Electronic Supplementary Material (ESI) for Biomaterials Science.

Supporting Information

Sugar modified amphiphilic cationic nano-adjuvant ceased tumor immune suppression and rejuvenated peptide vaccine induced antitumor immunity in cervical cancer

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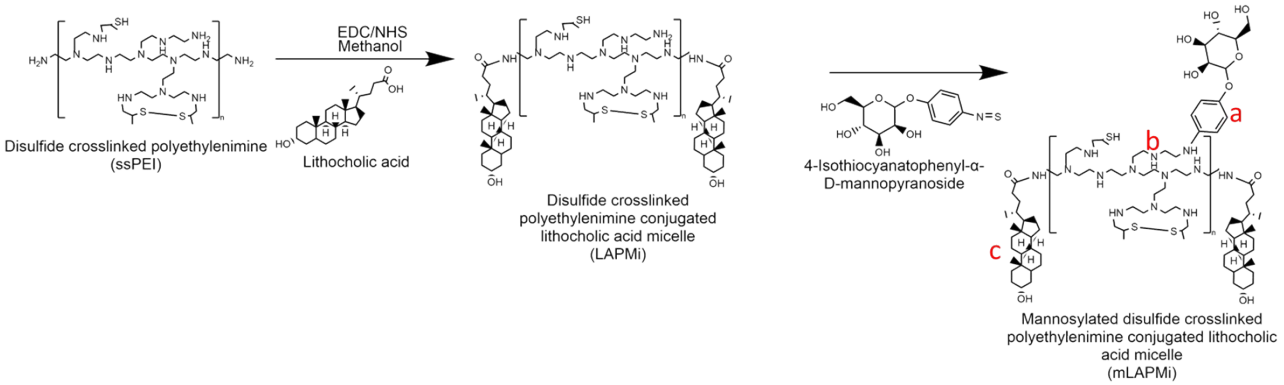

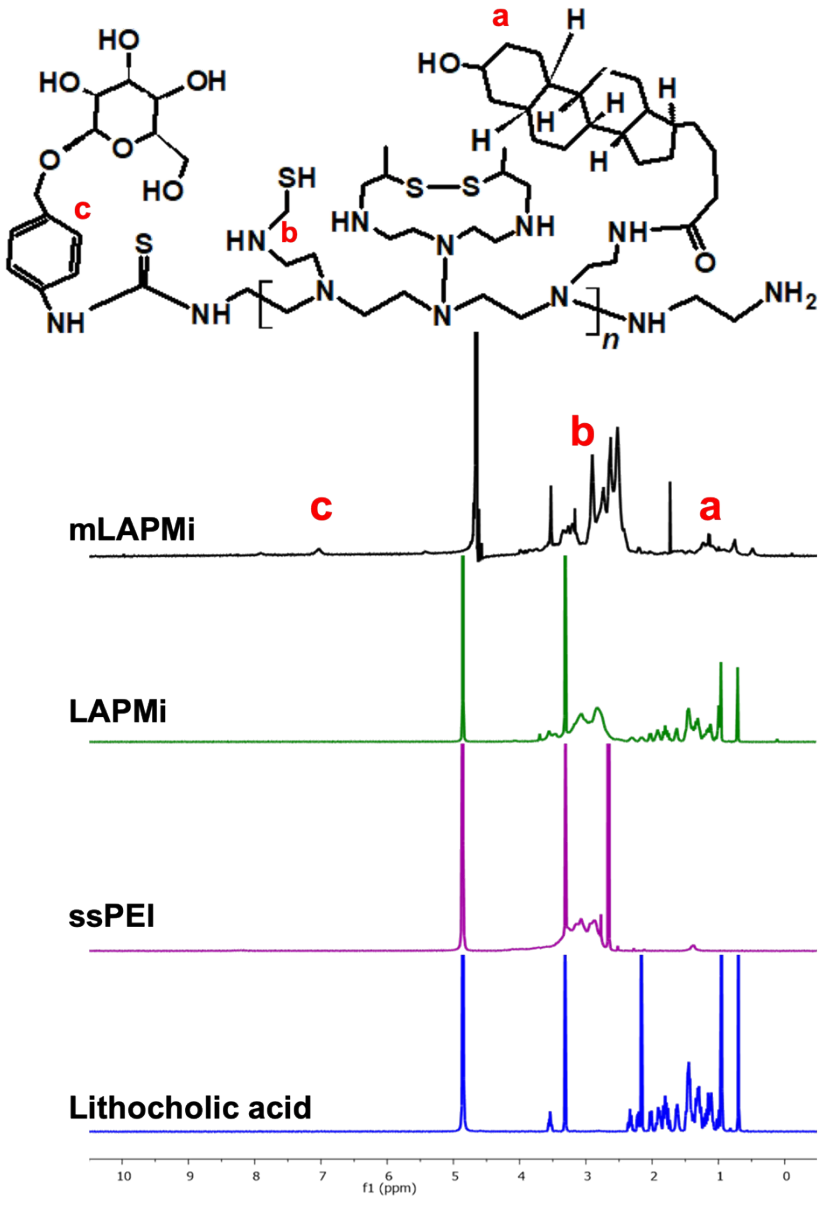

Figure S1: Schematic representation of mLAPMi synthesis and NMR analysis.

