Supporting Information

Polysaccharide Nanoparticles Can Efficiently Modulate the Immune Response Against an HIV Peptide Antigen

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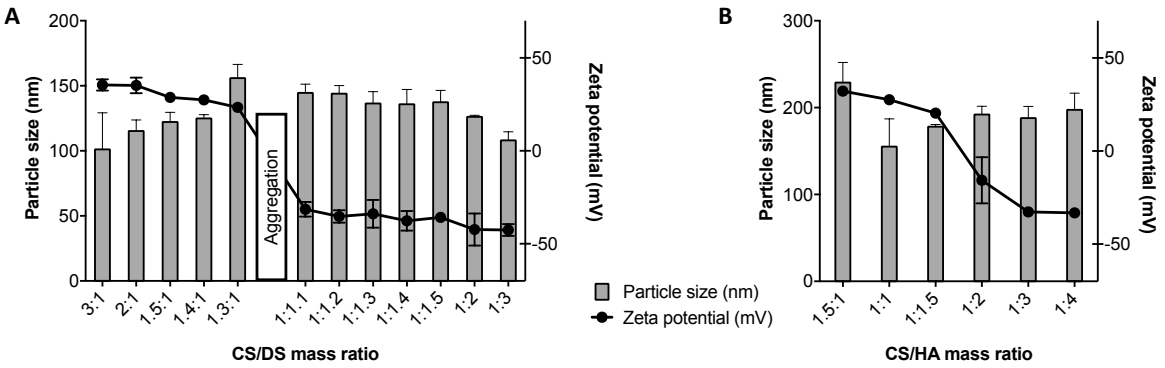
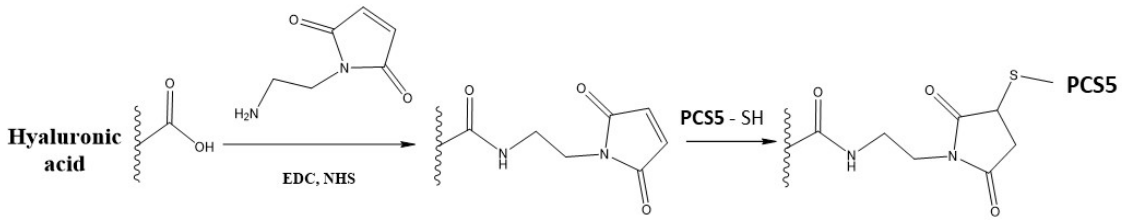
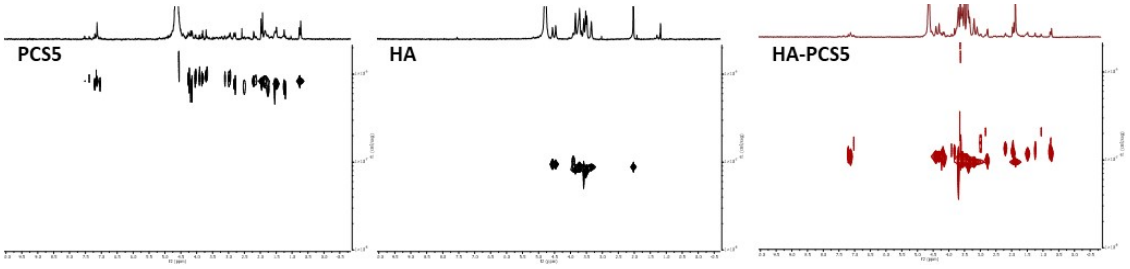


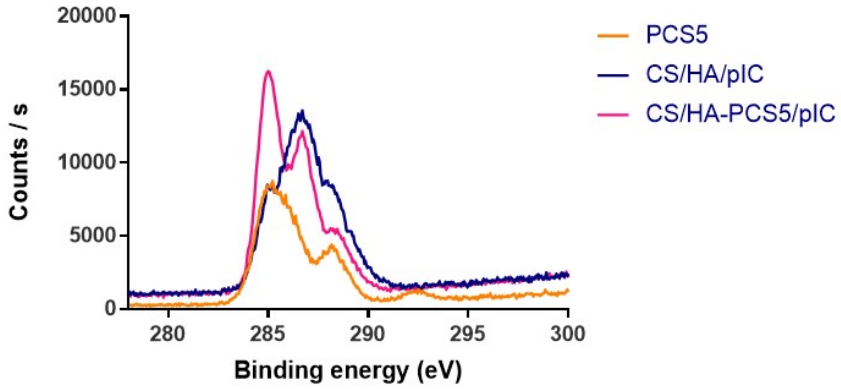
Supporting Figure S1. Evolution of particle size and zeta potential of blank (A) CS/DS NPs and (B) CS/HA NPs as the mass ratio of the negative polymer is increased. CS: chitosan, DS: dextran sulfate, NPs: nanoparticles, HA: hyaluronic acid.



