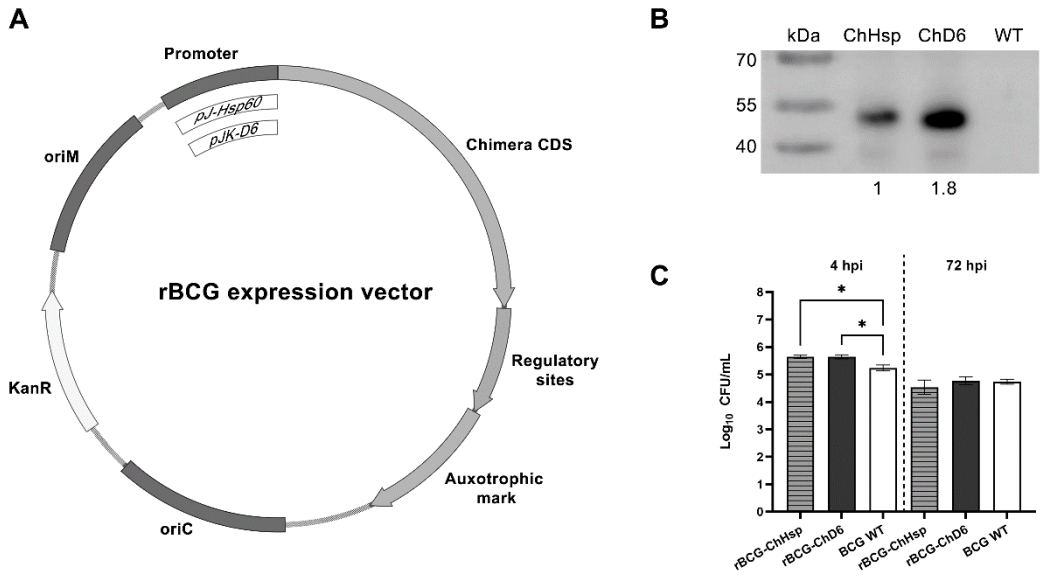
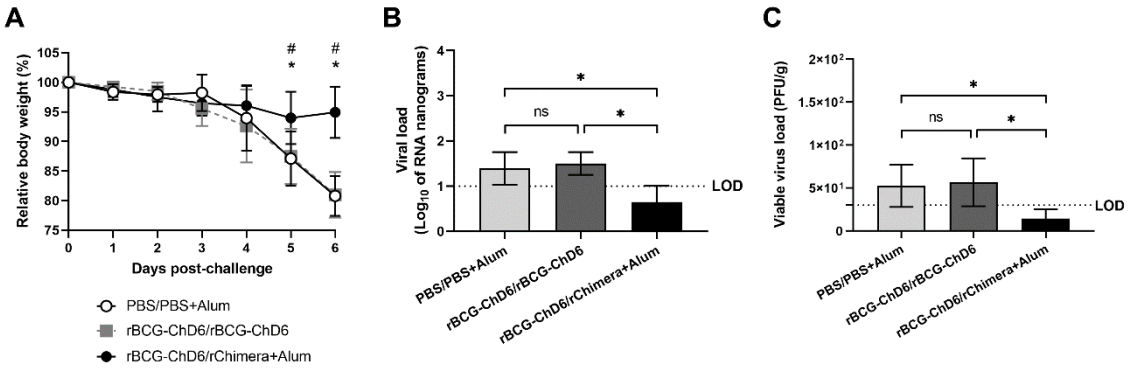


Supplementary Figure 1. Recombinant BCG strains express great amounts of rChimera and replicate well in macrophages. A) Plasmid schematics are represented with regions of interest depicted. Promoters are representative of either *pJ-Hsp60* (P_{Hsp60}) either *pJK-D6* (P_{D6}) plasmids. CDS represents Chimera coding sequence; *oriC* and *oriM* represent the origin of replication in *E. coli* and in *Mycobacterium*, respectively; *KanR* represents a kanamycin resistance maker. **B)** rBCG lysate supernatant preparations were submitted to SDS-PAGE 15% and the membrane incubated with sera (1:200) containing polyclonal anti-rChimera antibodies from mice previously immunized with rChimera. Differential rChimera expression by the rBCG-ChHsp and rBCG-ChD6 is observed at 52.2 kDa and results from densitometry analysis are represented under the proteins, indicating their relative expression levels when comparing one another (ChD6 expression being 1.8 times higher than ChHsp). First lane was loaded with kDa molecular ladder, lanes 2-4 with 10 µg of rBCG-ChHsp, rBCG-ChD6 and BCG WT protein preparations, respectively. **C)** rBCG strains were cultured with BMDMs isolated from C57BL/6 mice for differential uptake and intracellular growth analyses at MOI 5:1. After 4- and 72-hpi, infected cells were lysed, serially diluted and plated on 7H11 agar plates for later CFU counting. Results are presented as Log_{10} CFU/mL ± standard deviation. hpi represents hours post-infection. Statistical analyses were performed using 1-way ANOVA followed by the Bonferroni post-hoc test and * represents *p* value < 0.05. Results are representative of two independent experiments.



Supplementary Figure 2. Homologous rBCG-ChD6 prime-boost immunization is not protective against SARS-CoV-2 infection in K18-hACE2 mice. A) K18-hACE2 mice (n = 5) were immunized subcutaneously at day 0 with PBS or rBCG-ChD6 (s.c.). At day 30, mice were boosted with formulations containing PBS with Alum, rChimera with Alum or rBCG-ChD6. SARS-CoV-2 challenge was performed intranasally at day 50. Mice were observed for the following six days and relative body weight is represented. Statistical analyses were performed using 2-way ANOVA followed by the Bonferroni post-hoc test. * represents statistical difference when rBCG-ChD6/rChimera+Alum group (indicated by black circles connected by straight lines) was compared to PBS/PBS+Alum (indicated by white circles connected by straight lines), # when it is compared to rBCG-ChD6/rBCG-ChD6 (indicated by gray squares connected by dashed lines) (p value < 0.05). **B)** Lungs from mice were harvested at day 56 and processed accordingly. RNA extraction followed by RT-qPCR using 100 ng of total RNA determined the viral load of each sample and is presented as Log_{10} of nanograms of RNA. Alternatively, **(C)** Supernatant from lung homogenates containing viable viruses were serially diluted and used to infect VERO-E6 cells for 1 hour. After applying CMC and letting plaque formation, cells were fixed with formol and stained with crystal violet. PFUs were counted and viable viral titers are represented as PFU/g. Statistical analysis were performed using 1-way ANOVA followed by the Bonferroni post-hoc test and * represents p value < 0.05, while ns represents p value > 0.05. LOD represents the limit of detection for each experiment. Results are representative of two independent experiments.