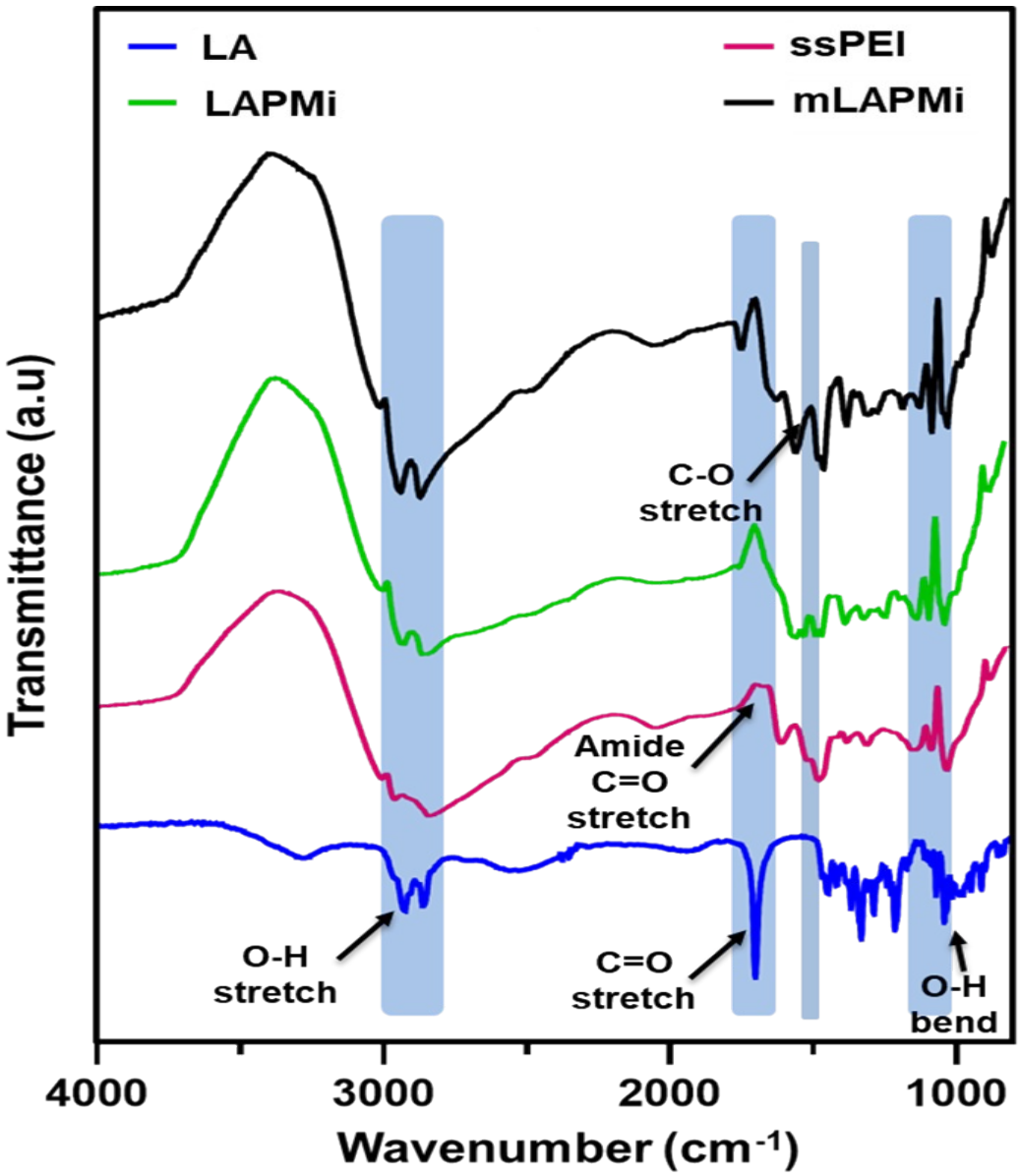

Figure S2: FTIR analysis of mLAPMi.

Sample	[LAPMi]: [Mannose] (feed ratio)	Grafting ratio % (1HNMR)
mLAPMi	1:0.1	39
mLAPMi	1:0.2	62
mLAPMi	1:0.25	65

Table S1: The chemical properties of mannose conjugated ssPEI-lithocholic acid micelle (mLAPMi).

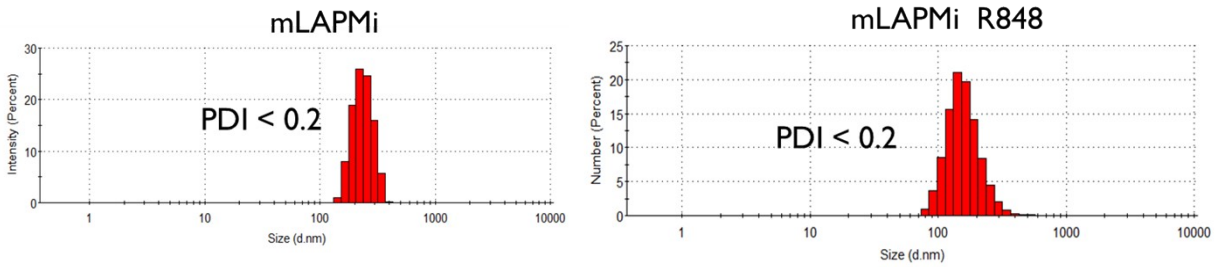

Figure S3: Dynamic light scattering analysis of mLAPMi and mLAPMi R848.

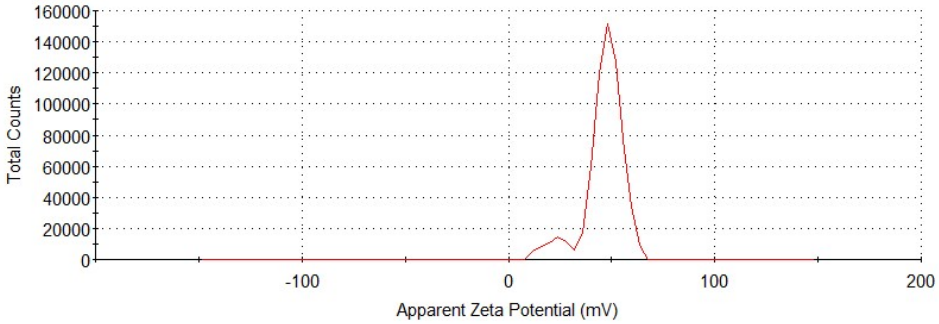

Figure S4: Zeta potential of mLAPMi-R848.

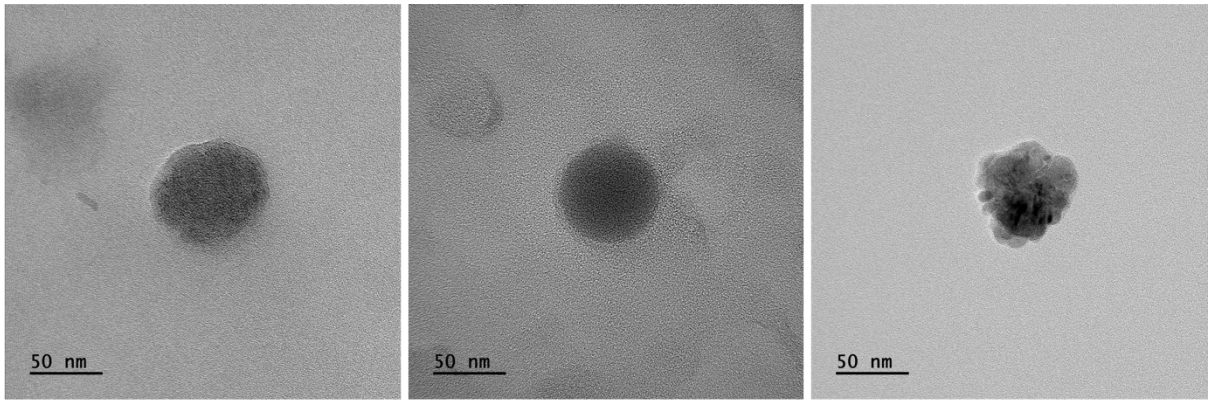

Figure S5- TEM images of mLAPMi and mLAPMi loaded with R848.

