Supplementary information to

Engineered protein subunit COVID19 vaccine is as immunogenic as nanoparticles in mouse and hamster models

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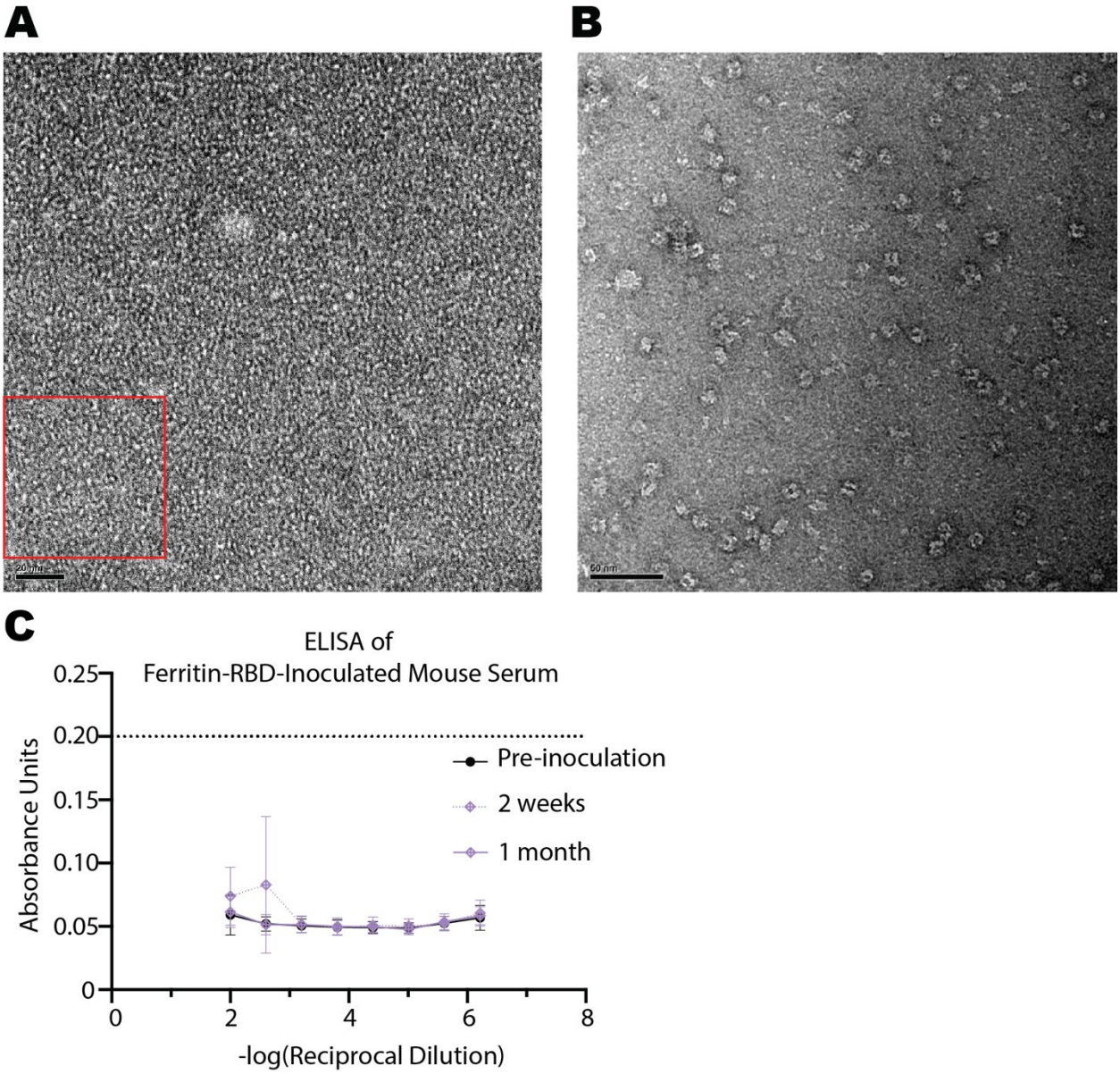
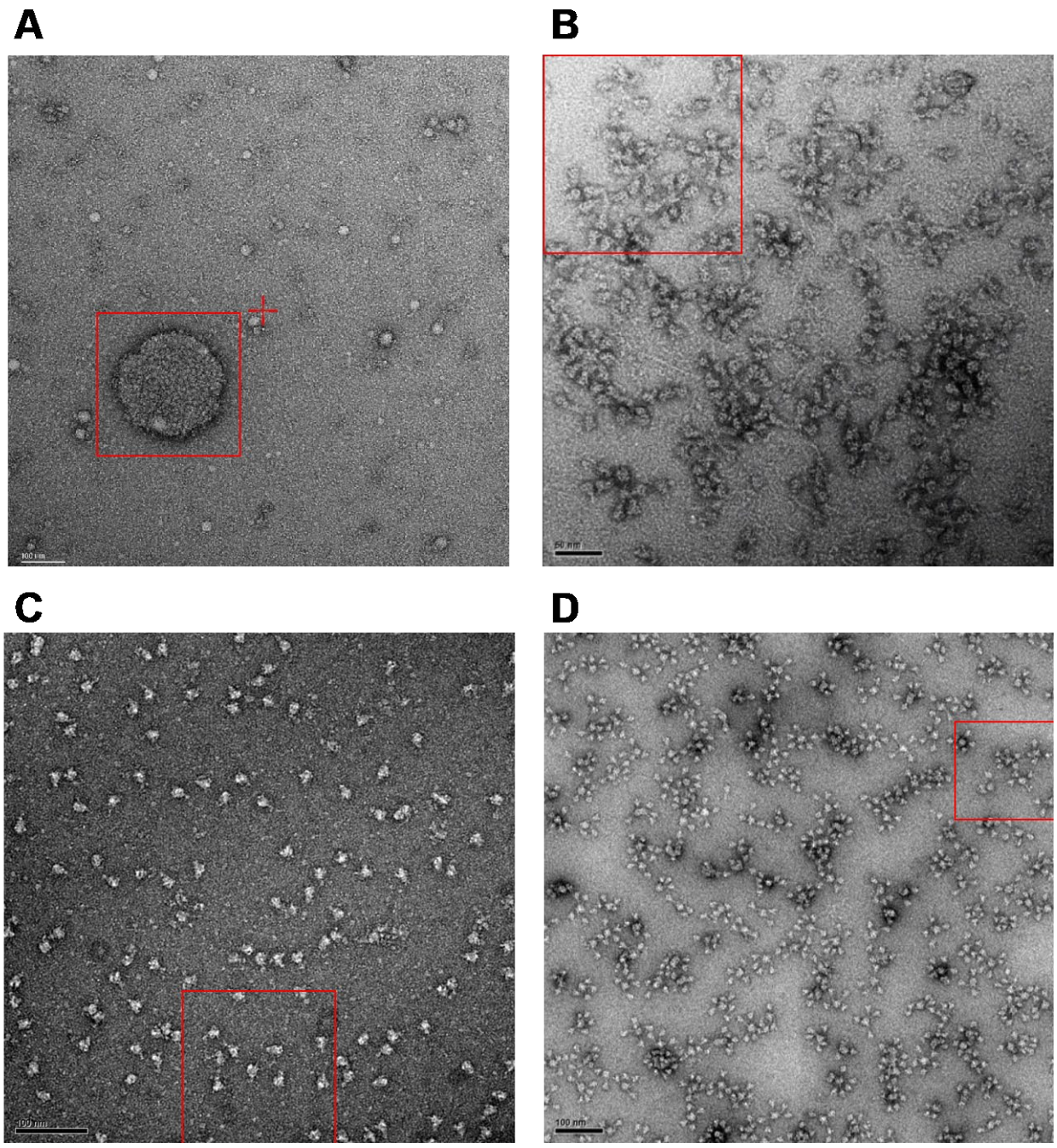
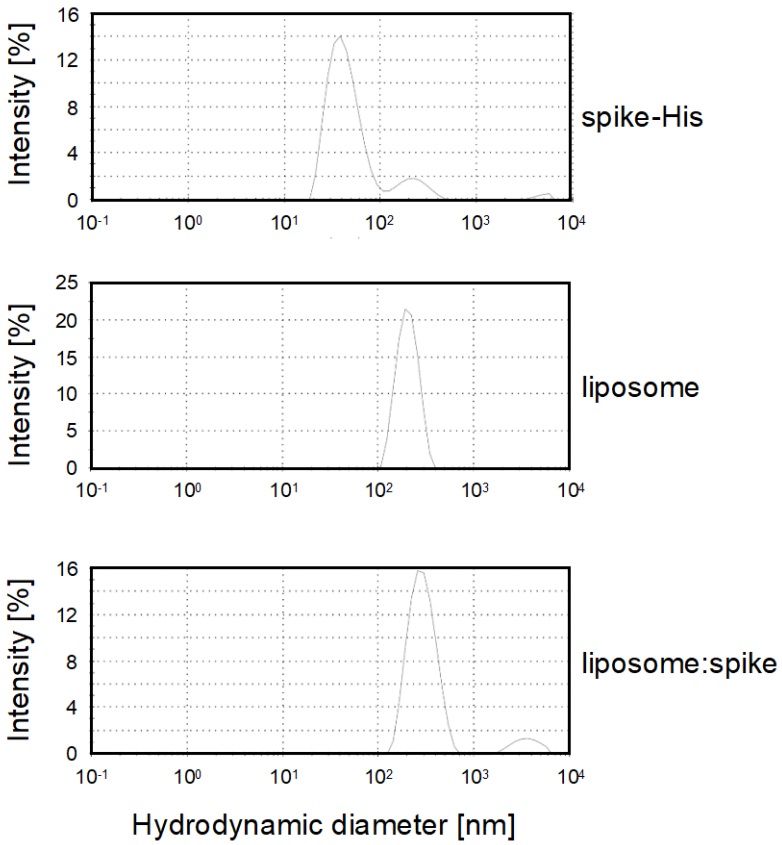


