



Supporting Information for

Vectored immunoprophylaxis and treatment of SARS-CoV-2 in a preclinical model

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Figures S1 to S4

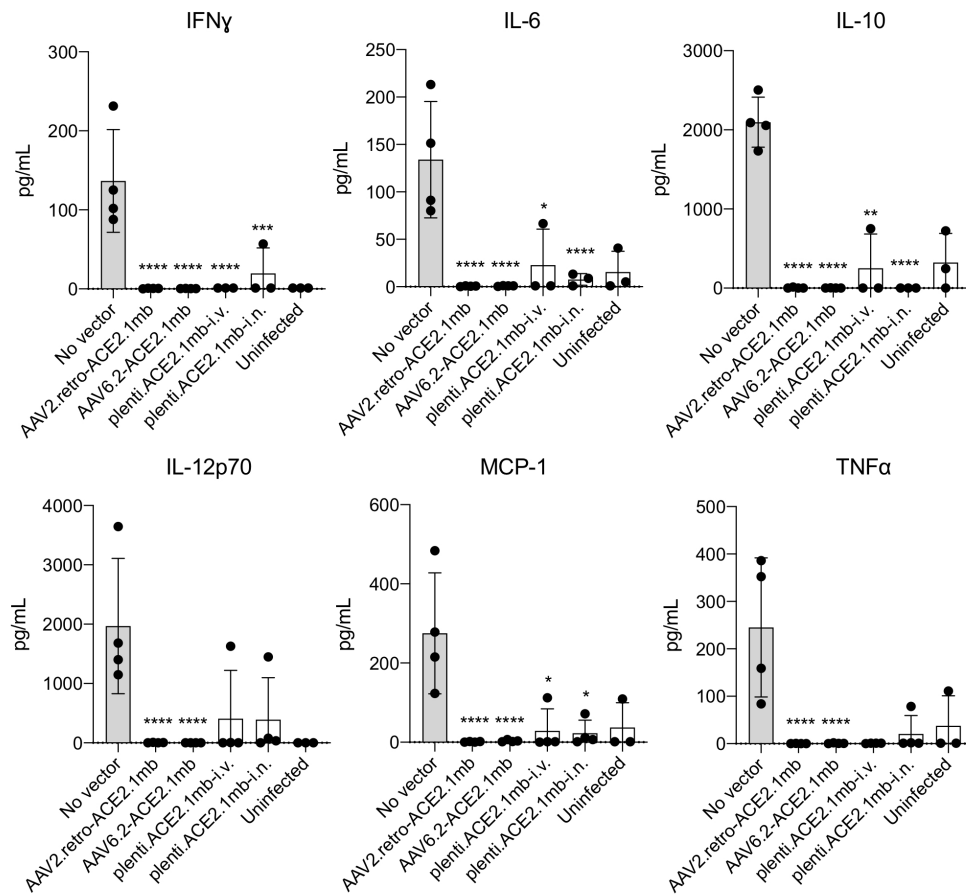


Fig. S1. Intranasal injected AAV2.retro, AAV6.2-decoys and lentivirus-based ACE2.1mb didn't induce any inflammatory cytokine secretion.

Mice (n=4) were treated with the decoy-expressing AAV vectors (1×10^{12} vg) or decoy-expressing lentiviral vector (5×10^6 IU). After 3 (AAV) or 7 days (lentiviral vector), the mice were challenged with SARS-CoV-2 WA1/2020 and 3-dpi the levels of IFN γ , TNF α , IL-10, IL-6, MCP-1 and IL-12p70 in lung were measured by cytokine beads array. The Y-axis shows the concentration of each cytokine. The experiment was done twice with similar results. Confidence intervals are shown as the mean \pm SD.

*P \leq 0.05, **P \leq 0.01, ***P \leq 0.001, ****P \leq 0.0001.