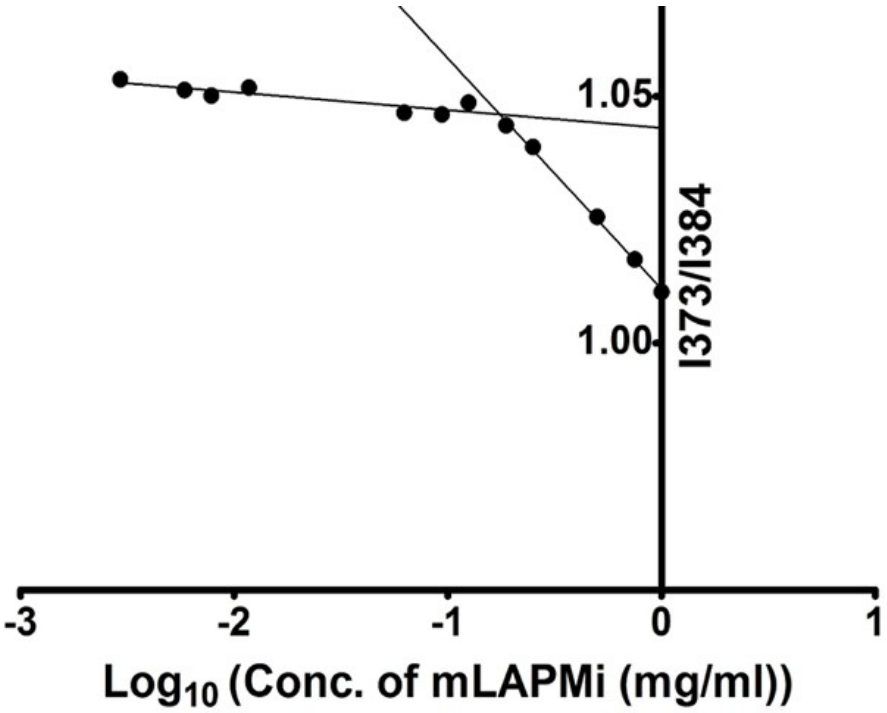

Figure S6- Critical micelle concentration of mLAPMi.

Sample	*Feed LAPMi (mg)*	*Feed R848 (mg)*	*Amount of R848 (µg)/ mg of micelle*	*Loading efficiency (%)*	*Loading content (%)*
LAPMi	10	2	46.4	22.6	4.64
mLAPMi	10	2	54.2	27.1	5.42

Table S2: Drug loading efficacy of mLAPMi

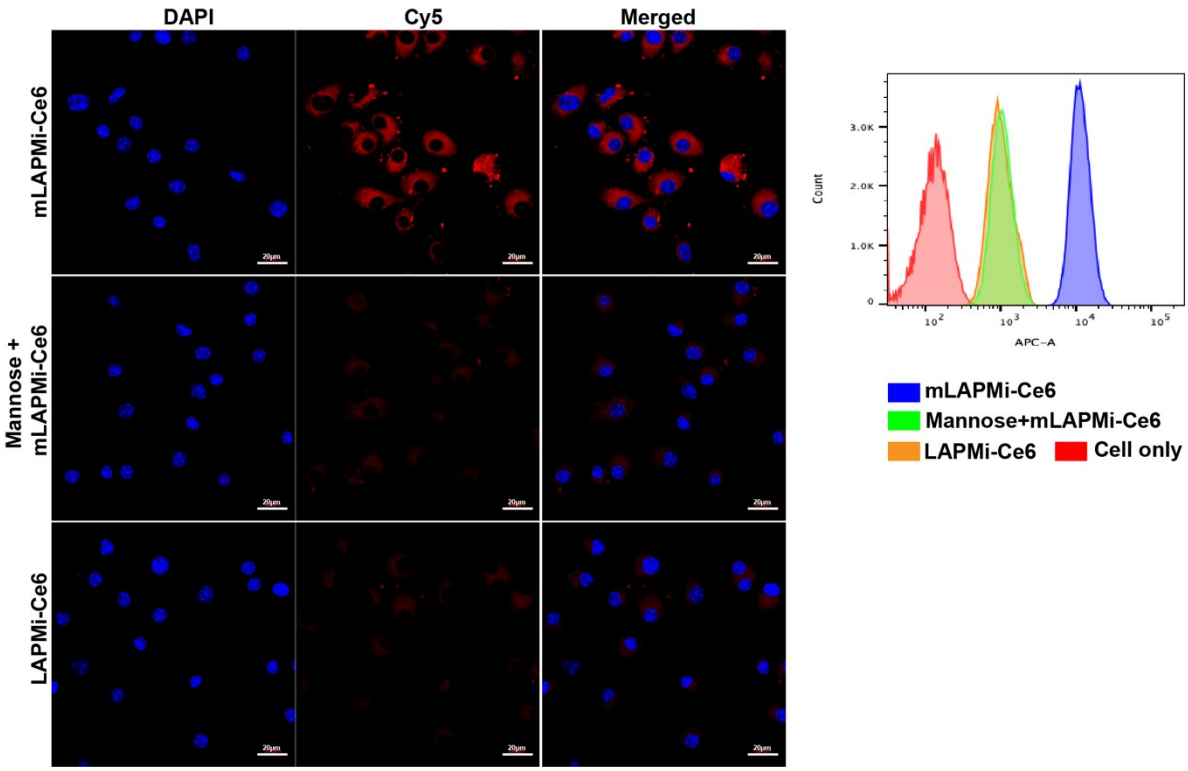

Figure S7: Intracellular uptake of mLAPMi-Ce6 in BMDCs. Scale bar is 20 µm.

