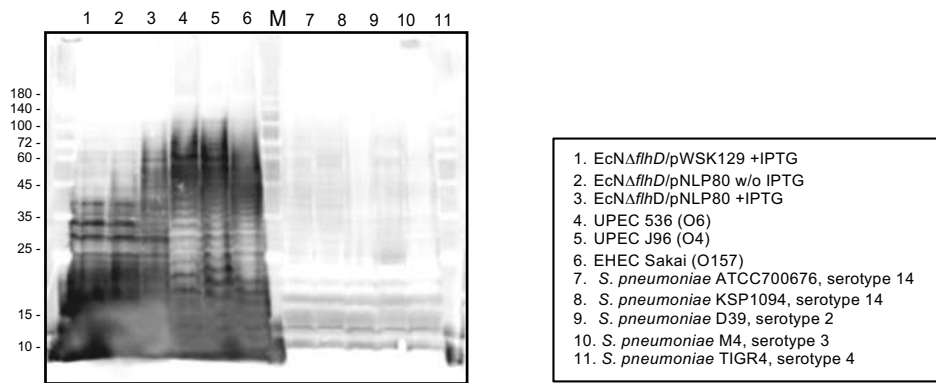
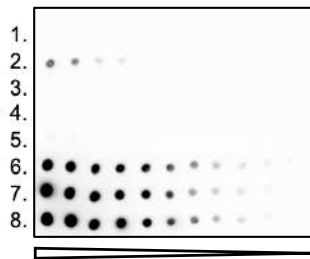


Lipid A-core



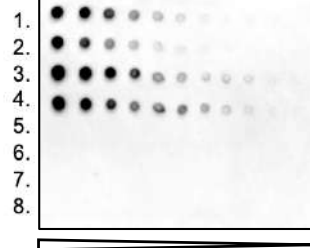
Supplementary Figure 1. Nakao et al.

CPS14



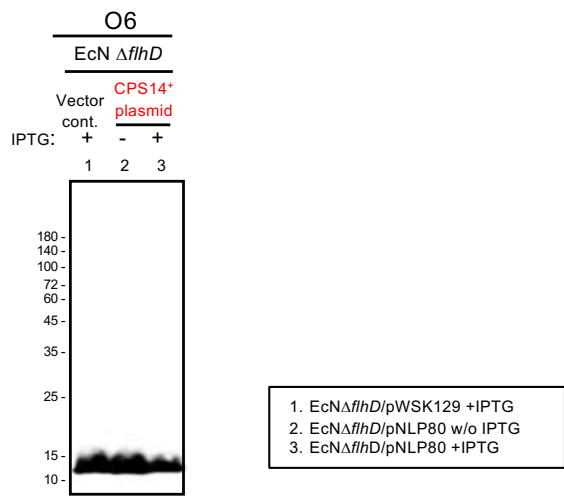
1. EcN Δ flhD/pWSK129 +IPTG 0.01mM
2. EcN Δ flhD/pNLP80 +IPTG 0.01mM
3. UPEC 536 (O6)
4. UPEC J96 (O4)
5. EHEC Sakai (O157)
6. *S. pneumoniae* ATCC 700676 (CPS14)
7. CPS14 standard-1
8. CPS14 standard-2

O6




1. EcN Δ flhD/pWSK129 +IPTG 0.01mM
2. EcN Δ flhD/pNLP80 +IPTG 0.01mM
3. *E. coli* O6 reference strain (O6)
4. UPEC strain 536 (O6)
5. UPEC strain J96 (O4)
6. EHEC strain Sakai (O157)
7. *S. pneumoniae* ATCC 700676 (serotype 14)
8. *S. pneumoniae* KSP1094 (serotype 14)

