Electronic Supplementary Material (ESI) for Nanoscale.

Multifunctional Biomimetic Nanoparticles Loading Baicalin for Polarizing Tumor-associated Macrophages

Shulan Han[a,b], Wenjie Wang[a] , Shengfang Wang[a], Shuo Wang[b], Ruijun Ju[c], Zihao Pan[c], Tingyuan Yang[b], Guifeng Zhang[b], Huimei Wang[a*], Lianyan Wang[b*]

[a] *Key Laboratory of Forest Plant Ecology, Ministry of Education, Northeast Forestry University. Harbin 150040, P. R. China*

[b] *Institute of Process Engineering, Chinese Academy of Sciences, Beijing 100190, P.R. China*

[c] *Beijing Institute of Petrochemical Technology, Beijing 102617, P.R. China*

** Corresponding author.*

Address correspondence to: whm0709@163.com

wanglianyan@ipe.ac.cn (L.-Y. Wang)

Tel/Fax: 0451-82192123

8610-82544931

Supporting information

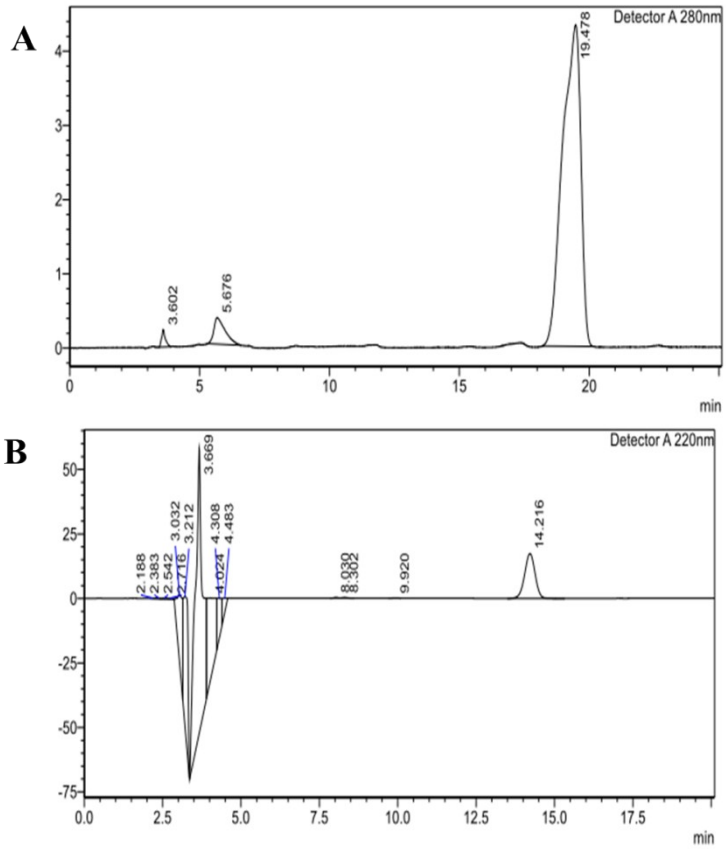

Figure S1 Drug loading of baicalin (A) and Hgp100$_{25\text{-}33}$ antigenic peptide (B) in biomimetic nanoparticles were detected by HPLC.

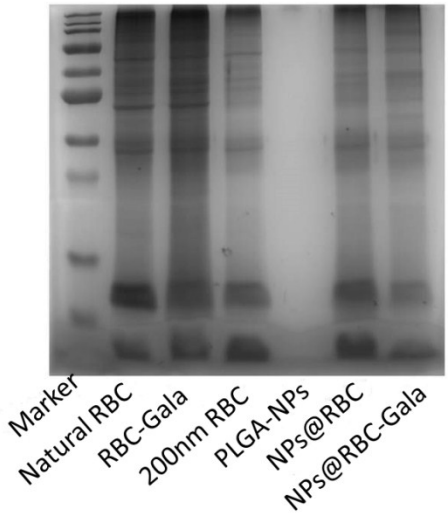

Figure S2 Characterization of NPs@RBC. SDS-PAGE of NPs@RBC and NPs@RBC-Gala along with PLGA-NPs, natural RBCs and RBC-Gala.

