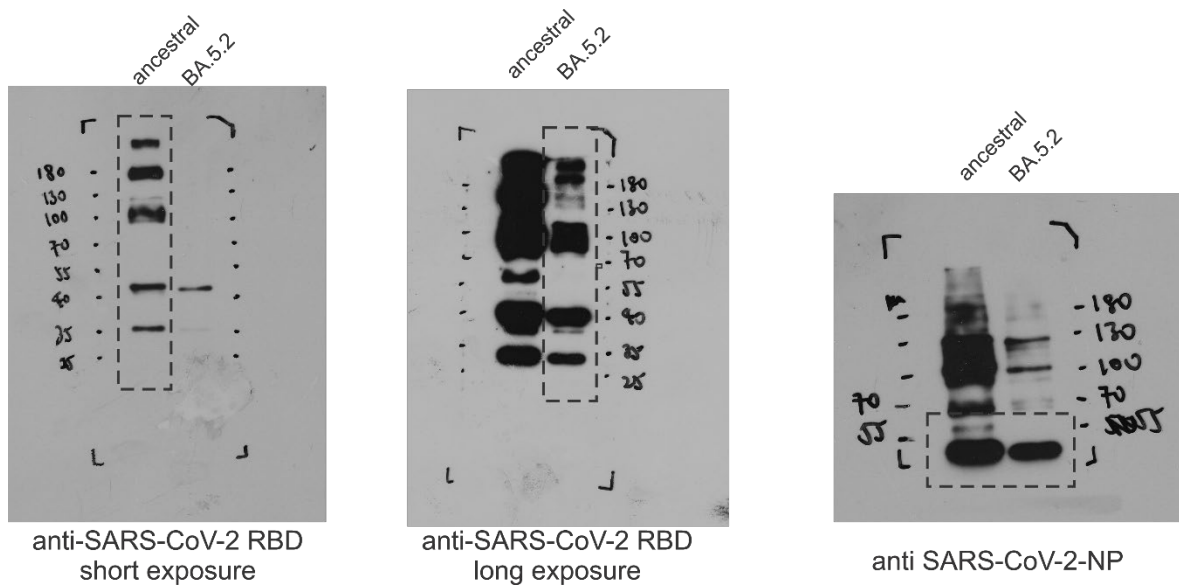
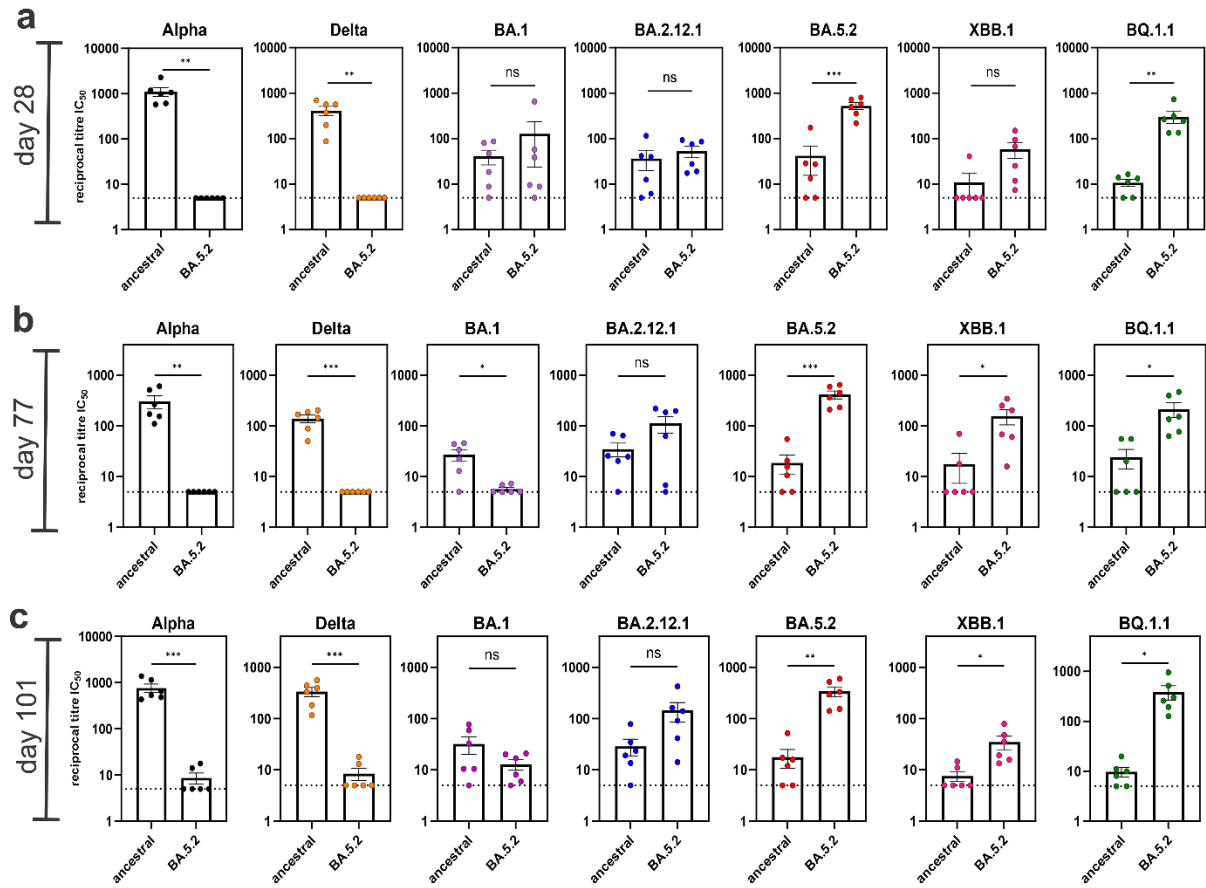