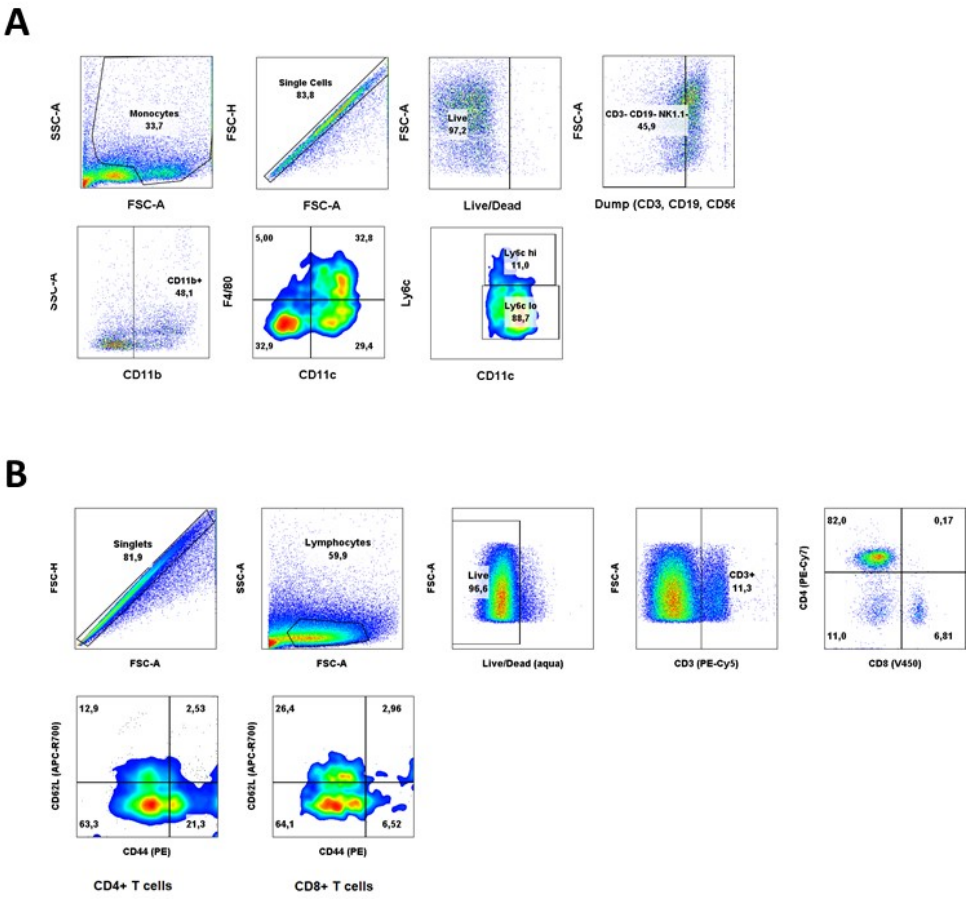
Supporting Figure S2. Preparation of the conjugate HA-PCS5 in a 2-step thiol-maleimide conjugation reaction.