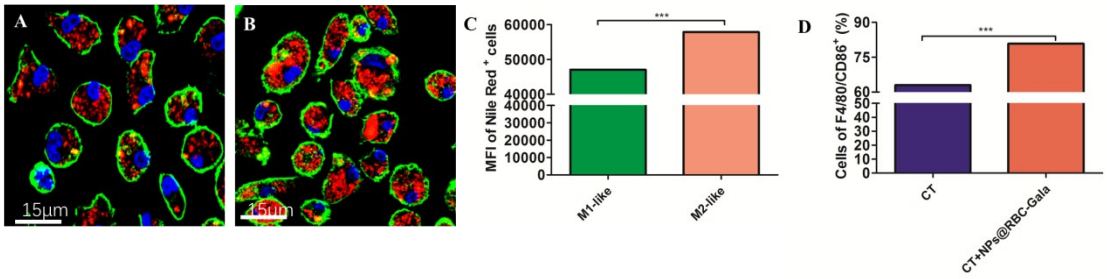

Figure S3 Competitive uptake of M1-like and M2-like macrophage cells. The Nps@RBC-Gala of uptake by M1-like macrophages (A) and M2-like macrophage cells (B) were analyzed by confocal microscopy. The Nps@RBC-Gala of uptake by M1-like macrophages and M2-like macrophage cells (C) were analyzed by flow cytometry. The activation of M1-like cells ($F4/80^+/CD86^+$ cells) by Nps@RBC-Gala (D).

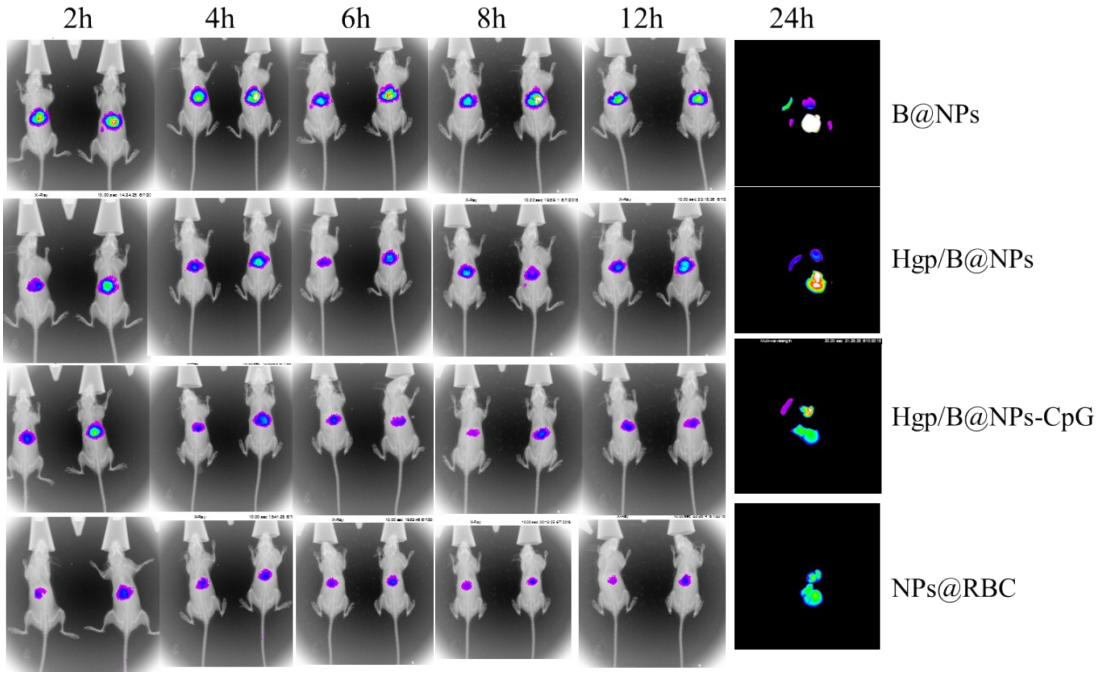

Figure S4 The distributions of nanoparticles *in vivo*. *In vivo* imaging of B@NPs, Hgp/B@NPs, Hgp/B@NPs-CpG, and NPs@RBC using a live imaging system.