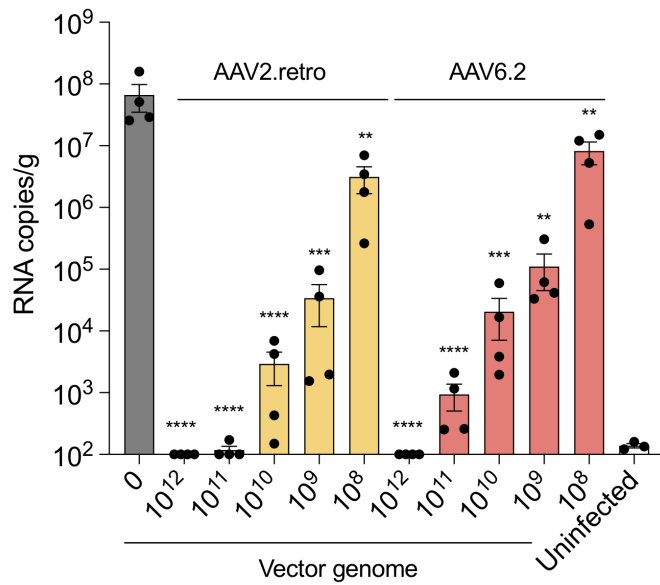


Fig. S2. AAV-Decoy protects mice from SARS-CoV-2 infection.

Different doses of decoy-expressing AAV vectors (1×10^{12} , 1×10^{11} , 1×10^{10} , 1×10^9 , 1×10^8 vg) were administered to hACE2 K18 Tg (n=4) by i.n. instillation. 3 days post-AAV injection, mice were challenged with 2×10^4 PFU of SARS-CoV-2 WA1/2020. At 3-dpi, subgenomic viral E gene RNA in the lung were quantified. Confidence intervals are shown as the mean \pm SD. ** $P \leq 0.01$, *** $P \leq 0.001$, **** $P \leq 0.0001$.

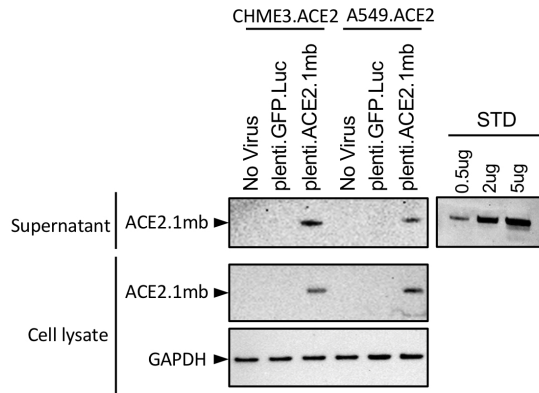


Fig. S3. Lentivirus-based ACE2.1mb was secreted in different cell lines.

CHME3.ACE2 and A549.ACE2 cells were transduced with decoy-expressing lentiviral vectors at an MOI of 0.5. 3-dpi, decoy protein secreted into the supernatant was pulled-down on nickel-nitrilotriacetic acid-agarose beads and bead-bound decoy protein was detected on an immunoblot probed with His-tag antibody. Decoy protein in the cell lysates is shown below with GAPDH as a loading control.

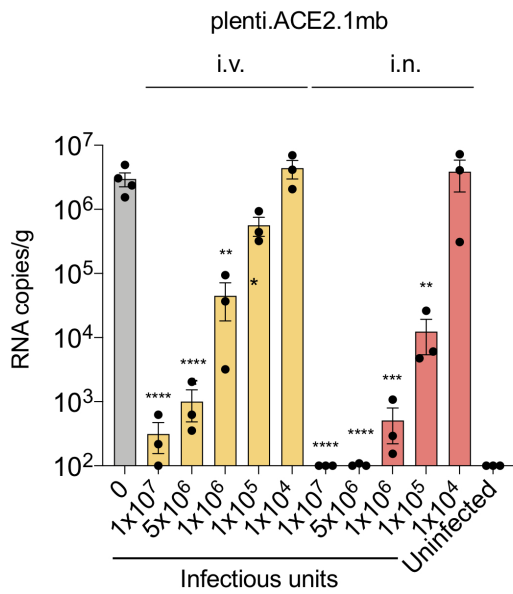


Fig. S4. Lentivirus-based ACE2.1mb protected mice from SARS-CoV-2 infection.

hACE2 K18 Tg mice (n=3) were injected i.v. or i.n. with different amounts of decoy-expressing lentiviral vectors (1 X 10⁷, 1 X 10⁶, 1 X 10⁵, 1 X 10⁴ IU). One week later, the mice were challenged with 2 X 10⁴ PFU SARS-COV-2. At 3-dpi, lung subgenomic viral E RNA was quantified by RT-qPCR. Confidence intervals are shown as the mean ± SD. **P ≤ 0.01, ***P ≤ 0.001, ****P ≤ 0.0001.