

Figure S1. Mutations in S protein of SARS-CoV-2 VOCs. Schematic depiction of the locations of amino acid substitutions in the indicated four VOCs. Receptor binding domain (RBD) is shown in blue. N-terminal domain (NTD) is in orange. RBM: receptor-binding motif. SD1: subdomain 1. SD2: subdomain 2. HR1: heptad repeat 1. HR2: heptad repeat 2. TM: transmembrane domain. CP: cytoplasmic domain.

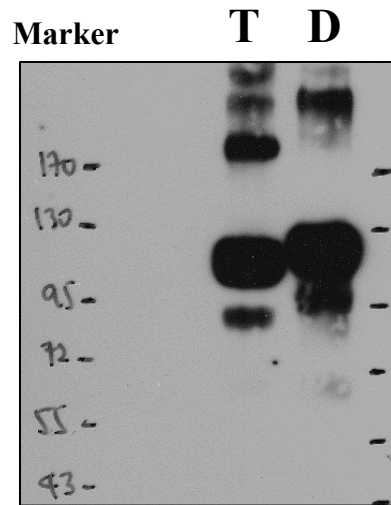


Figure S2. Expression of spike protein from the indicated SARS-CoV-2 strains by Western blotting. Lysates of Vero-E6-TMPRSS2 cells infected by the indicated strains were probed by anti-SARS-CoV-2 S antibodies.

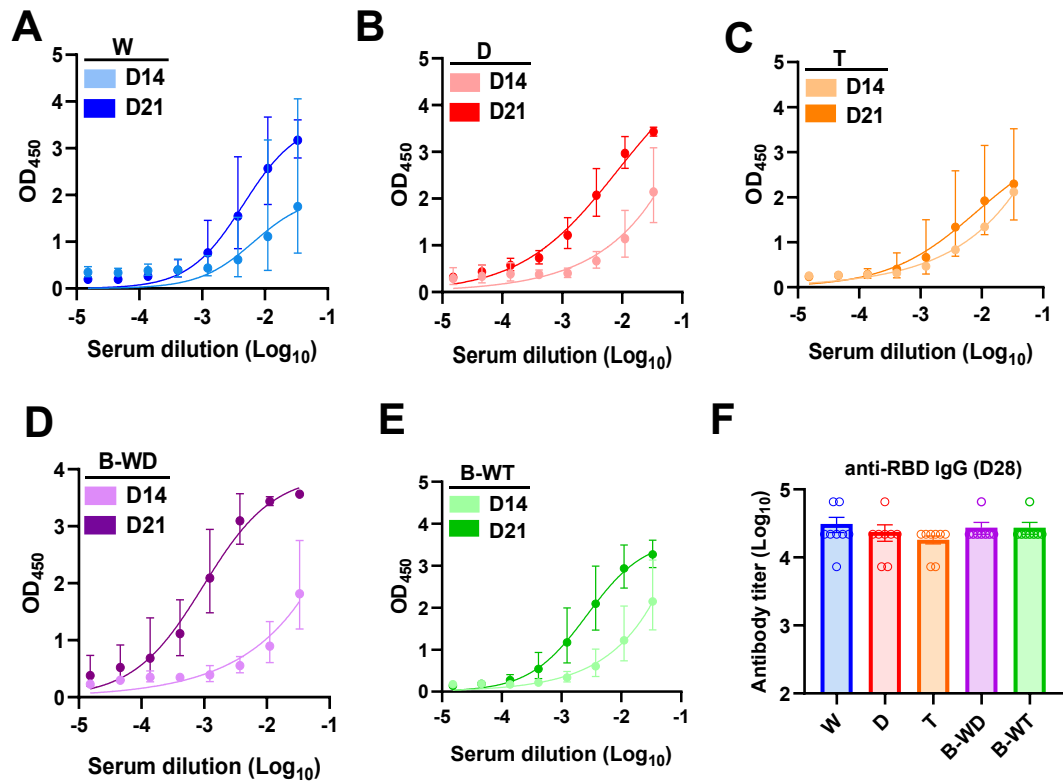


Figure S3. ELISA analysis of antibodies against SARS-CoV-2 RBD for the indicated groups collected at days 14 (D14), 21 (D21) and 28 (D28) post-vaccination. (A-E) IgG antibodies against SARS-CoV-2 RBD in hamsters immunized with the indicated vaccines detected by ELISA. (F) Endpoint titer of antibodies against SARS-CoV-2 RBD for the indicated groups collected at day 28 (D28) post-vaccination as detected by ELISA.