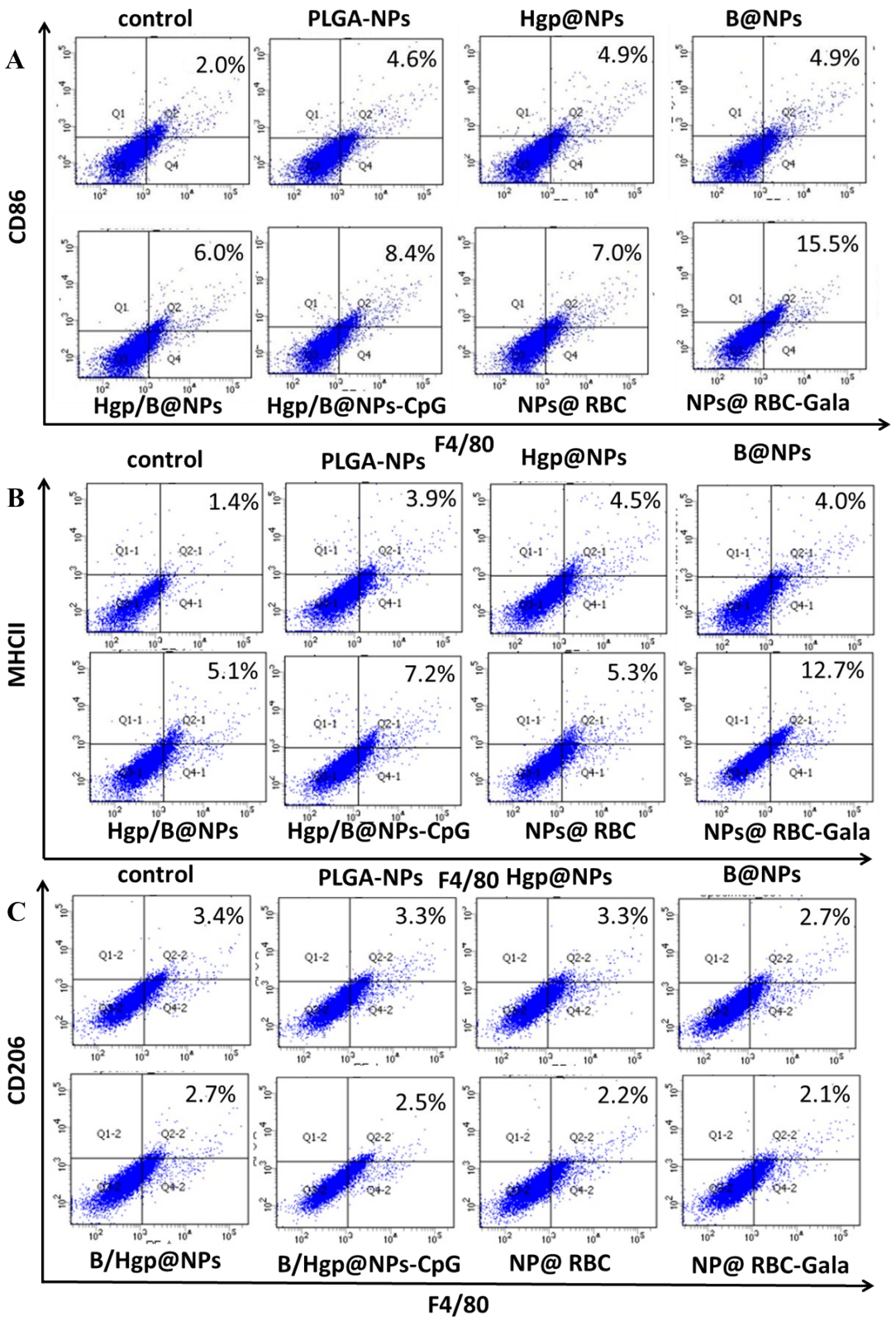

Figure S5 TAM phenotype sorting in tumor tissues was tested by flow cytometry. F4/80$^+$ CD86$^+$ M1-type TAMs (A), F4/80$^+$ MHCII$^+$ TAM1s (B) and F4/80$^+$ CD206$^+$ (C) M2-type TAMs were sorted at the end of treatment.