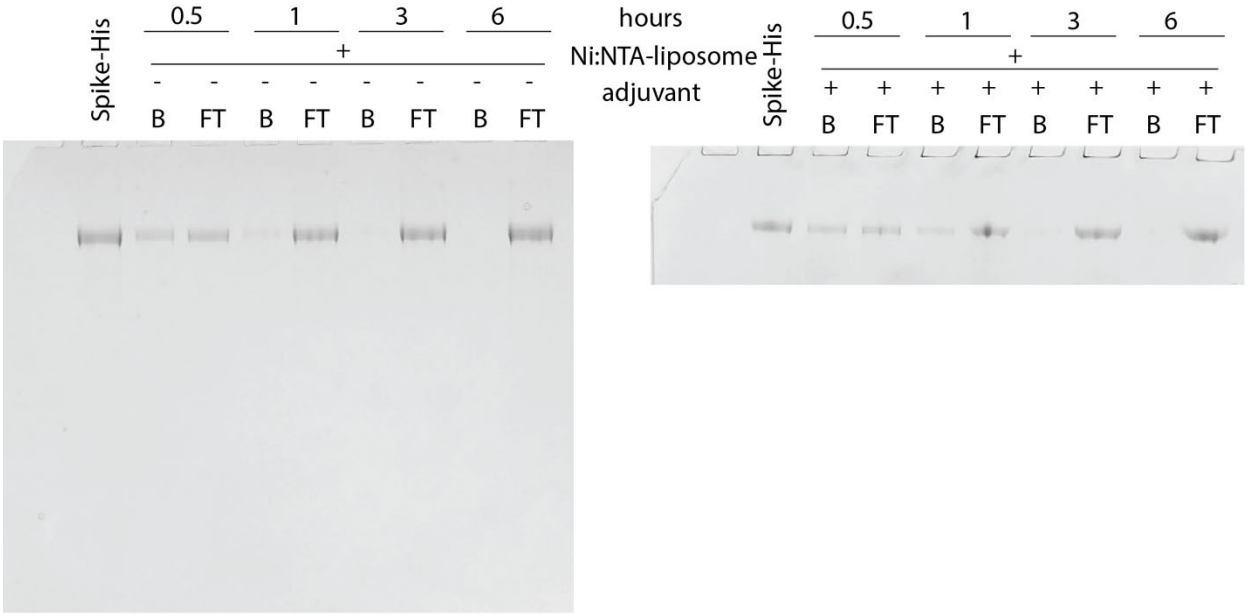
Supplementary Figure 1: Electron micrographs and immunogenicity of negative stained RBD-based immunogens. (**A**) Purified RBD protein. The region shown in Figure 1B is outlined in red. (**B**) Misfolded ferritin-RBD particle. (**C**) Immunogenicity of serum extracted from ferritin-RBD-inoculated mice. Each point represents the mean value of three individual mice at the time points given in the legend. The dotted line at 0.2 AU indicates the value for which endpoint titers were calculated in spike seropositive samples.



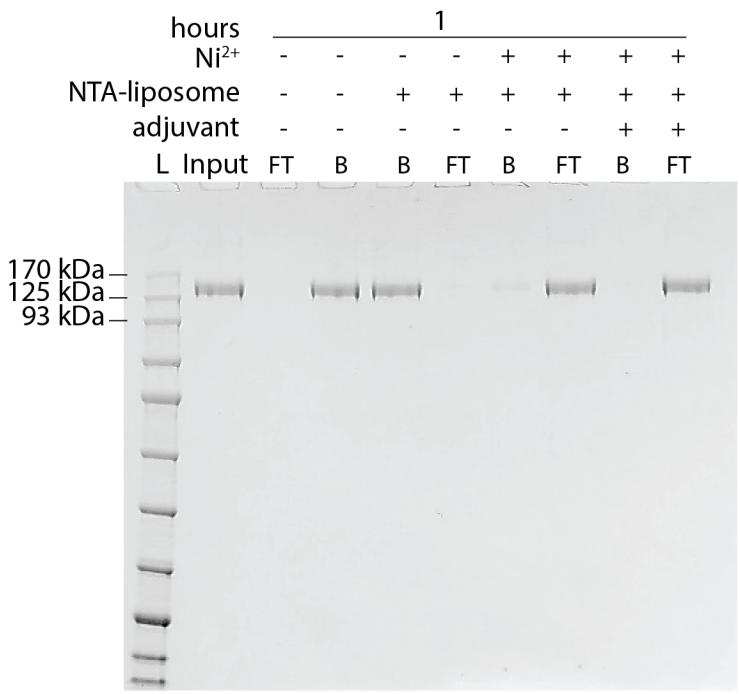
Supplementary Figure 2: Electron micrographs of negative stained trimeric spike-based immunogens. Regions shown in Figure 1B are outlined in red. (**A**) Liposome:spike (**B**) Spike rosettes (**C**) Spike (**D**) Spike:ferritin



