



Supplementary Fig. S1 Phylogenetic analysis of SARS-CoV-2 related bCoVs and pCoVs. a

Phylogenetic tree of full length nucleotide sequence of bCoVs and pCoVs related to SARS-CoV-2.

The tree were build with iqtree v2.1.3 with 1,000 bootstrap replicates. **b** Pairwise amino acid

sequence identities among pCoV-GD, pCoV-GX and bCoV-Laos compared to SARS-CoV-2. **c** Spe-

cific functional domains of S protein (upper panel). Pairwise amino acid sequence identities be-

tween pCoV-GD01 and pCoV-GX/P2V compared to SARS-CoV-2 in different functional domains

of S protein (bottom panel). SP (signal peptide), NTD (N-terminal domain), RBD (receptor-bind-

ing domain), Linker (Linker of S1 and S2), FP (fusion peptide), HR1 (heptad repeat 1), HR2 (heptad

repeat 2), TM (transmembrane domain), CP (cytoplasmic tail). **d** Genomic comparison of pCoV-

GD, pCoV-GX and bCoV-Laos with SARS-CoV-2 in RBD region.