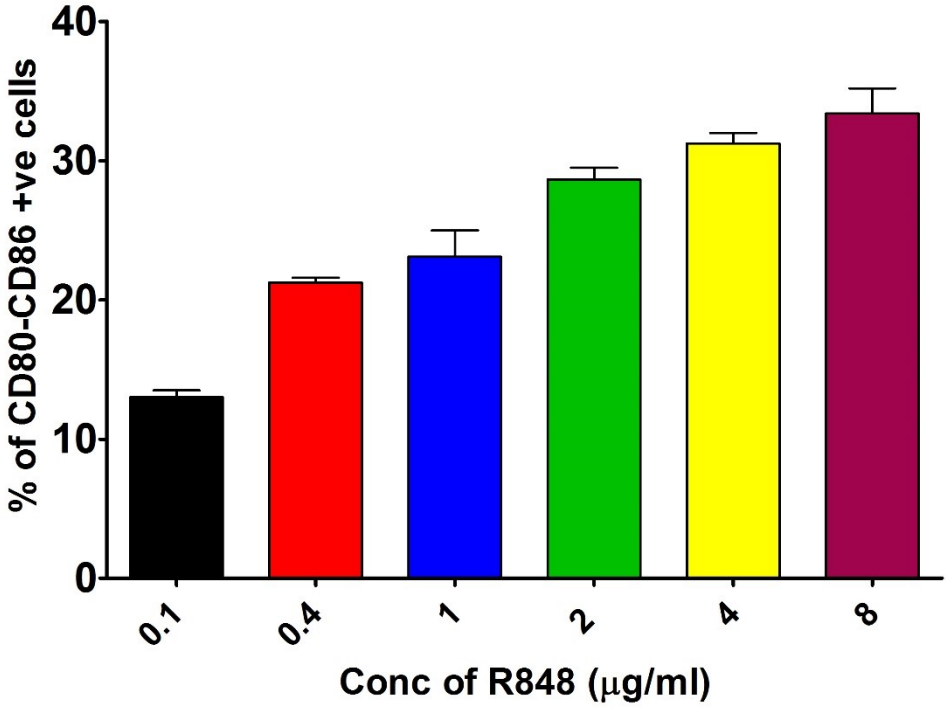

Figure S8: DC maturation in BMDCs treated with different concentration of R848.

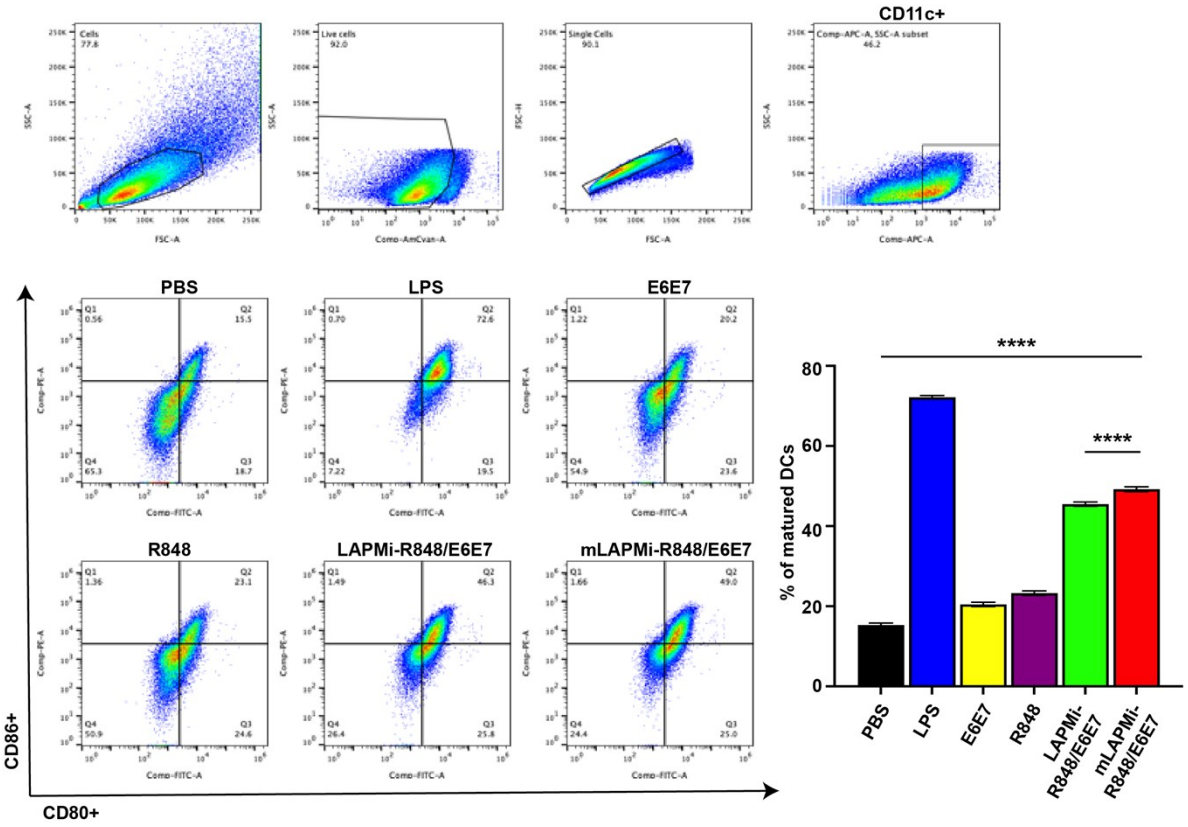

Figure S9: BMDCs maturation induced by mLAPMi-R848 nanoparticle and E6E7 peptide antigen in bone marrow derived dendritic cells, N = 4, SEM, ****, $p < 0.0001$