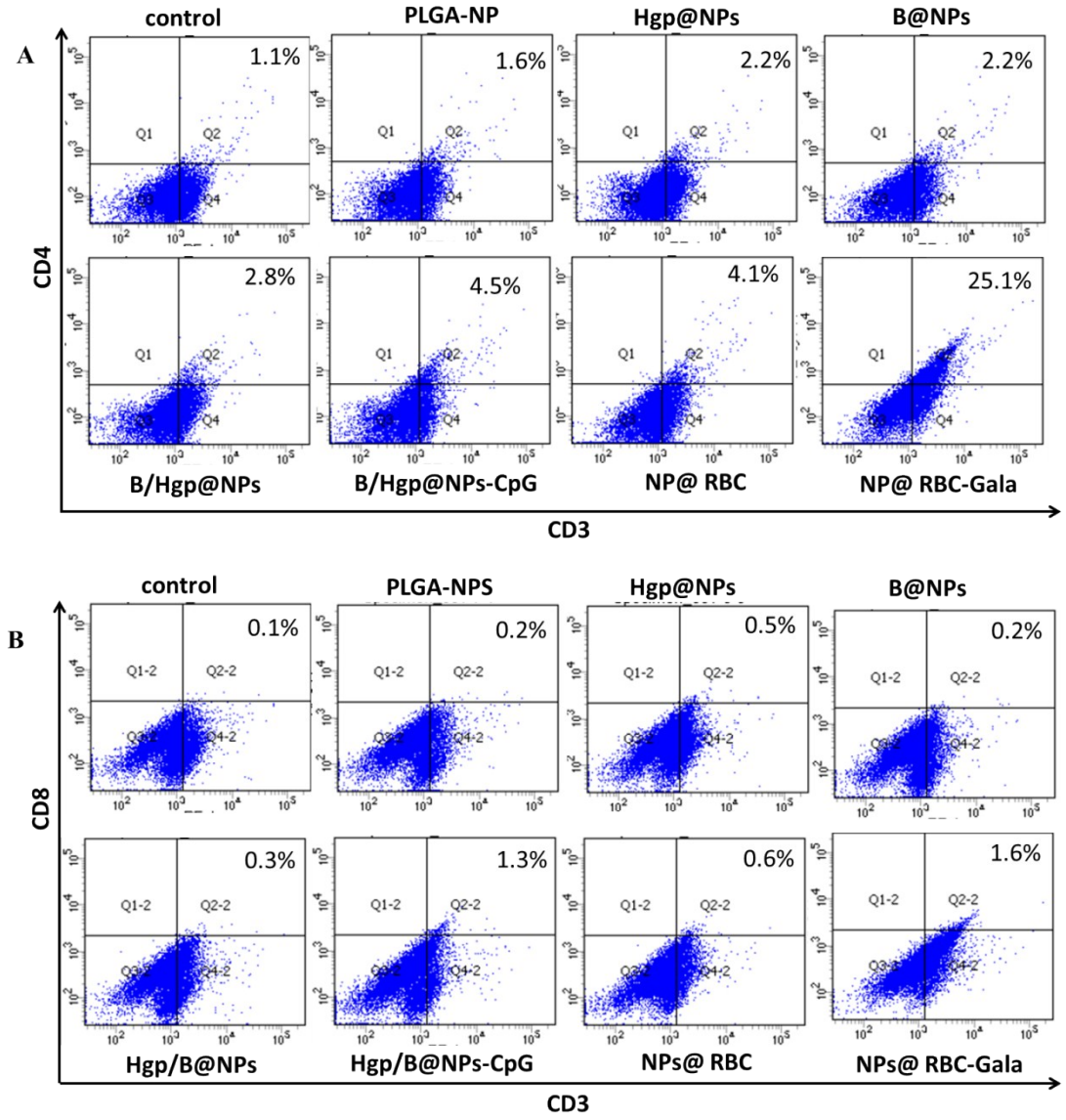

Figure S6 The infiltration of Th1 ($CD3e^+$ $CD4^+$) and $CD8^+$ CTL ($CD3e^+$ $CD8^+$) cells in tumor tissue was examined via flow cytometry. $CD3e^+$ $CD4^+$ cells were identified as Th1 cells (A) and $CD3e^+$ $CD8^+$ cells were identified as CTL cells (B) in the tumor tissue.