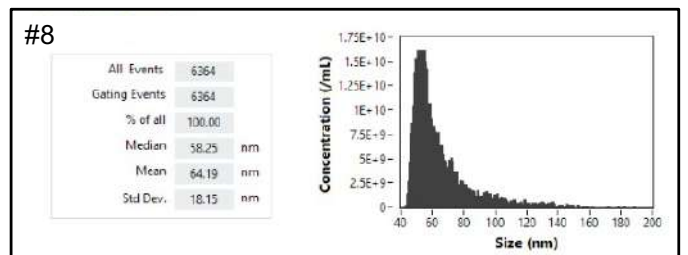
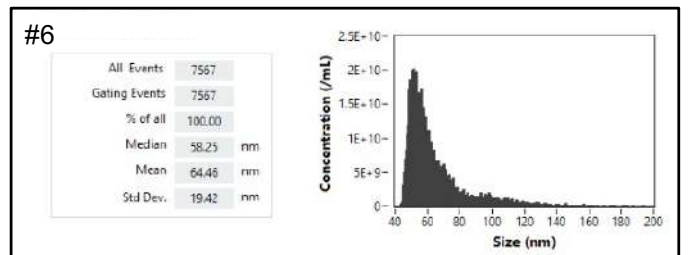
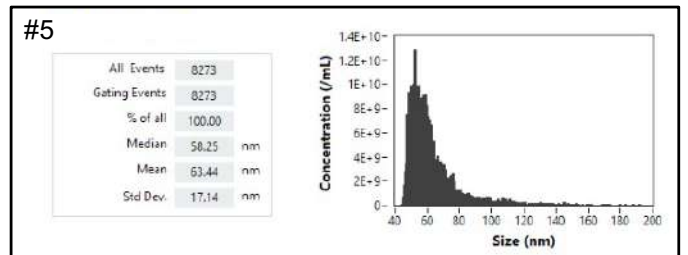
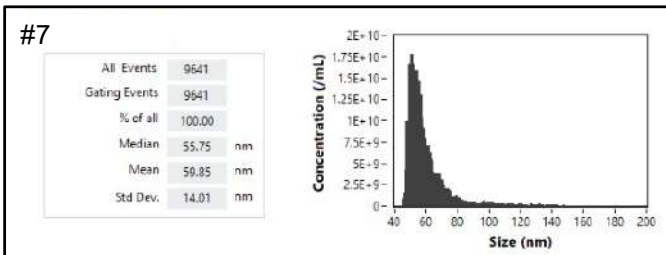
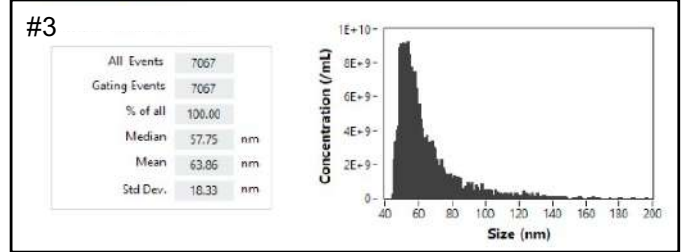
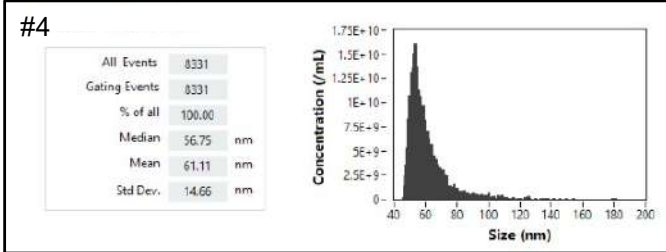
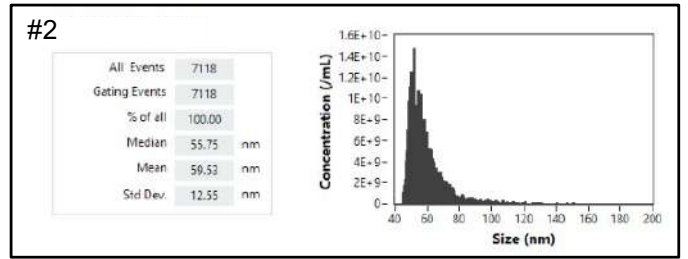
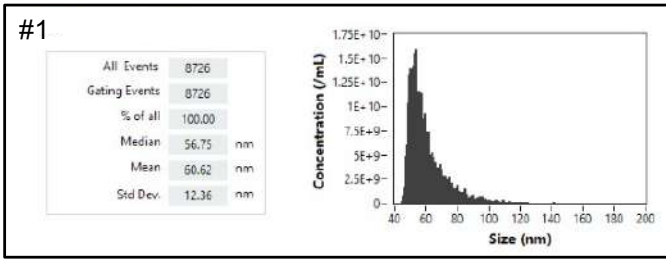
Supplementary Figure 2. Nakao et al.




Supplementary Figure 3. Nakao et al.

MVs
(vector control) 

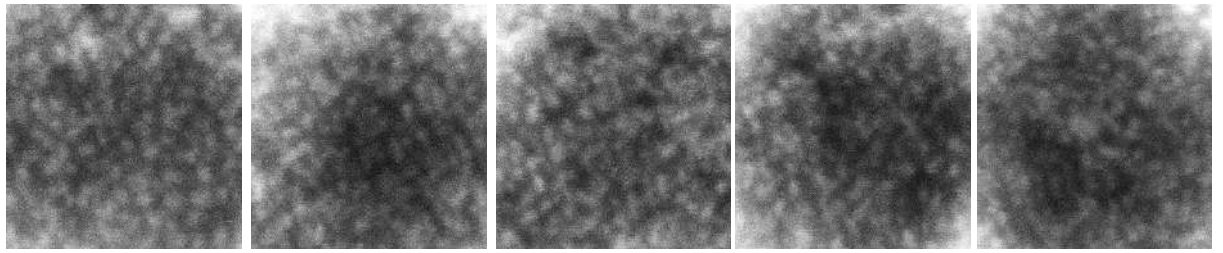
CPS14⁺MVs 



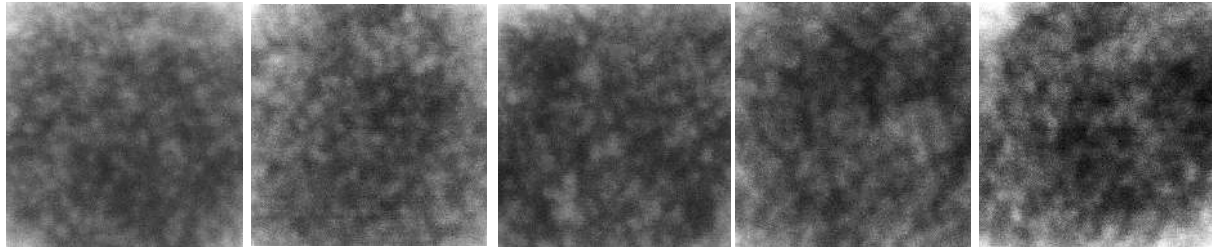
Supplementary Figure 4. Nakao et al.