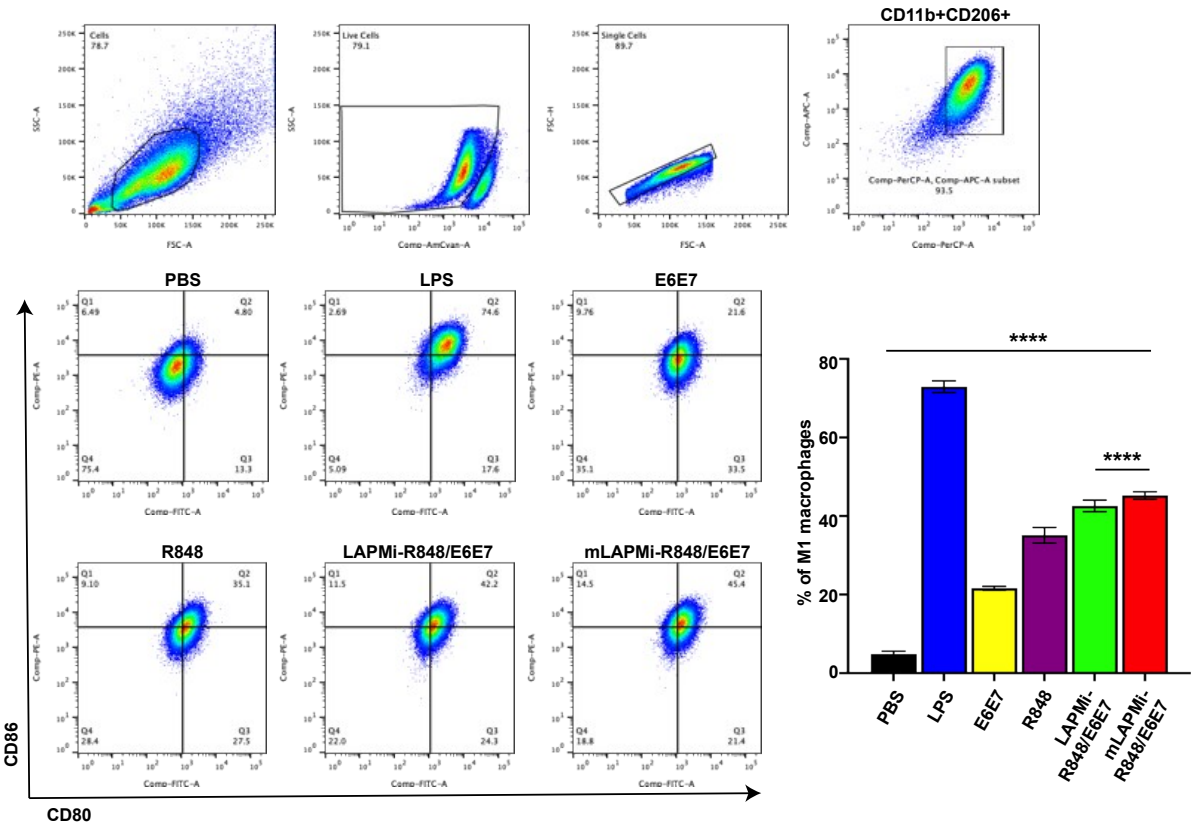

Figure S10- Macrophage polarization by mLAPMi-R848 nanoparticle and E6E7 peptide antigen in IL-4 induced M2 polarized J774A.1 macrophage cell lines. N = 4, SEM ****, $p < 0.0001$.

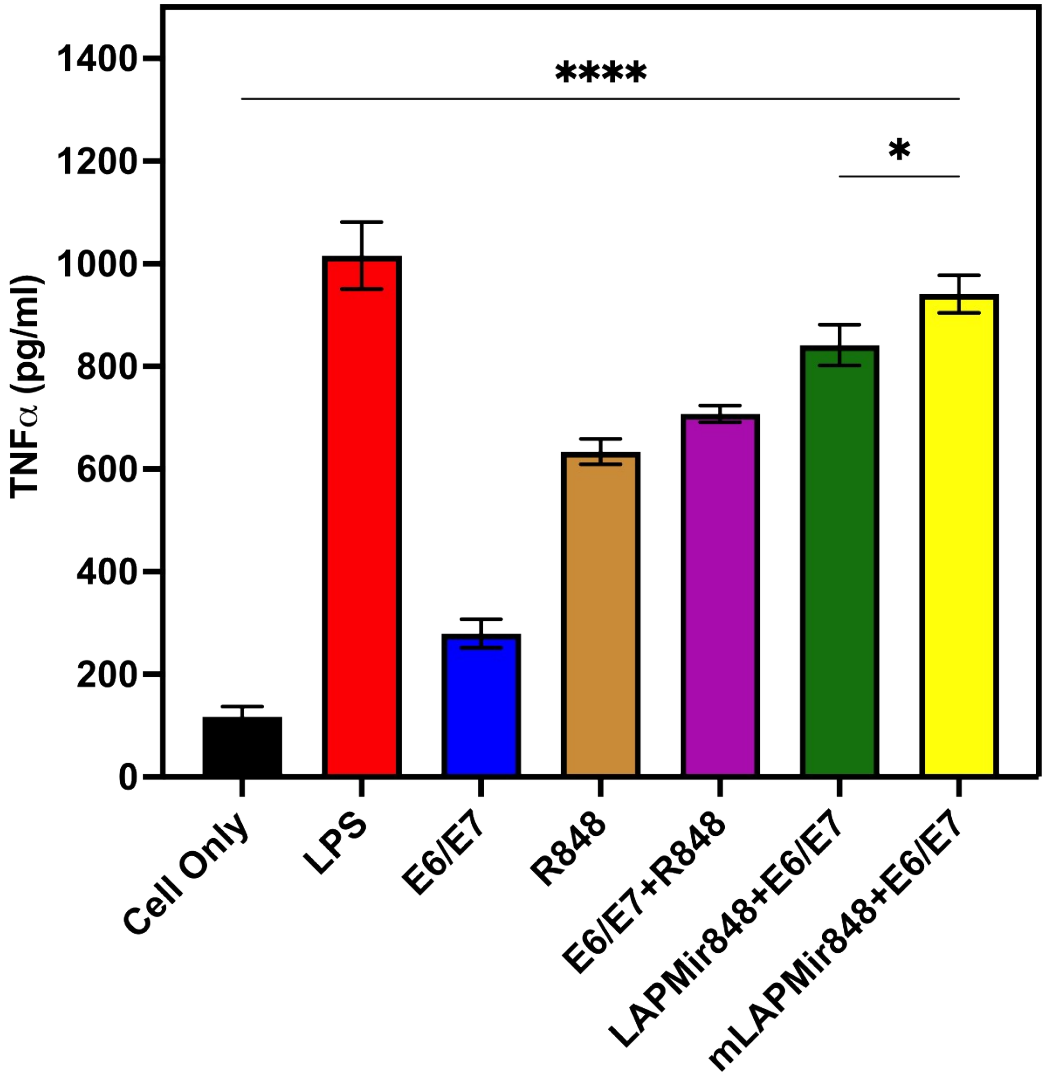

Figure S11: ELISA analysis of TNFα secreted from mLAPMi-R848 treated BMDCs. n=3, SEM, ****p<0.0001.

