

## Supplementary Materials

**Table S1:** Antigen loading in formulating vaccine NPs and MPs against various pathogens

Treatment groups	Amount of antigen exposed to the APCs per well	
<i>N. gonorrhoeae</i> CDC F62, FA19 and FA1090 BSA MPs	20 % loading	40 µg – 8 µg per well
Measles, Zika, Influenza A (H1N1), Canine coronavirus PLGA NPs	2 % loading	4 µg- 0.8 µg per well

**Table S2:** Gating strategy for daughter T-cells quantification as they proliferate

Treatment groups	Days	Gating (Mean FITC-A)
All viral (Measles, H1N1 flu prototype, Canine coronavirus virus and Zika) vaccine candidates + adjuvants	0-1	903845
	1-2	651486
	2-4	498763
	4-6	112981
All <i>N. gonorrhoeae</i> (CDC-F62, FA19 and FA1090 strains) vaccine candidates + adjuvants	0-1	954853
	1-2	743856
	2-4	457453
	4-6	269159

**Table S2:** Gating strategy and mean FITC-A values for proliferated T-cells in response to nanoparticulated vaccine candidates. The gating values were determined using flow cytometry to quantify T-cell proliferation over a 6-day period. Mean FITC-A values for the proliferated T-cell populations were recorded for the measles vaccine candidate + adjuvants and the *N. gonorrhoeae* vaccine candidate + adjuvants groups at different time intervals. Gating values represent the mean fluorescence intensity corresponding to the different stages of T-cell clonal expansion.