

Figure S1. RBD and S protein ELISA reactivity with plasma from healthy donors.

The reactivity of healthy human plasma against SARS-CoV-2 RBD and S protein was assessed by ELISA assay.

Name	Sequence
316-549(RBD)	SNFRVQPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRRKRISNCVADYSVLVNSASFSTFKCYGVSPTKLNDLCFTNVYADSFVIRGDEVQRQIAPGQTGKIADYNYKLPPDFTGCVIAWNSNNLDSKVGGNYYLYRLFRKSNLKPFERDISTEIYQAGSTP CNGVEGFNCYFPL LQSYGFQPTNGVGYPYRVVLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTESNKKFLPFQQFGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQDVNCTEVPVAIHADQLTPTWRVYSTGSNVFQTRAGCLIGAEHVNNSYECDIPIGAGICASYQTQTNSPRRARSVASQSIIAYTMSLGAENSVAYSNNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYICGDSSTECNLLLQYGSFCTQLNRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQILPDPSKPSKRISFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFNGLTVLPPL
S-316-415	SNFRVQPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRRKRISNCVADYSVLVNSASFSTFKCYGVSPTKLNDLCFTNVYADSFVIRGDEVQRQIAPGQT
S-346-445	RFASVYAWNRRKRISNCVADYSVLVNSASFSTFKCYGVSPTKLNDLCFTNVYADSFVIRGDEVQRQIAPGQTGKIADYNYKLPPDFTGCVIAWNSNNLDSKV
S-376-475	TFKCYGVSPTKLNDLCFTNVYADSFVIRGDEVQRQIAPGQTGKIADYNYKLPPDFTGCVIAWNSNNLDSKVGGNYYLYRLFRKSNLKPFERDISTEIYQA
S-406-505	EVRQIAPGQTGKIADYNYKLPPDFTGCVIAWNSNNLDSKVGGNYYLYRLFRKSNLKPFERDISTEIYQAGSTP CNGVEGFNCYFPL LQSYGFQPTNGVGYPYRVVLSFELLHAPATVCGPKKSTNLVK
S-436-535	WNSNNLDSKVGGNYYLYRLFRKSNLKPFERDISTEIYQAGSTP CNGVEGFNCYFPL LQSYGFQPTNGVGYPYRVVLSFELLHAPATVCGPKKSTNLVK
S-466-549	RDISTEIYQAGSTP CNGVEGFNCYFPL LQSYGFQPTNGVGYPYRVVLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLTGT
S-466-485	RDISTEIYQAGSTPCNGVEG
S-476-495	GST PCNGVEGFNCYFPL LQSY
S-486-505	FNCYFPLQSYGFQPTNGVGYPYRVVLSFELLHAPATVCGPKKSTNLVK
S-476-486	GSTPCNGVEGF
S-476-487	GSTPCNGVEGFN
S-476-488	GSTPCNGVEGFNC
S-476-489	GSTPCNGVEGFNCY
S-476-490	GSTPCNGVEGFNCYF
S-476-491	GSTP CNGVEGFNCYFPL
S-476-492	GSTP CNGVEGFNCYFPL
S-476-493	GSTP CNGVEGFNCYFPL Q
S-476-494	GSTP CNGVEGFNCYFPL QSY
S-476-495	GSTP CNGVEGFNCYFPL QSY
S-477-495	STP CNGVEGFNCYFPL QSY
S-478-495	TP CNGVEGFNCYFPL QSY
S-479-495	P CNGVEGFNCYFPL QSY
S-480-495	CNGVEGFNCYFPL QSY
S-481-495	NGVEGFNCYFPLQSY
S-482-495	GVEGFNCYFPLQSY
S-483-495	VEGFNCYFPLQSY
S-484-495	EGFNCYFPLQSY
S-485-495	GFNCYFPLQSY
S-486-495	FNCYFPLQSY

Table S1. The summary of SARS-CoV-2 RBD and truncated peptide sequences.

The sequences recognized by 9E1 are colored in red.