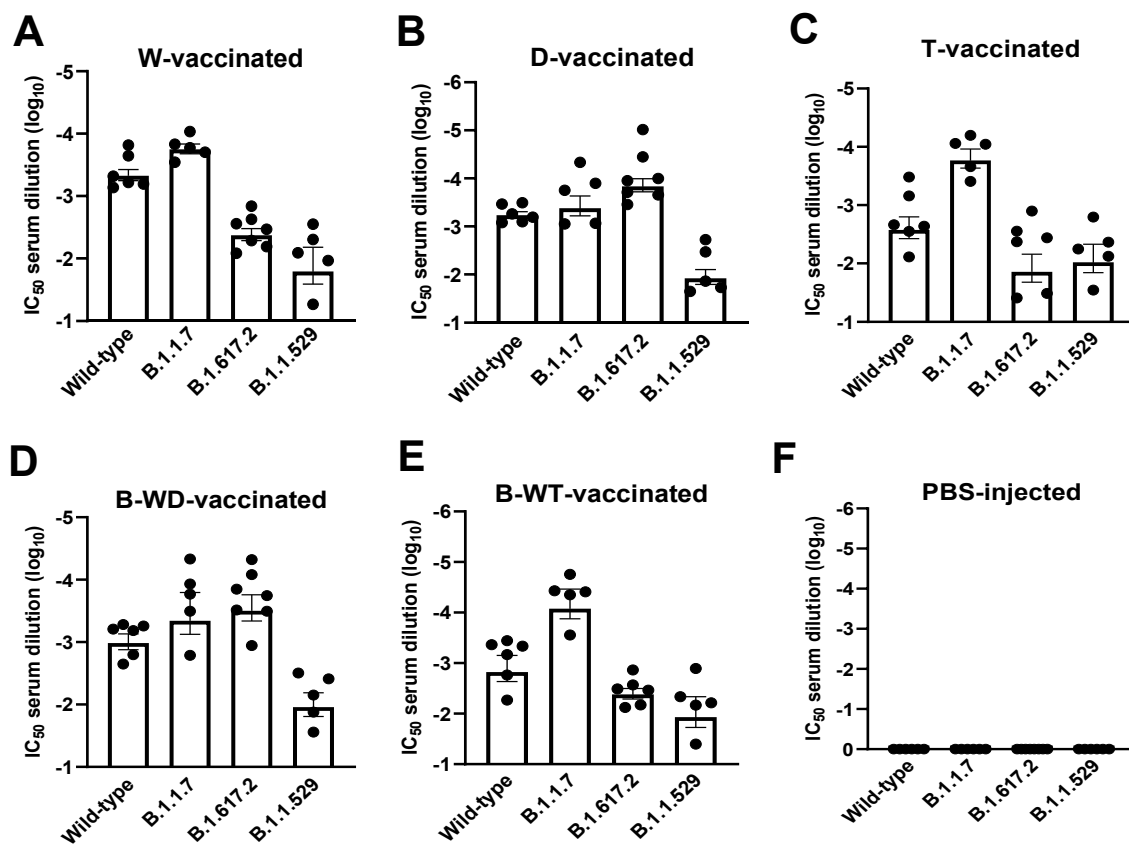


Figure S4. Neutralization activity of the serum samples collected at day 28 post-vaccination from hamsters immunized with the indicated types of inactivated vaccines detected by microneutralization assay.