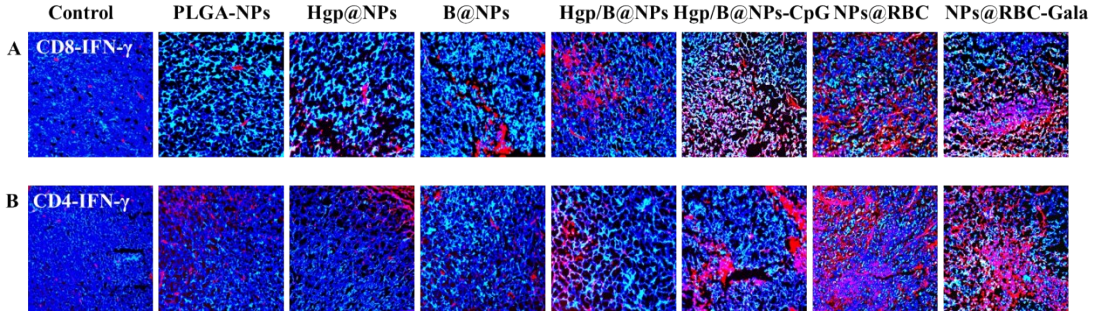

Figure S7 Different formulations successfully increased the infiltrations of T cells in the B16 tumor-bearing mice. The activation of Th1 cells ($CD4^+$ T) (A) and cytotoxic T cells ($CD8^+$ T) (B) in tumors were examined via immunofluorescent staining. Blue: nucleus, Red: $CD4^+$ cells and $CD8^+$ cells, Green: IFN-γ.

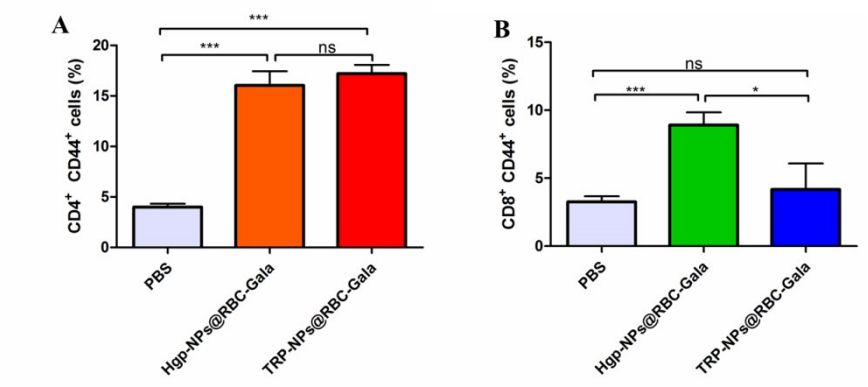

Figure S8. $Hgp100_{25\text{-}33}$ and $TRP1_{113\text{-}126}$ were delivery by macrophages to activate $CD4^+$ and $CD8^+$ T cells *in vitro*.

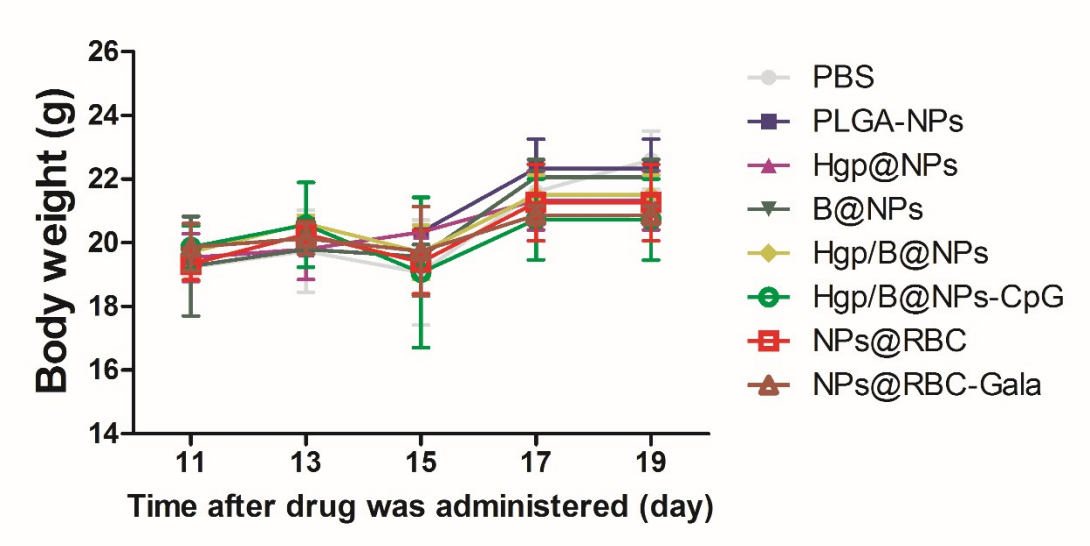

Figure S9. The body weight of tumor-bearing mice.