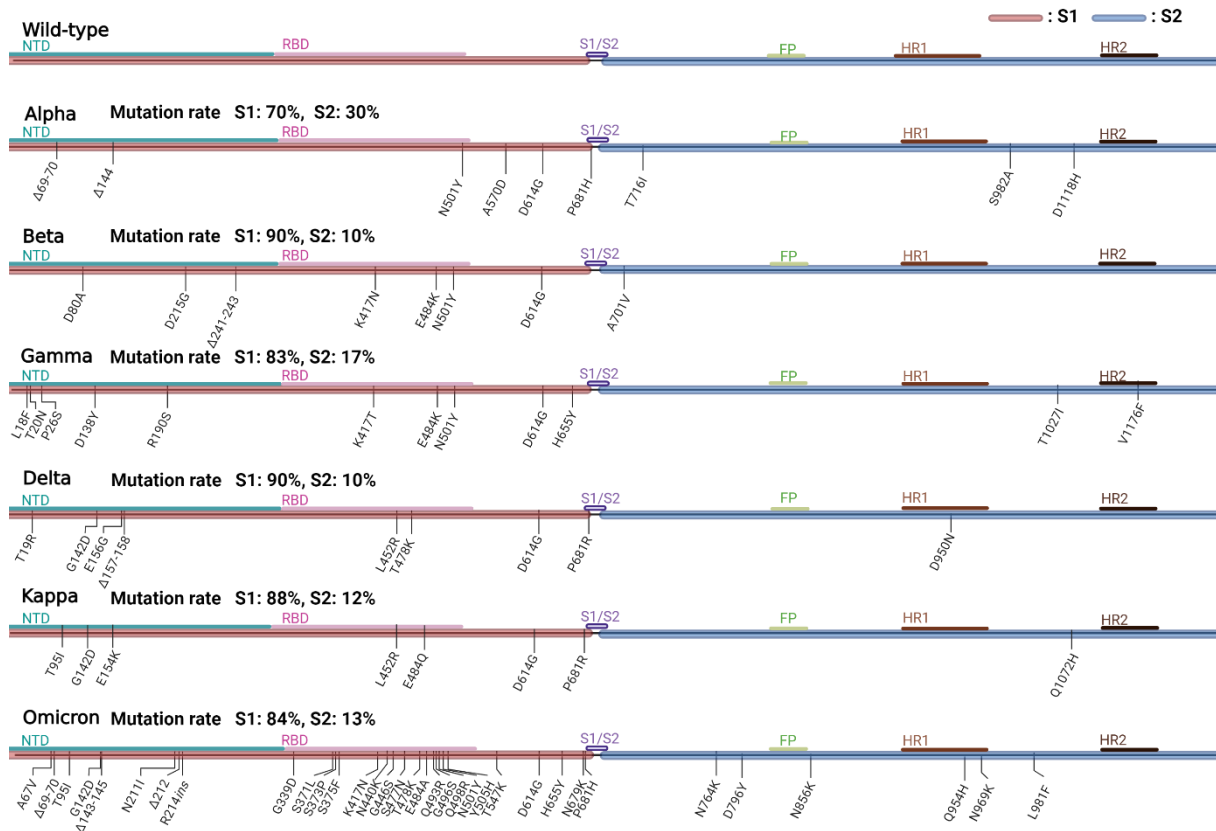


Supplementary Figure S1. Identification of a non-competing antibody pair against SARS-CoV-2 spike protein. Competition ELISA was conducted by pre-incubating SARS-CoV-2 S-ECD with increasing concentrations of isotype control or the selected mAbs, followed by incubating with prepared HRP-conjugated K104.1. All values represented as mean \pm SD of triplicate measurements and represent one out of two independent experiments.



Supplementary Figure S2. The schematic diagram of the spike protein of SARS-CoV-2 wild-type and multiple variants with mutations. Black lines indicate the mutation sites on each S1 and S2 subunit of SARS-CoV-2 spike proteins. Each mutation rate of S1 or S2 subunit within the spike CoV-2 variants are indicated, respectively. NTD: N-terminal domain, RBD: receptor-binding domain, FP: fusion peptide, HR1: heptapeptide repeat sequence 1, HR2: heptapeptide repeat sequence 2.