MVs
(vector control) 

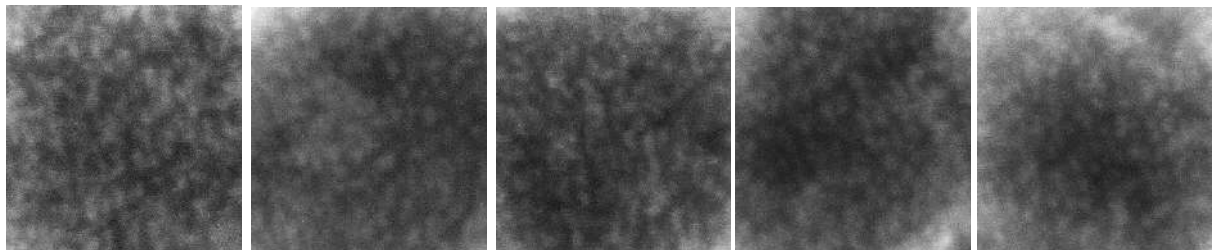
Lot-1




Lot-2

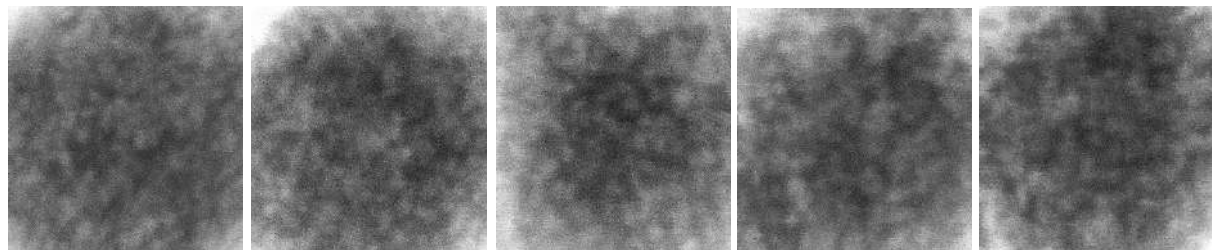


Lot-3

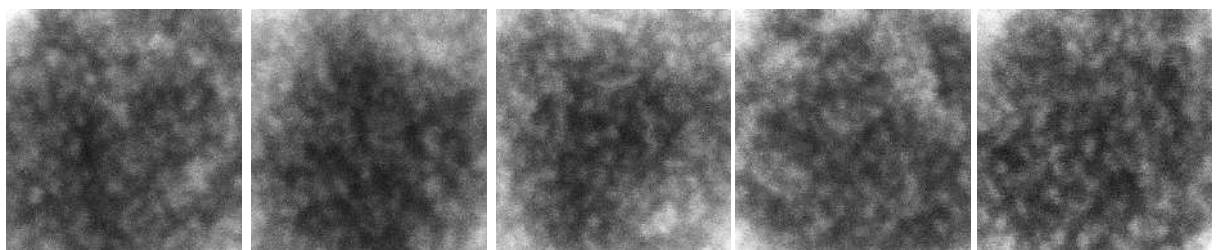


CPS14+MVs 

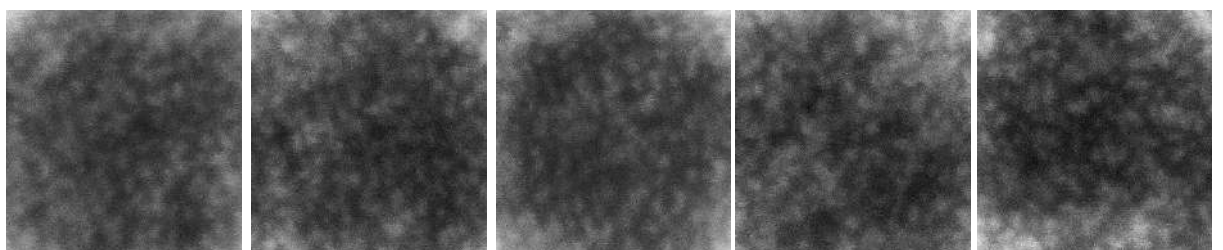
Lot-1

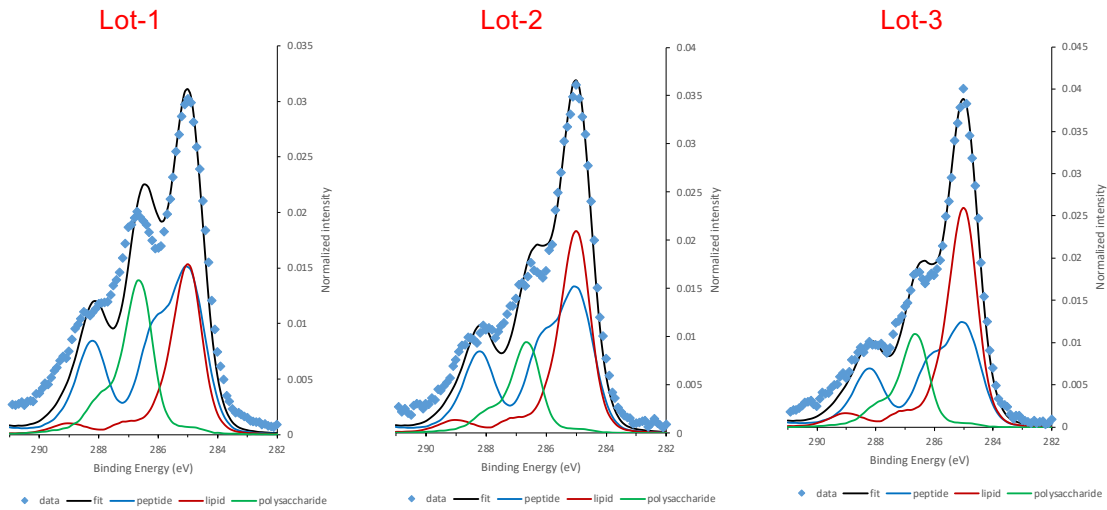
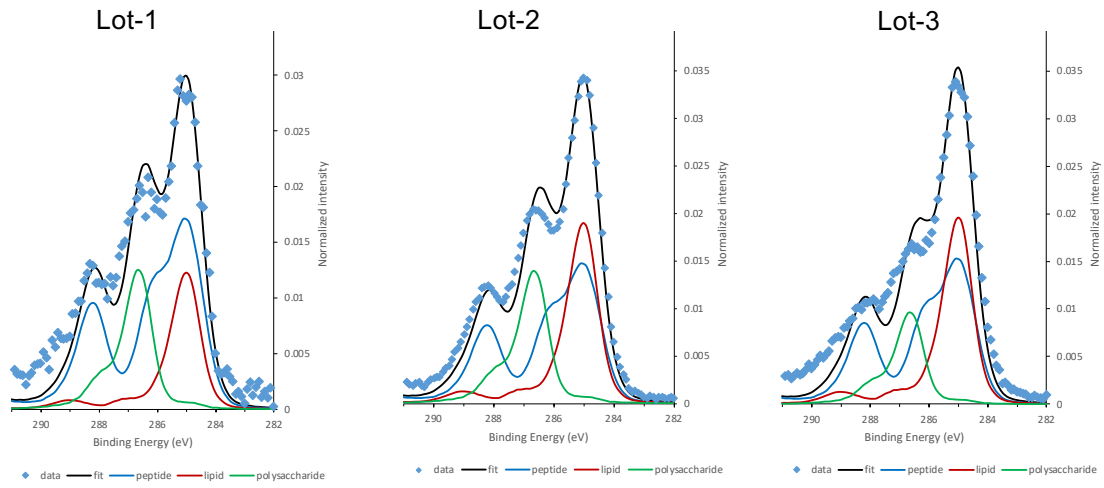


Lot-2



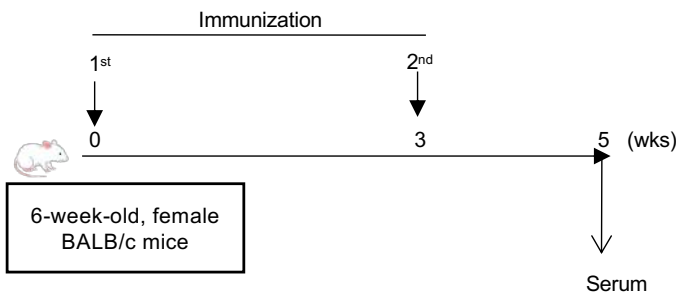
Lot-3





Supplementary Figure 6. Nakao et al.

