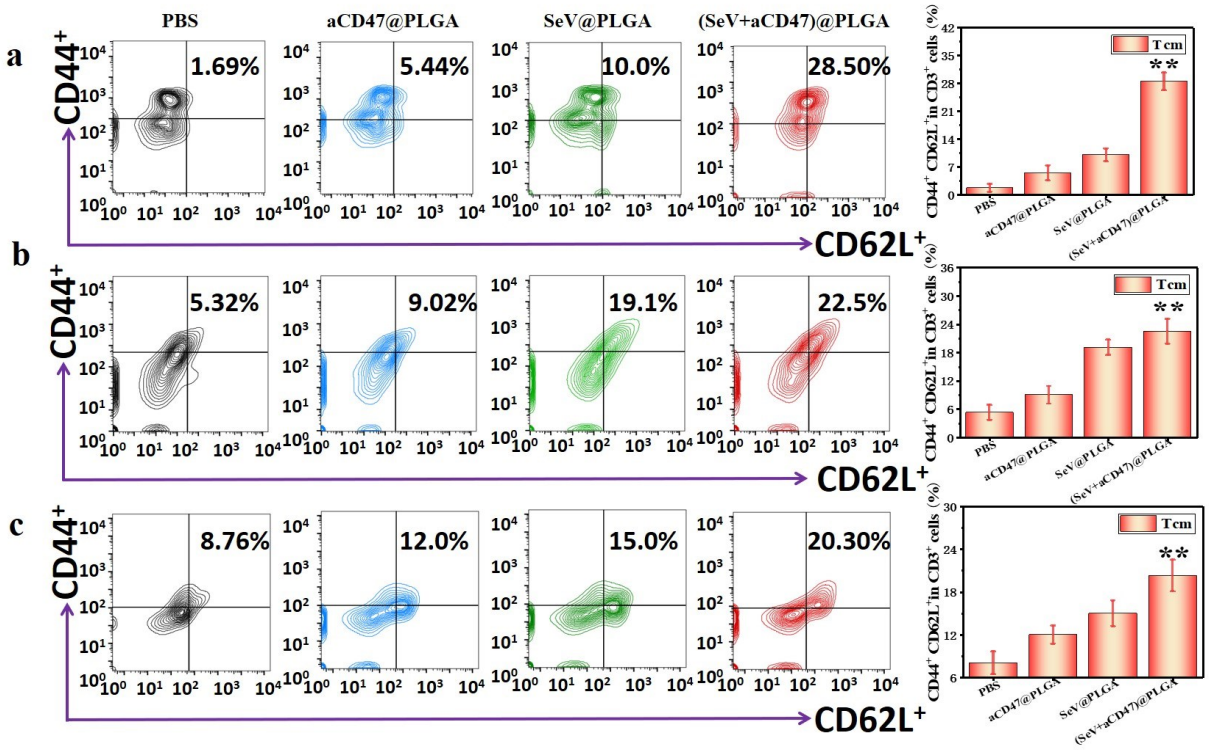
Supplementary Fig. 28. Hemolytic evaluation of erythrocyte safety from BALB/c mice by PBS, aCD47, aCD47@PLGA and (SeV+aCD47)@PLGA nanoparticles incubated for 1h. The scale bars were 100 μm.



Supplementary Fig. 29. Erythrocyte agglutination test of nanohybrids. Evaluation of erythrocyte safety from BALB/c mice by PBS, SeV, aCD47@PLGA and (SeV+aCD47)@PLGA nanoparticles incubated for 1h. The scale bars were 100 μm.



Supplementary Fig. 30. Flow cytometry for quantitative detection of $CD138^+$ B cells gating on $CD45^+$ cells throughout the body. a) lymph gland and b) spleen.



Supplementary Fig. 31. Flow cytometry for quantitative detection of $CD44^+CD62L^+$ memory T cells gating on $CD3^+$ cells throughout the body. a) lymph gland, b) spleen and c) blood.