Supplementary Information



Supplementary Fig. 1 Uncropped/unprocessed Western blot image. Rabbit monoclonal anti-SARS-CoV-2 RBD (ThermoFisher) and in-house mouse monoclonal anti-SARS-CoV-2 NP were used in immunoblotting of purified virions.



Supplementary Fig. 2 Statistical analysis of LVMNA results. Unpaired two-tailed Student's t-test was performed with LVMNA against SARS-CoV-2 Alpha, Beta, BA.1, BA.2.12.1, BA.5.2, XBB.1 and BQ.1.1 at days 28 (**a**), 77 (**b**), and 101 (**c**) post-vaccination. Error bars represent mean $\pm$ SEM ($n = 6$). *: $P < 0.05$. **: $P < 0.01$. ***: $P < 0.001$. ns: not significant ($P > 0.05$).

Supplementary Table 1 Primer list.

SARS-CoV-2	
SARS-CoV-2 Subgenomic E (sgE) probe	/5HEX/AC ACT AGC C/ZEN/A TCC TTA CTG CGC TTC G/3IABkFQ/
SARS-CoV-2 sgE Forward	CGATCTCTTG TAGATCTGTTCTC
SARS-CoV-2 sgE Reverse	ATATTGCAGCAGTACGCACAC
Hamster	
IL-4 Forward	ACAGAAAAAGGGACACCATGCA
IL-6 Reverse	GAAGCCCTGCAGATGAGGTCT
IL-6 Forward	CCT GAA AGC ACT TGA AGA ATT CC
IL-6 Reverse	GGT ATG CTA AGG CAC AGC ACA CT
CCL17 Forward	CGA GTG CTG CCT GGA GAT C
CCL17 Reverse	TGA TGG CCT TCT TCA CAT GC
β -actin Forward	ACTGCCGCATCCTCTTCCT
β -actin Reverse	TCGTTGCCAATGGTGATGAC

Primers used in RT-qPCR for quantification of viral titer and hamster lung cytokines/chemokines are listed (5' – 3').