(A) Timeline of immunization, different doses of vaccines



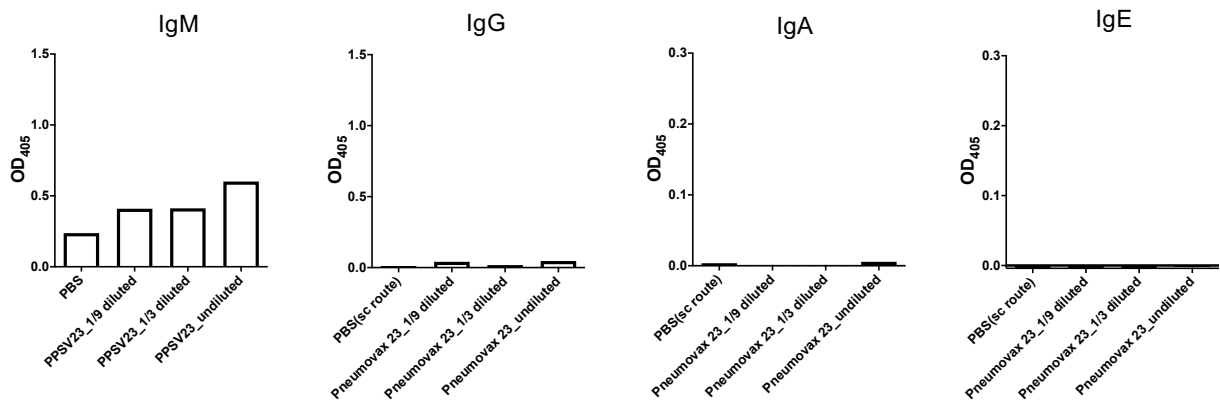
PPSV23_PBS and 3 different doses, 90 μ L/shot
Mice (n=2) were administered with PBS, 1/9 diluted [containing 0.5 μ g CPS14], 1/3 diluted [1.5 μ g], and undiluted PPSV23 [4.5 μ g].

PCV13_PBS and 3 different doses, 90 μ L/shot
Mice (n=2) were administered with PBS, 1/9 diluted [containing 0.043 μ g CPS14], 1/3 diluted [0.13 μ g], and undiluted PCV13 [0.39 μ g].

