



**Supplementary Fig. S11 Pre-existing immunity of pCoV-GD01 protect against homologous challenge.** **a** 8-week-old hACE2 mice were inoculated i.n. with  $6 \times 10^3$  PFU pCoV-GD01 ( $n = 5$ ) or PBS ( $n = 3$ ), and 14 days later inoculated with an equivalent dose of pCoV-GD01. **b** The sera were collected at 14 dpi and subjected to neutralization assays. The NT<sub>50</sub> of sera from were analyzed using pseudovirus for pCoV-GD01. Data are shown as geometric means  $\pm$  SD. **c&d** Lungs and tracheas were collected 3 days post re-challenge. Viral sgRNA loads in the lungs and tracheas were determined by qRT-PCR. Data are shown as means  $\pm$  SD. Student's t-test was performed for statistical analysis (\*\* $p < 0.01$ ). L.O.D, limit of detection.