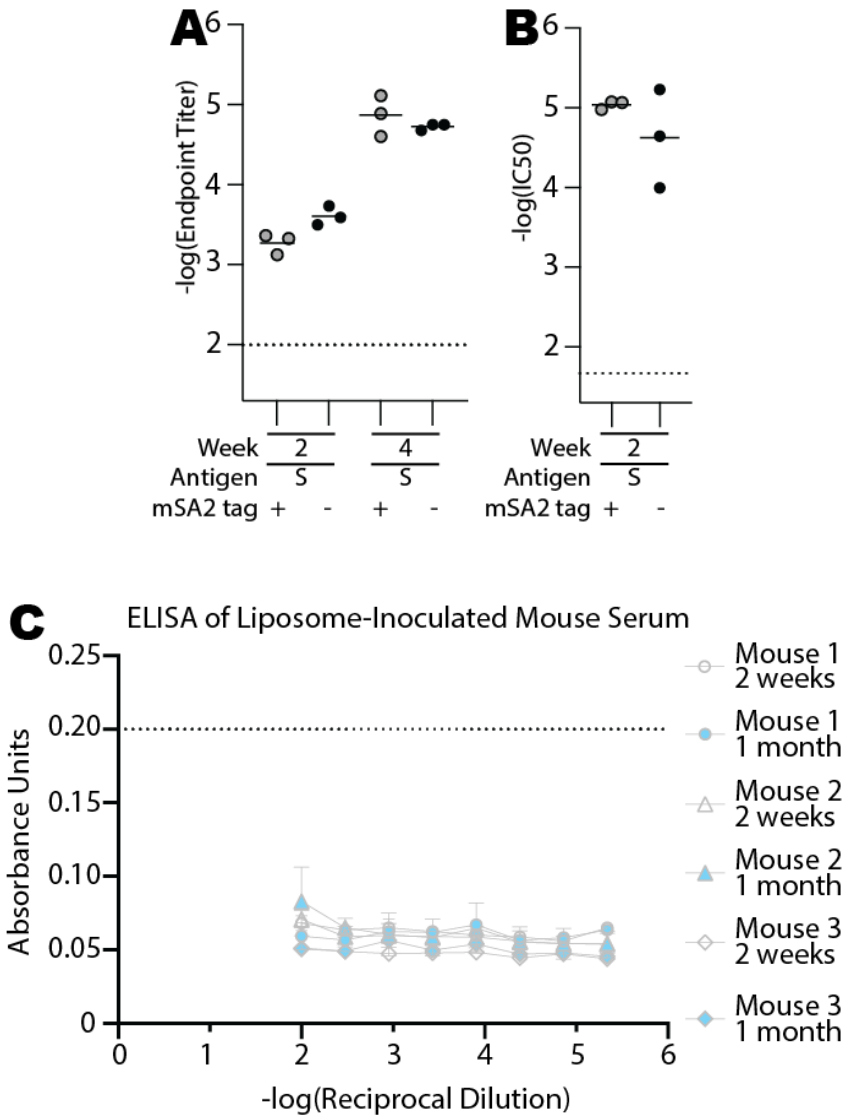
Supplementary Figure 3: Dynamic light scattering data of spike-His (top), NTA-conjugated liposomes (middle), and purified liposome:spike particles.



Supplementary Figure 4: Kinetic characterization of spike-His binding to Ni:NTA liposomes. Ni:NTA bead-capture assay in which flow through is collected at progressive time points in the absence (**left**) and presence (**right**) of adjuvant. B, bound fraction; FT, flow through. Hours indicate the length of incubation of Ni:NTA beads with indicated components at 4 ºC with shaking.



Supplementary Figure 5: Original western blot image for main text Figure 2B.



Supplementary Figure 6: (A) Immunogenicity of spike immunogen with and without mSA2 tag and (B) antigenicity of liposome-only. In (C), the dotted line at 0.2 AU indicates the value for which endpoint titers were calculated in spike seropositive samples.