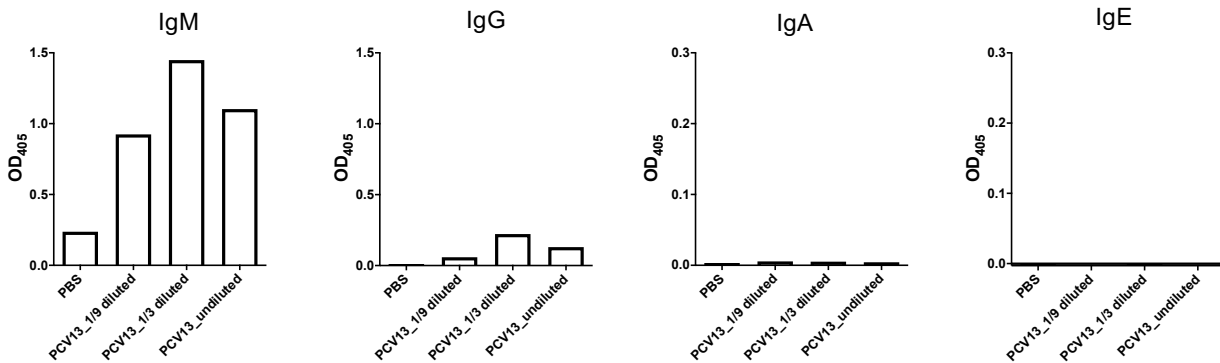
CPS14⁺MVs_PBS and 3 different doses, 90 μ L/shot
Mice (n=2) were administered with PBS, 1/9 diluted [containing 0.0014 μ g CPS14], 1/3 diluted [0.0044 μ g], and undiluted CPS14⁺MVs [0.013 μ g].

(B) Humoral immune responses in serum after vaccination with different doses

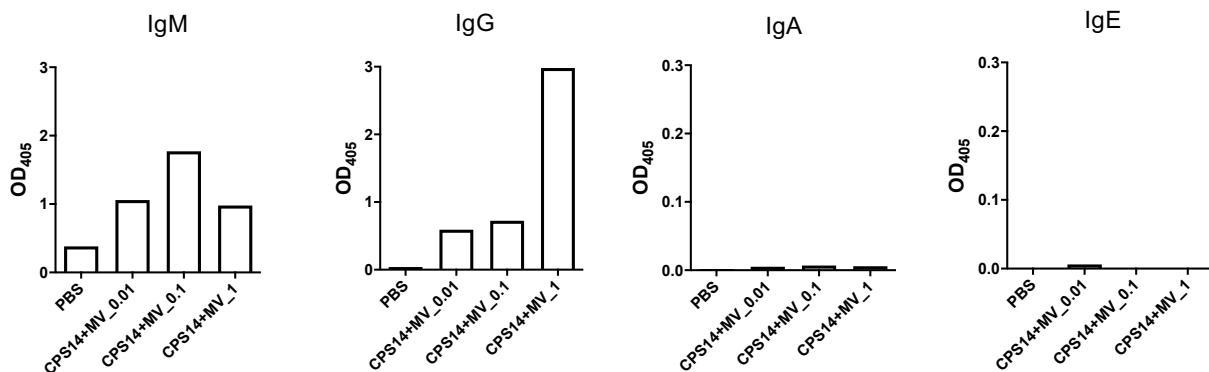
PPSV23



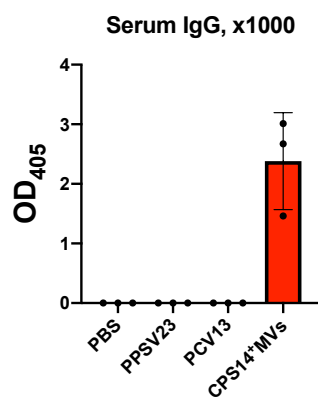
PCV13



CPS14⁺ MVs

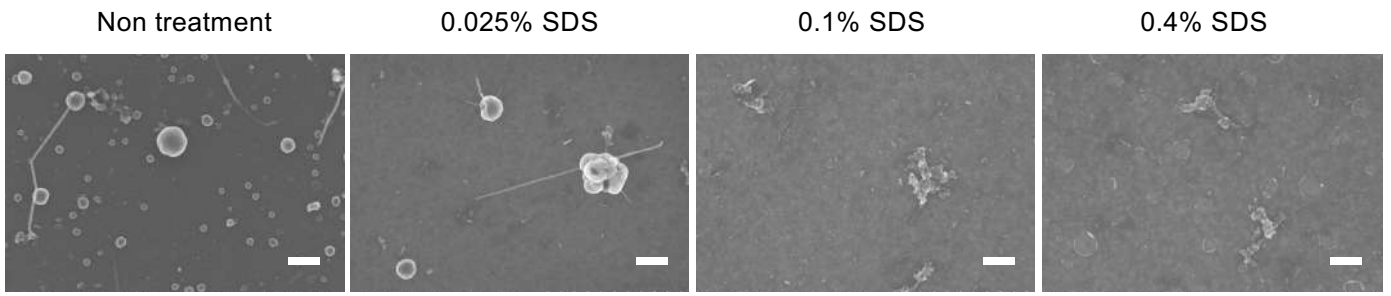


(C) Vaccination with PPSV23, PCV13, and CPS14+MVs at same CPS14 doses

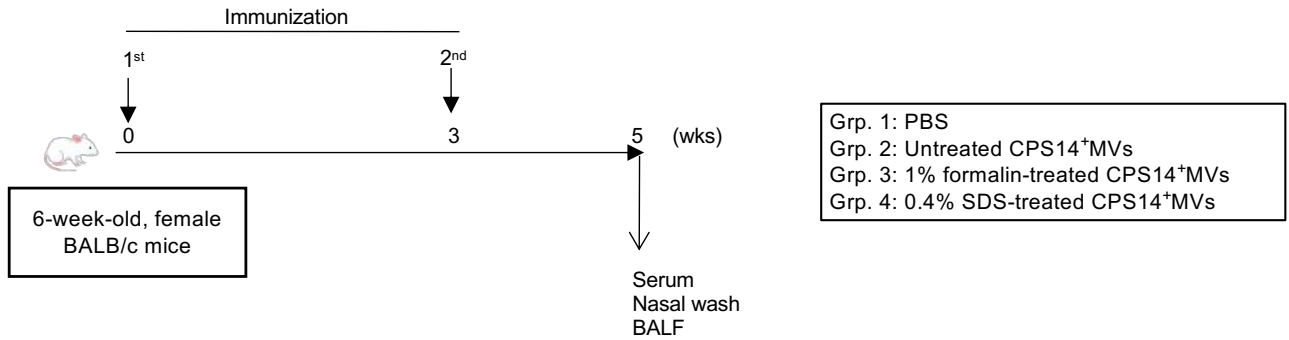


Supplementary Figure 7. Nakao et al.

