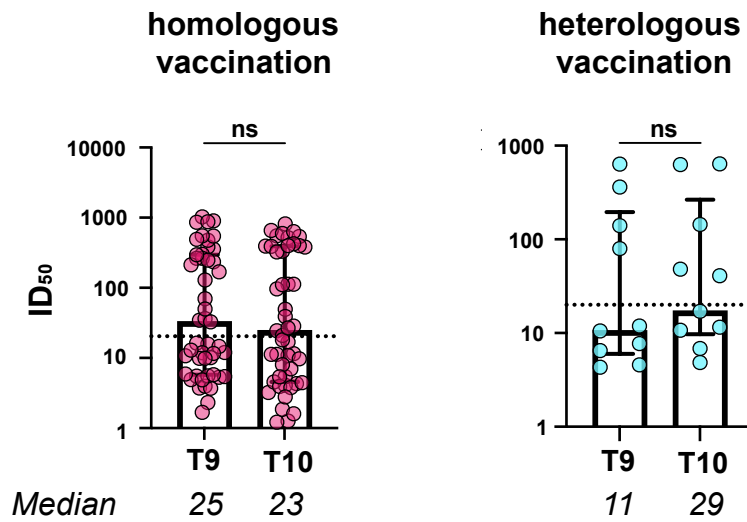


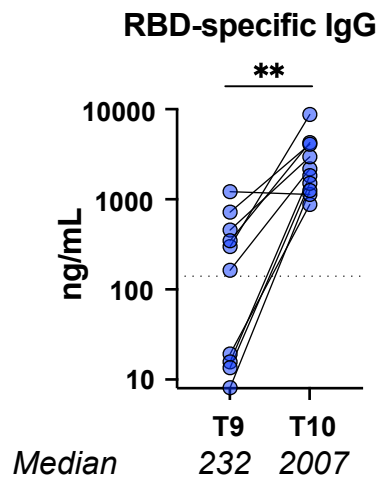
Supplementary Table S1. Cohort description.

Regimen of vaccination	Homologous	Heterologous
Number of participants	48	10
Age, years, median (range)	27 (18 – 73)	27.5 (23 – 39)
Female	23	4
Male	25	6
First dose Gam-COVID-Vac (Ad26)	48	10
Second dose Gam-COVID-Vac (Ad5)	48	10
Booster vaccine Gam-COVID-Vac (Ad26) Pfizer	48 0	0 10
Time between prime vaccination and booster days, median (range)	273 (249 – 300)	282 (267 – 328)
Probe sampling after booster, days, median (range)	33 (29 – 41)	42 (38 – 49)
Fever	14 (29%)	6 (60%)
Injection site reactions	22 (46%)	9 (90%)
Weakness	21 (44%)	7 (7%)
Headache	6 (13%)	2 (2%)

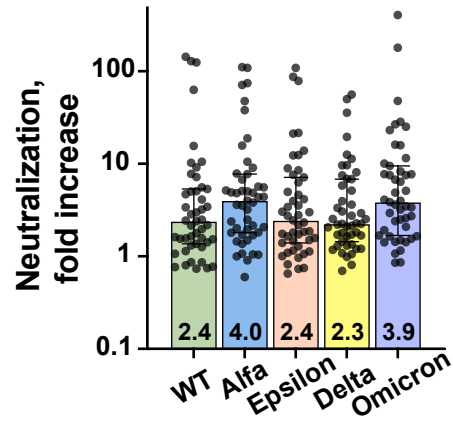
Ad5-specific NABs



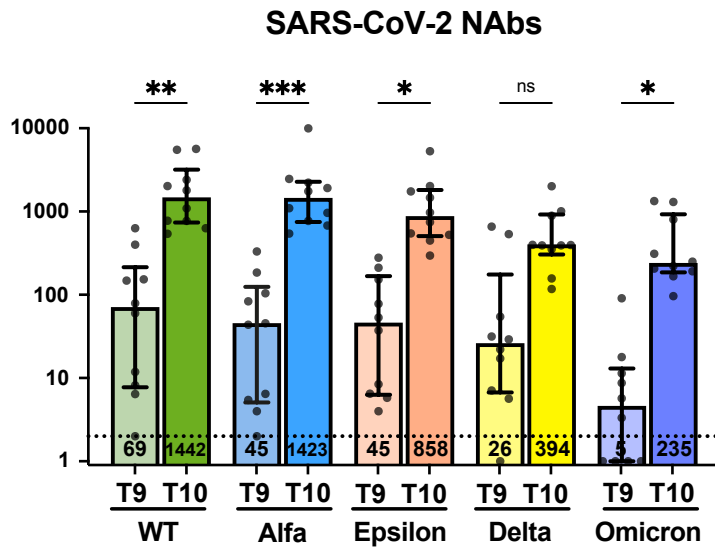
Supplementary Figure S1. The levels of Ad5-specific NABs before (T9) and after (T10) homologous (Gam-COVID-Vac/Gam-COVID-Vac) or heterologous (Gam-COVID-Vac/mRNA) vaccination boost.



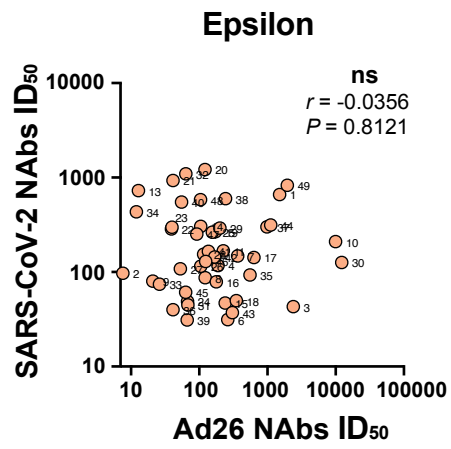
Supplementary Figure S2. RBD-specific IgG response in the heterologous vaccination group before (T9) and after (T10) boost mRNA vaccination.



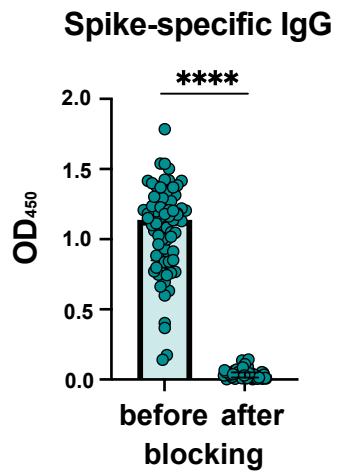
Supplementary Figure S3. Fold increase in SARS-CoV-2 neutralizing activity of sera after boost Gam-COVID-Vac vaccination. Virus neutralization data presented for SARS-CoV-2 wild type (WT), Alfa, Epsilon, Delta, and Omicron mutant variants. Numbers inside bars indicate median fold increase.



Supplementary Figure S4. SARS-CoV-2 NAb responses in the heterologous vaccination group against WT, Alfa, Epsilon, Delta, and Omicron VOCs after boost mRNA vaccination. Median values are indicated.



Supplementary Figure S5. Spearman's correlation between pre-boost (T9) Ad26-specific NAb levels and post-boost (T10) SARS-CoV-2 NAb titers against Epsilon VOC.



Supplementary Figure S6. ELISA testing of anti-Spike activity in serum samples before and after blocking with recombinant Spike protein (160 $\mu\text{g}/\text{mL}$).