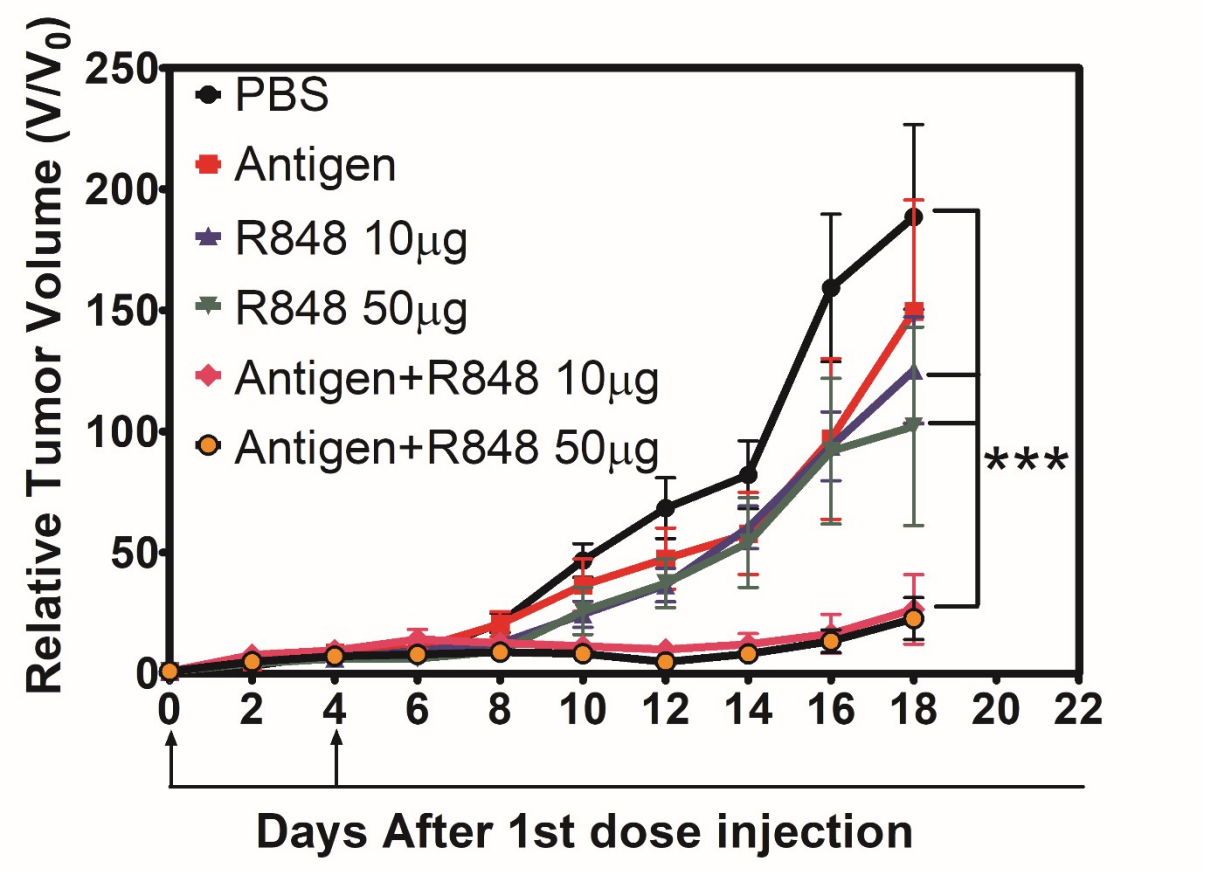

Figure S12: Antitumor effect of different dose of R848 in TC-1 tumor model. 10 μg is equivalent to 0.5 mg/kg, 50μg is equivalent to 2.5 mg/kg. n=5, SEM, *p<0.05, ***p<0.001.

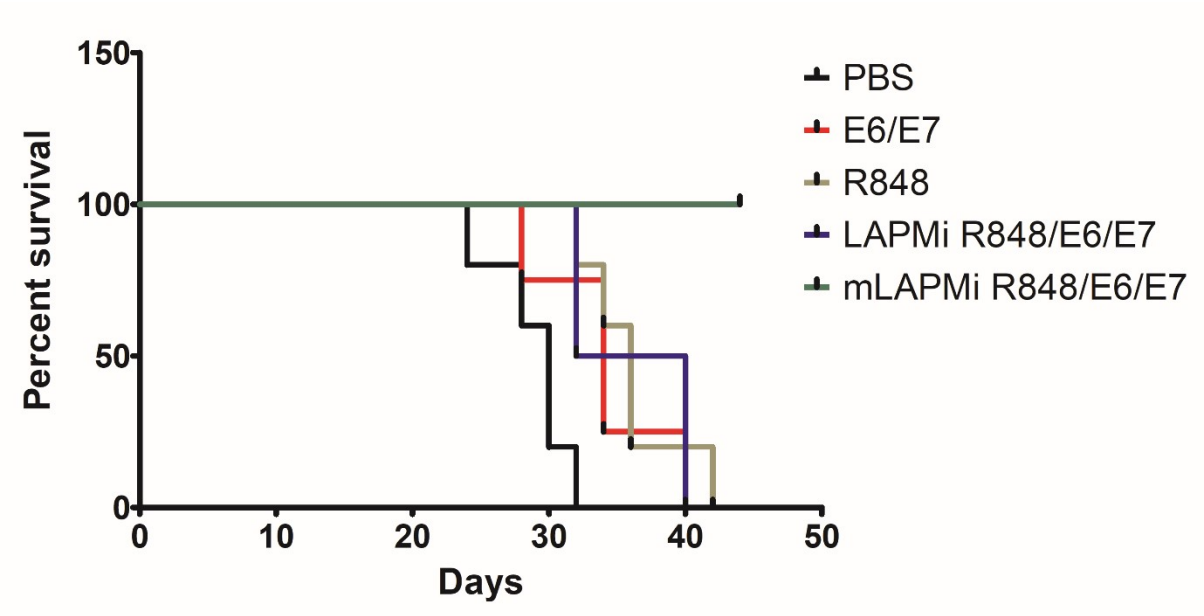

Figure S13: Survival rate of TC-1 tumor mice administered with mLAPMi-R848 and E6E7 peptide.