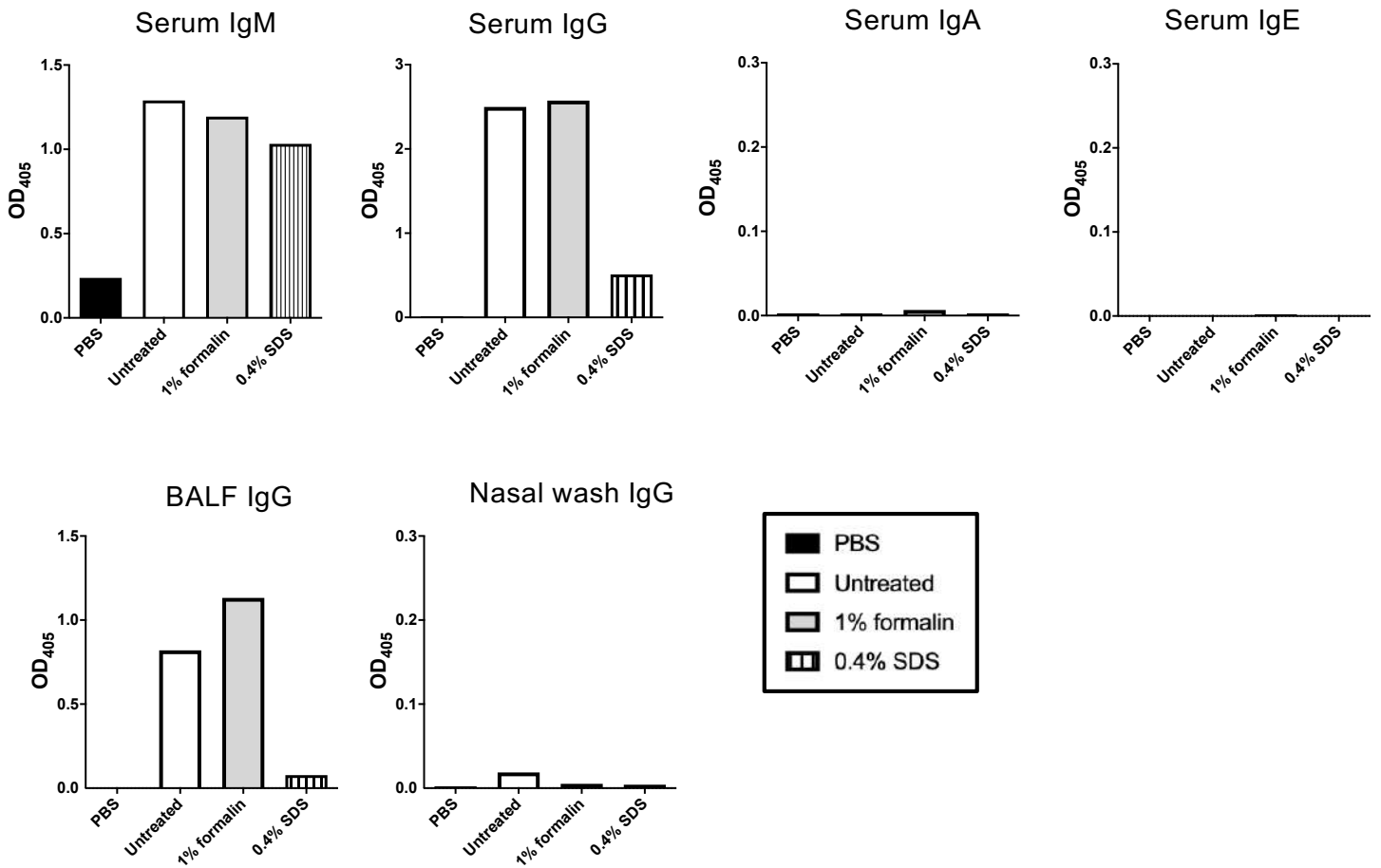
(A) SDS resistance



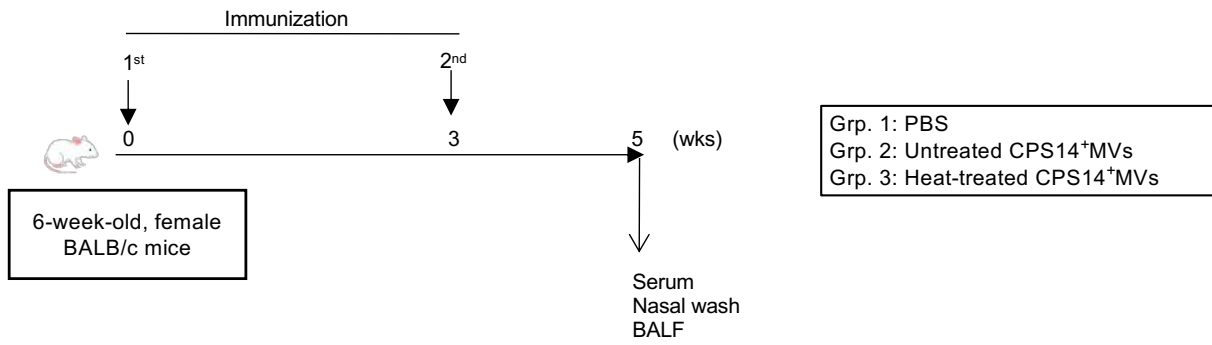
(B) Timeline of immunization, using CPS14+MV_s treated with formalin or detergent



