

## Supplemental Figs

### **Supplemental Figure 1. ACE2 receptor expression and assay development.**

a) UV trace from SEC of ACE2-IgHu expressed in mammalian cells and purified on a protein A column b) SEC-MALS determined molecular weight of ACE2-IgHu to be that of a dimeric complex (~190kDa) as shown by the line under the peak on the right y-axis c) ACE2-IgHu binding comparison for immobilized S1 spike protein from varying batches of expression and purification as well as freeze-thaw assessment via ELISA show negligible differences.

**Supplemental Figure 2. Animal IgG and serological competition.** a) AUC is significantly decreased in the presence of vaccinated mouse IgG competitors; however a greater decrease is observed when full-length CoV-2 spike protein was immobilized versus naïve mouse IgG samples. b) ELISA competition curves for vaccinated rabbit IgG (IgGr low dose, blue; IgGr high dose, red) or sera (sera low dose, blue; sera high dose, red) versus naïve rabbit IgG or c) sera samples (grey) and pooled Day 0 rabbit IgG or sera samples (black). d) ELISA competition curves for Week 2 vaccinated guinea pig sera (pool, dark blue; individual animals, blue) versus naïve guinea pig sera samples (grey) and pooled prevaccinated guinea pig sera samples (black). e) AUC for vaccinated guinea pig IgG pool (blue) versus naïve guinea pig IgG pool (grey) and pooled prevaccinated guinea pig IgG samples (black) f) ELISA competition curves with same coloring as in e.

**Supplemental Figure 3. Primate serological competition.** a) Four constant concentrations of ACE2-IgMu were tested with varying concentrations of the ACE2-IgHu competitor to establish an optimal ACE2-IgMu concentration which displays a full blocking curve (red, 1.0ug/ml) from the competitor dilution series while retaining a wide range in signal. b) ELISA competition curves for vaccinated NHP sera (blue) versus pooled Day 0 NHP sera (black).

**Supplemental Figure 4.** **a)** Human sera from nine SARS-CoV-2 positive COVID-19 patients run in standard ELISA binding assay with spike antigen **b)** Human sera from sixteen healthy donors run in standard ELISA binding assay with spike antigen **c)** Human sera from nine SARS-CoV-2 positive COVID-19 patients was tested in the primate competition assay and compared to sixteen naïve human sera collected pre-pandemic. The AUC of the COVID-19 patient serum (purple) is significantly decreased compared to the pre-pandemic human serum (grey) and normalized to a buffer control. **d)** pseudovirus neutralization assay for the nine SARS-CoV-2 positive COVID-19 patients displayed neutralization for all samples to varying degrees **e)** pseudovirus neutralization assay for the sixteen naïve human sera collected pre-pandemic displayed little to no neutralization for all samples.