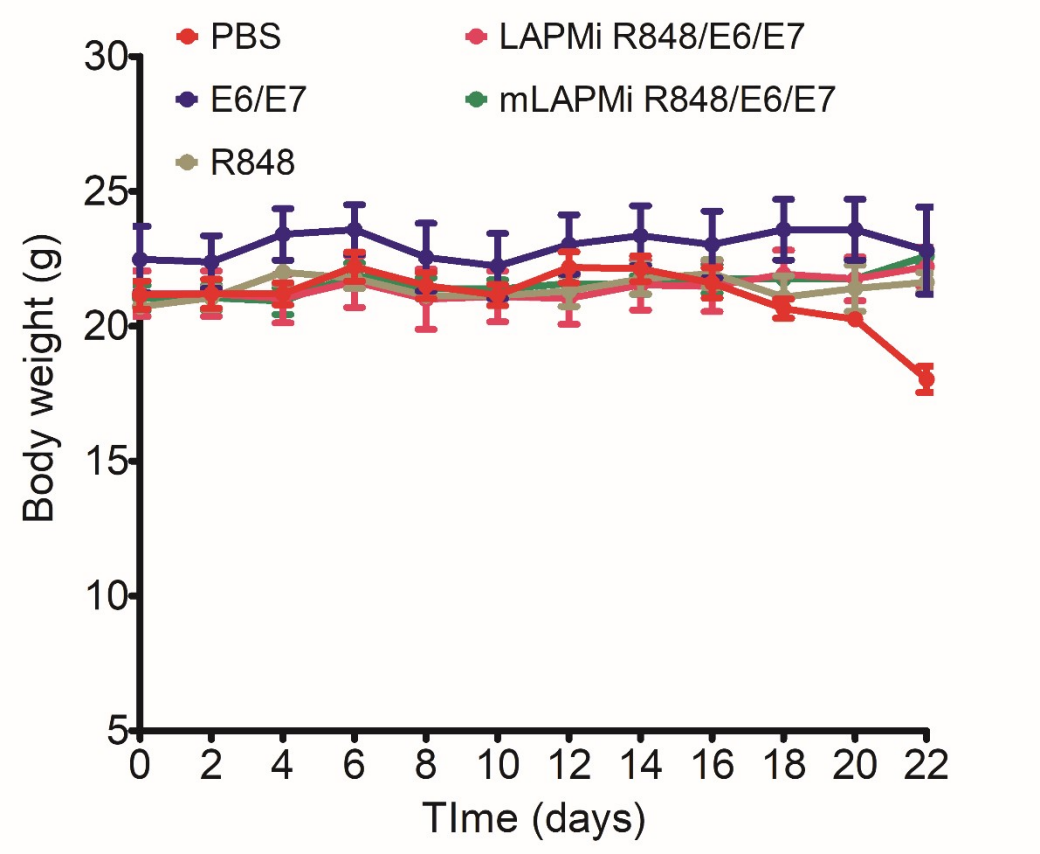

Figure S14: Body mass of TC-1 tumor mice administered with mLAPMi-R848 and E6E7 peptide.

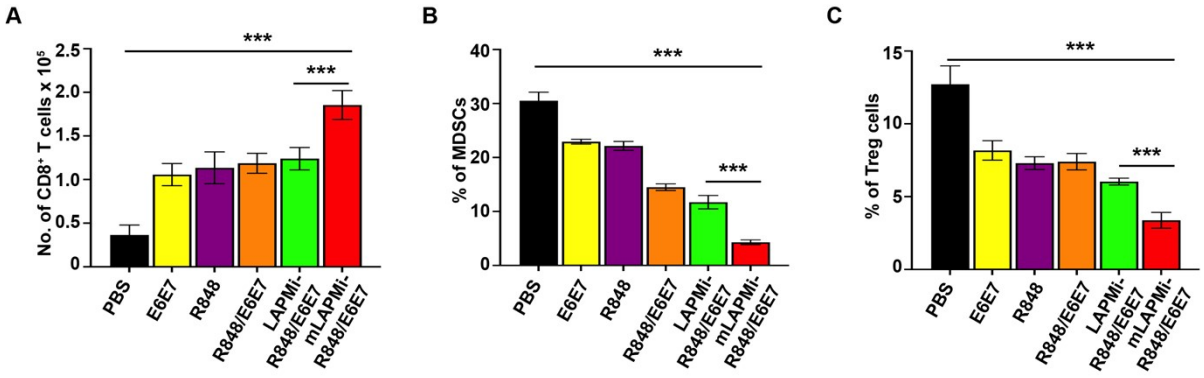

Figure S15: Immune phenotyping of cells isolated from primary tumor of mLAPMi-R848 and E6E7 peptide antigen vaccinated TC-1 tumor mice. A) Absolute numbers of CD8+ T cells (gated with CD3+CD8+), B) MDSCs (gated with CD11b+ Ly6g & Ly6cGR-1+) C) Tregs (gated with CD4+CD25+FoxP3+). N=4, ***p<0.001.

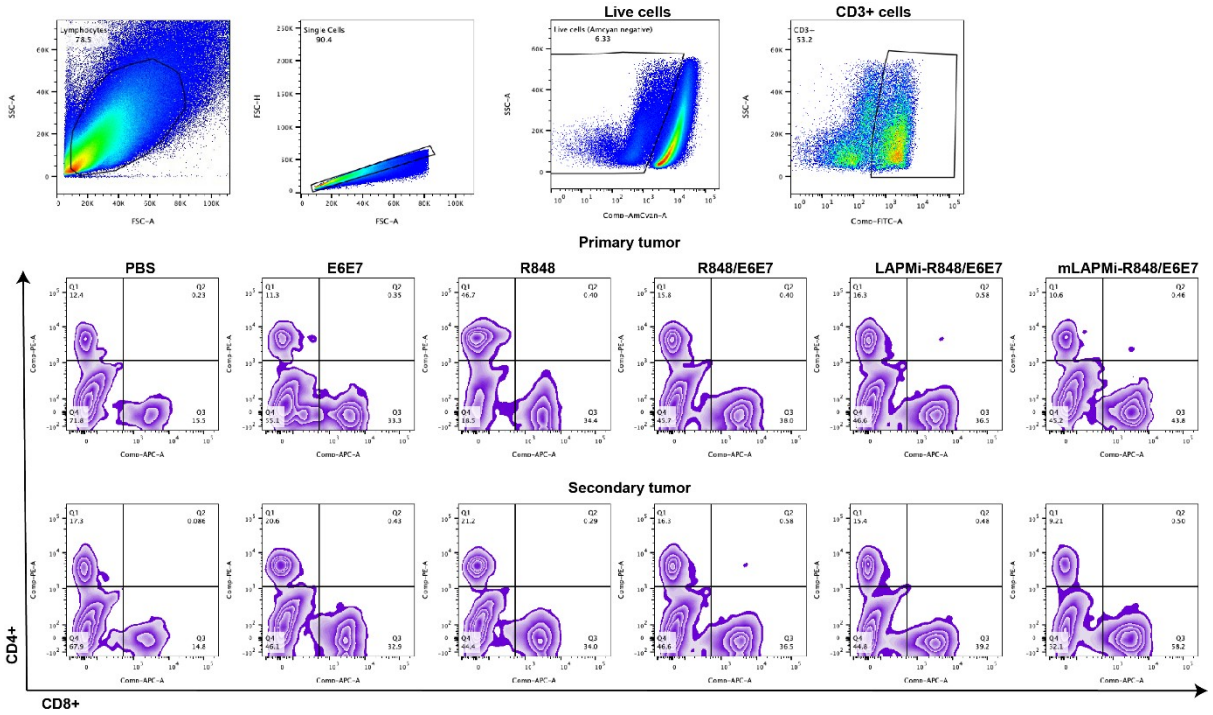

Figure S16: Gating strategy of CD8+ T cells isolated from the both primary and secondary tumors in mLAPMI-R848/E6E7 treated bilateral tumor model.