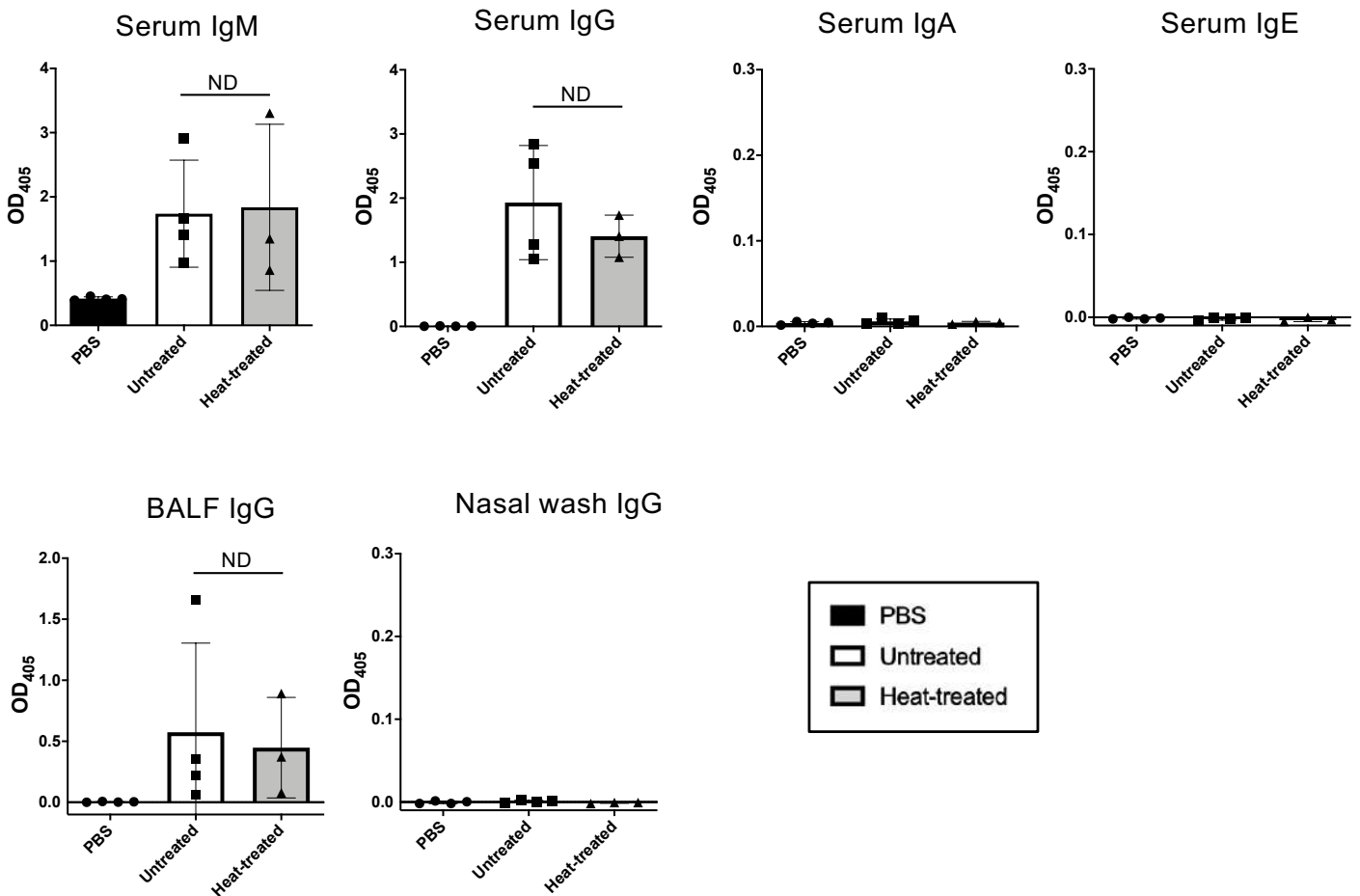
(C) Humoral immune responses against CPS14: treatment with formalin or SDS



