

Supplementary Materials:

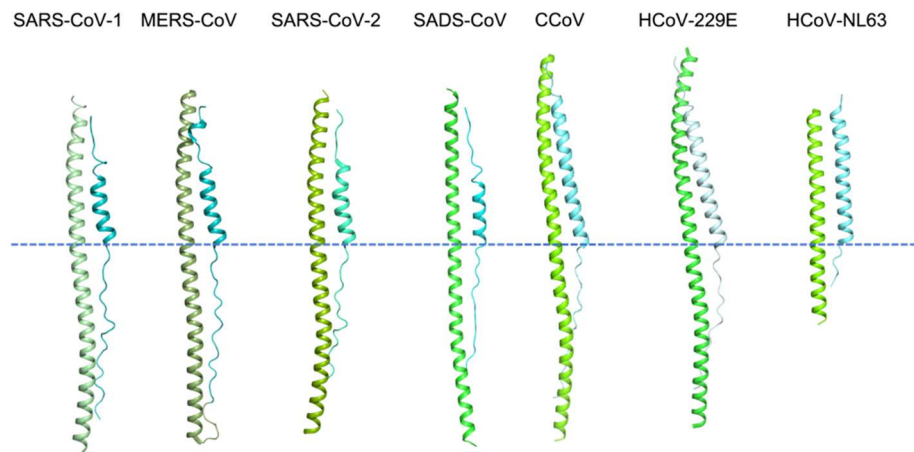


Figure S1. HR2 monomers from representative coronaviruses. SARS-CoV-1 (PDB entry: 2BEZ), MERS-CoV (PDB entry: 4NJL), SARS-CoV-2 (PDB entry: 6LXT), HCoV-229E (PDB entry: 5YL9), HCoV-NL63 (PDB entry: 2IEQ) and two our structures.

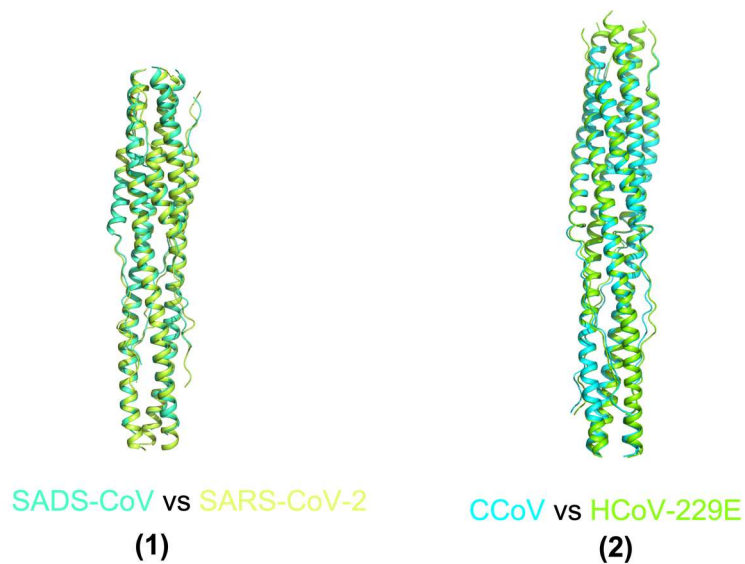


Figure S2. (lemon) Fusion cores (1) and CCoV-HuPn-2018 (cyan) and HCoV-229E (chartreuse) fusion cores (2), using SARS-CoV-2 (PDB entry: 6LXT) and HCoV-229E (PDB entry: 5YL9) as reference, respectively.

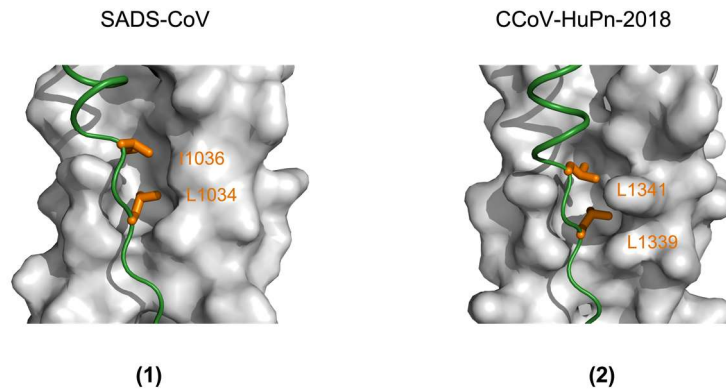


Figure S3. Trimer with residues L1034 and I1036 (SADS-CoV) (1) or L1339 and L1341 (CCoV-HuPn-2018) (2) from HR2 pointing toward it.

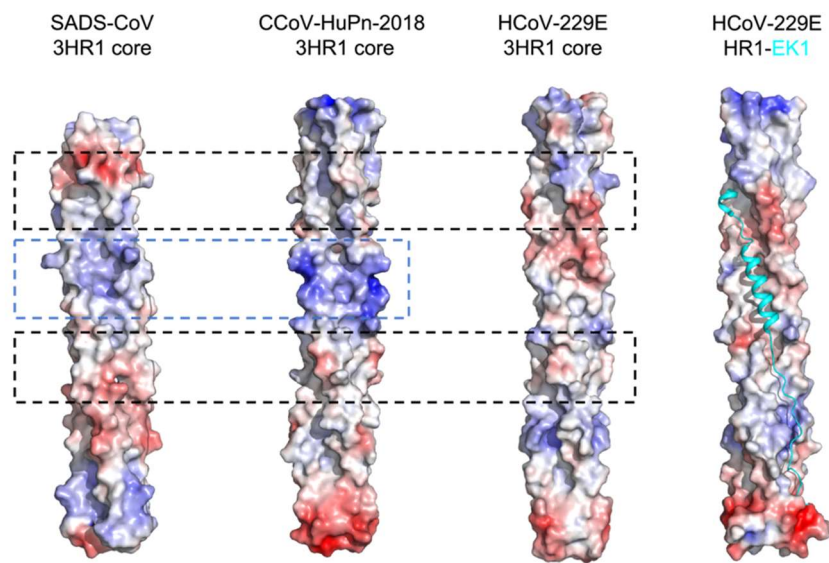


Figure S4. HR1 core from SADS-CoV, CCoV-HuPn-2018 and HCoV-229E. The black dashed boxes depict the regions on different 3HR1 cores where the electrostatic surface potentials are similar among three α -HCoVs, while the blue dashed boxes depict the regions on 3HR1 cores where the electrostatic surface potentials are similar in two α -HCoVs. Structure of HR1-EK1 6-HB is shown on the right panel as electrostatic surface (3HR1) and ribbon (EK1, cyan).