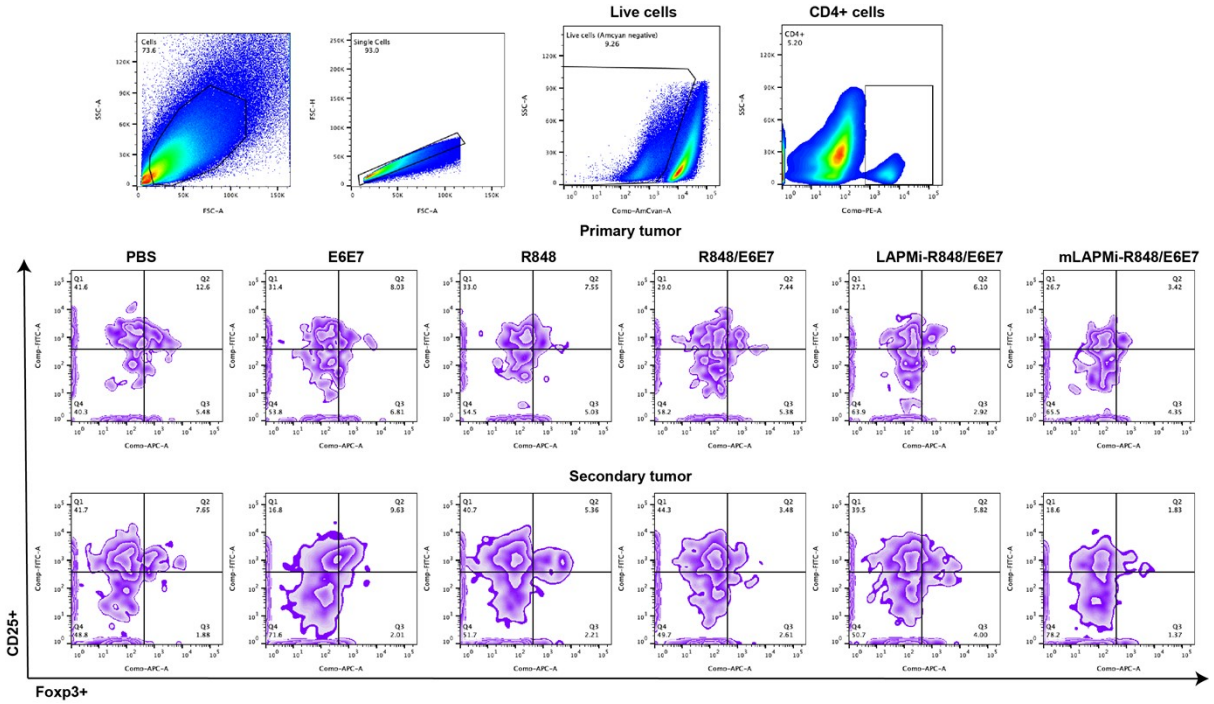

Figure S17: Gating strategy of Treg cells isolated from the both primary and secondary tumors in mLAPMI-R848/E6E7 treated bilateral tumor model.

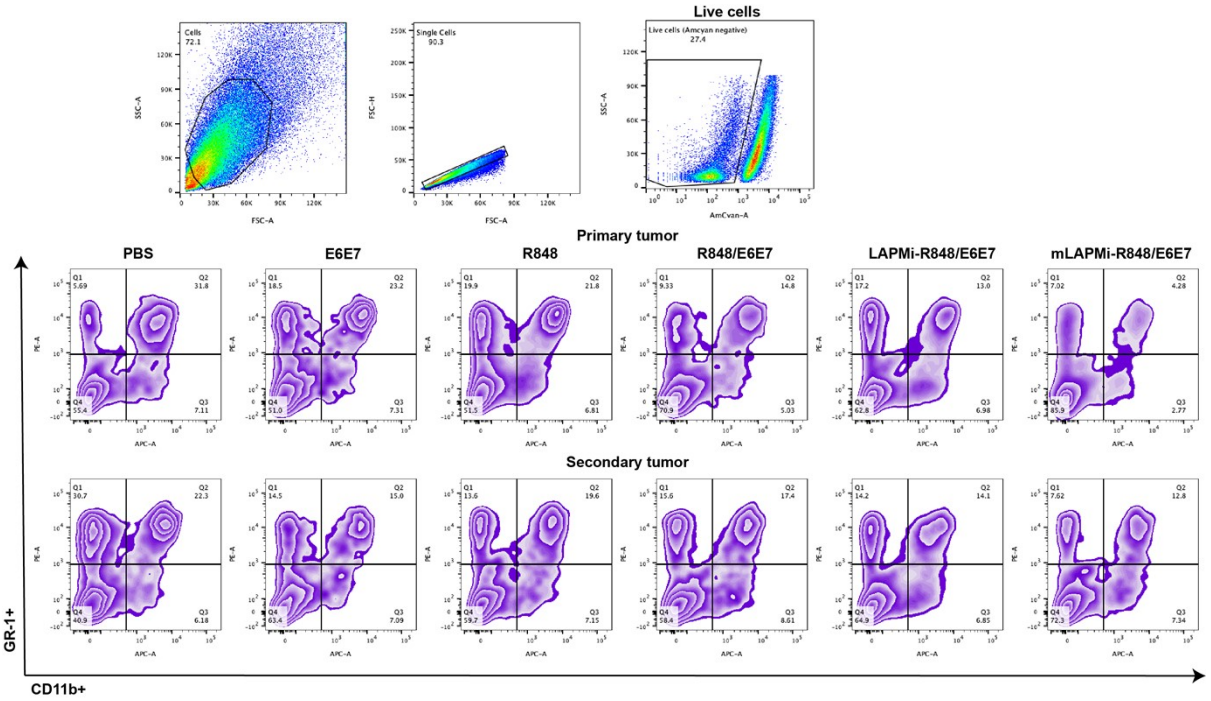

Figure S18: Gating strategy of MDSCs isolated from the both primary and secondary tumors in mLAPMI-R848/E6E7 treated bilateral tumor model.