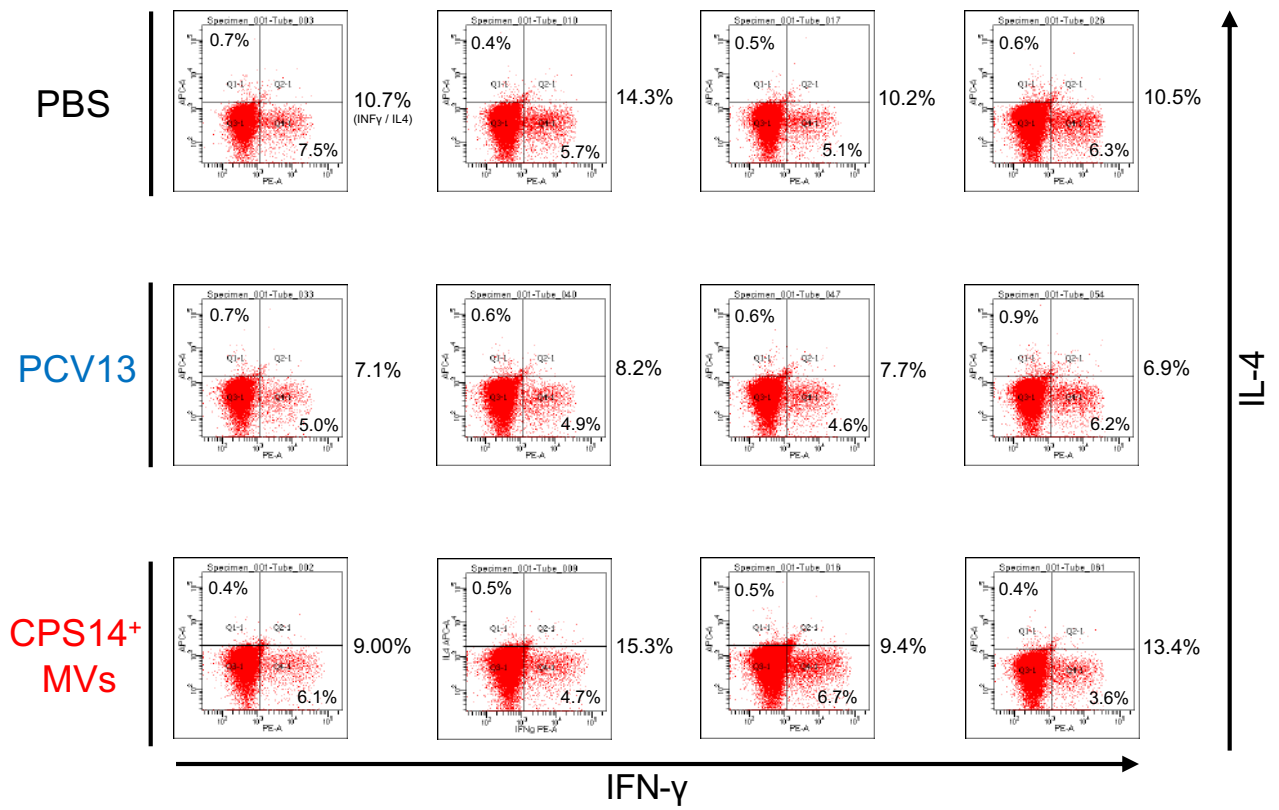
(D) Timeline of immunization, using CPS14⁺MVs with or without heat treatment



(E) Humoral immune responses against CPS14: Heat treatment

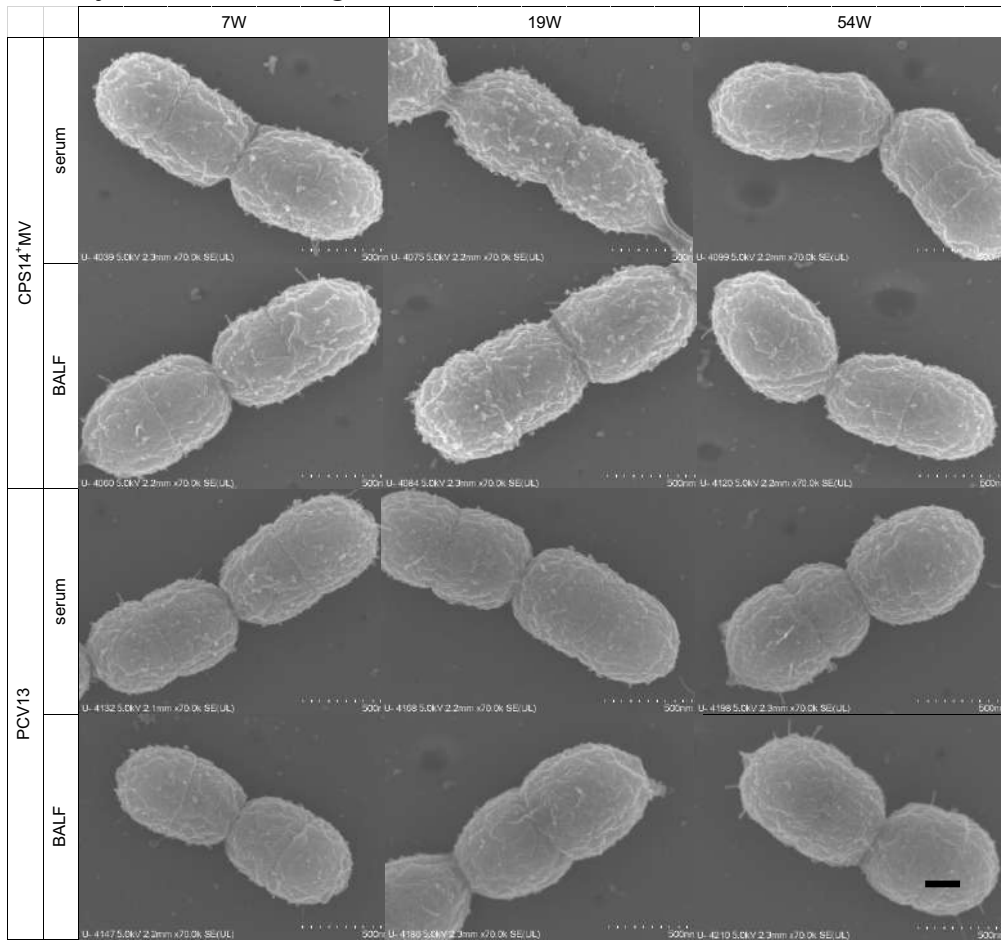


Supplementary Figure 8. Nakao et al.



Supplementary Figure 9. Nakao et al.

(A) Secondary electron images



(B) Refractory electron images