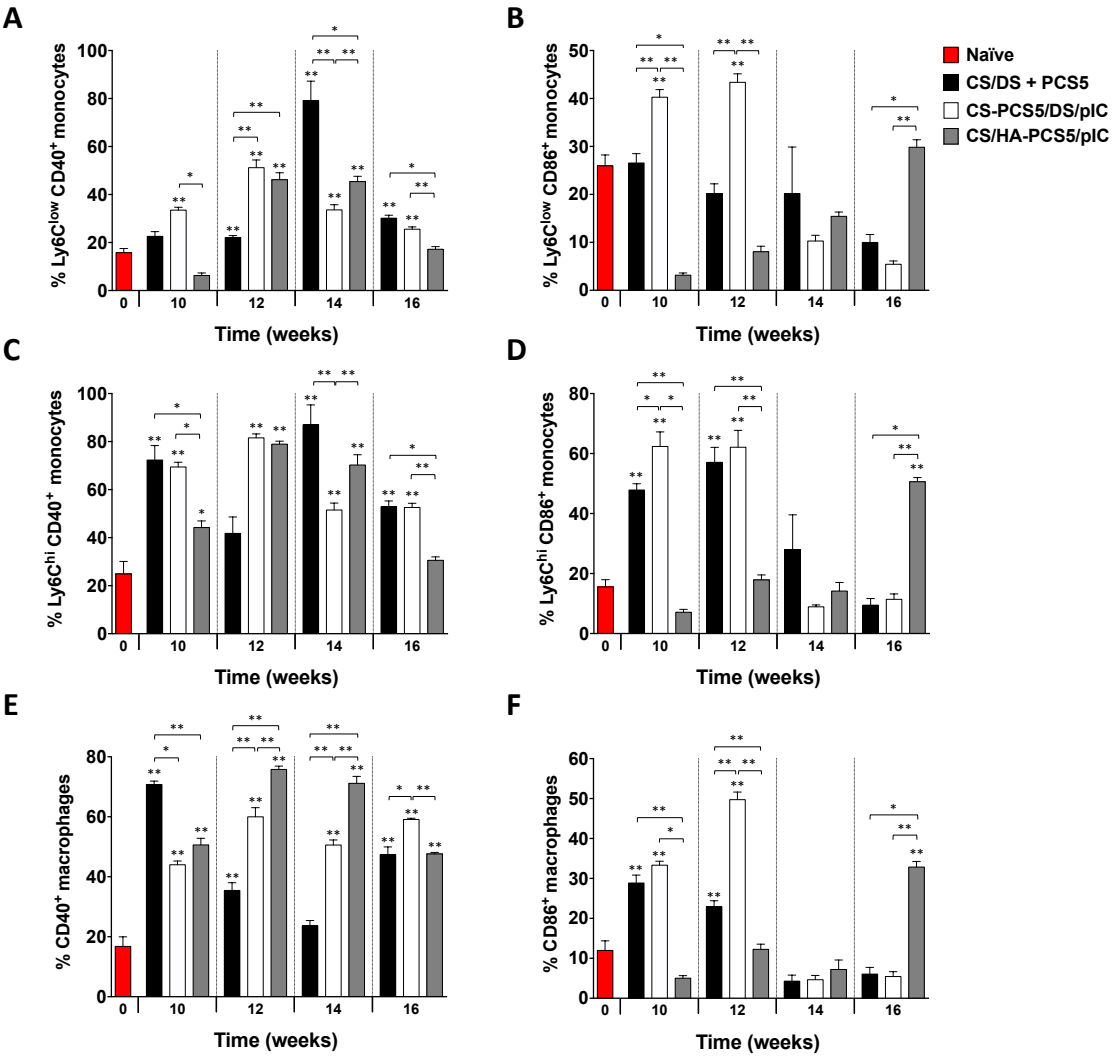
Supporting Figure S3. Diffusion-ordered spectroscopy (DOSY) spectra of PCS5, HA and HA-PCS5. PCS5: protease cleavage site 5, HA: hyaluronic acid.



Supporting Figure S4. Carbon s1 binding energies of PCS5 (orange), CS/HA/pIC NPs (blue) and CS/HA-PCS5/pIC NPs (pink). PCS5: protease cleavage site 5, CS: chitosan, HA: hyaluronic acid, pIC: poly(I:C) (polyinosinic:polycytidylic acid), NPs: nanoparticles.



Supporting Figure S5. Multicolor flow gating of (A) monocytes Ly6c^{hi} and Ly6c^{low} and macrophages CD11b^{+} CD11c^{-} F4/80^{+} and (B) central memory and effector memory T cells (CD44^{+} CD62L^{+} and CD44^{+} CD62L^{-}).



Supporting Figure S6. Monocyte and macrophage expression of co-stimulatory factors at 10, 12, 14 and 16 weeks post prime. $CD40^+$ and $CD86^+$ expression in (A-B) $Ly6C^{low}$ monocytes; (C-D) $Ly6C^{high}$ monocytes and (E-F) macrophages was quantified by multicolor flow cytometry of splenocytes obtained from non-treated naïve (red bars) and NP-vaccinated mice: CS/DS + PCS5 (black bars), CS-PCS5/DS/pIC (white bars) or CS/HA-PCS5/pIC (gray bars). Values represent mean ± SEM ($n \geq 3$). Statistical comparison between groups was done using a Mann-Whitney test. Significant statistical differences are represented as * ($p < 0.05$) and ** ($p < 0.01$) for comparison between groups and to naïve mice. NPs: nanoparticles, CS: chitosan, DS: dextran sulfate, PCS5: protease cleavage site 5, pIC: poly(I:C) (polyinosinic:polycytidylic acid), HA: hyaluronic acid.

Supporting Table S1. Elemental composition (%) by XPS of the surface of CS, HA, PCS5, blank CS/HA/pIC NPs and loaded CS/HA-PCS5/pIC NPs.

Sample	C	O	N	Cl	Mg	F	Na	S	C/O	C/N
Chitosan	50.53	32.78	7.46	6.18	2.75	0.30	-	-	1.54	6.77
Hyaluronic acid	51.73	34.87	3.95	0.45	0.71	5.42	5.88	-	1.48	13.10
PCS5	58.49	16.72	15.96	-	-	6.79	-	2.05	3.50	3.66
CS/HA/pIC NPs	55.19	29.38	4.29	2.05	-	-	4.56	0.28	1.87	12.86
CS/HA-PCS5/pIC NPs	65.51	20.52	7.04	3.67	-	0.39	1.72	1.15	3.19	9.31

Key: CS, chitosan; HA, hyaluronic acid; PCS5, protease cleavage site 5; pIC, poly(I:C); NPs, nanoparticles.