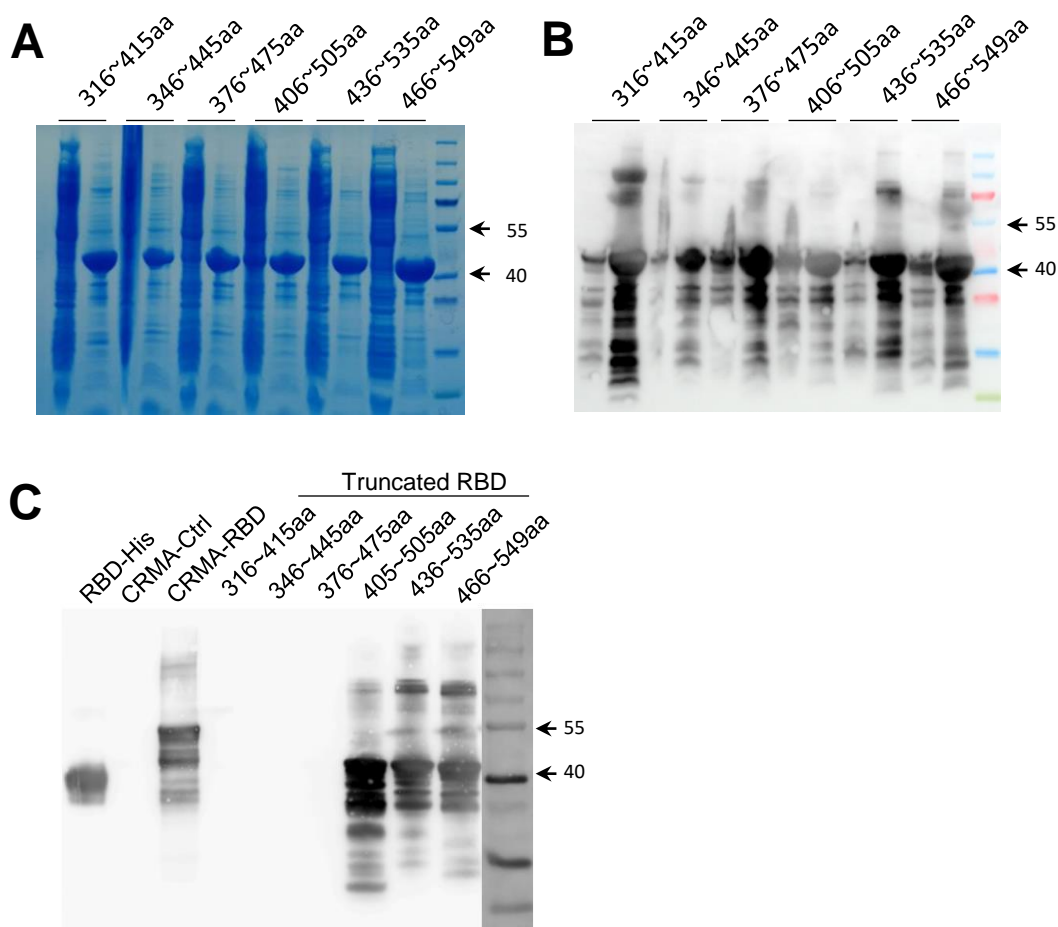


Figure S2. Analysis of recombinant CRMA-fused truncated RBD proteins.

CRMA-fused truncated RBD proteins were evaluated by SDS-PAGE(A) and Western blot(B) with anti-His polyAb. CRMA-fused protein plasmids were transformed into *E.coli* ER2566 and induced by IPTG for 8 hours. For a truncated protein, the left lane represented supernatant of induced *E.coli* after ultrasonication and the lane right represented inclusion body of induced *E.coli* after ultrasonication.

(C)Western blot analysis of 9E1 against CRMA-fused truncated RBD proteins.RBD-His expressed by 293F and CRMA-RBD expressed by *E.coli* were used as positive control. CRMA protein was used as negative control. 9E1 was diluted at 1μg/mL.

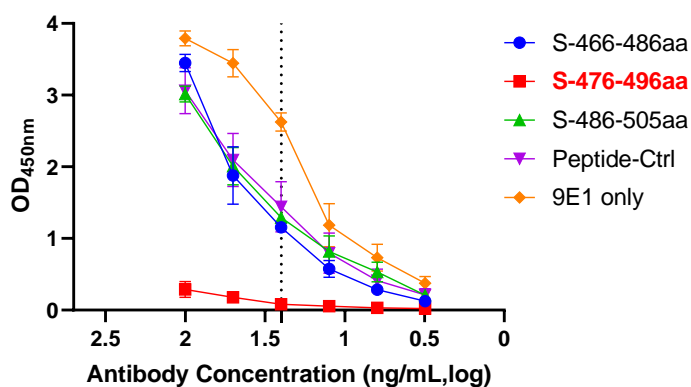
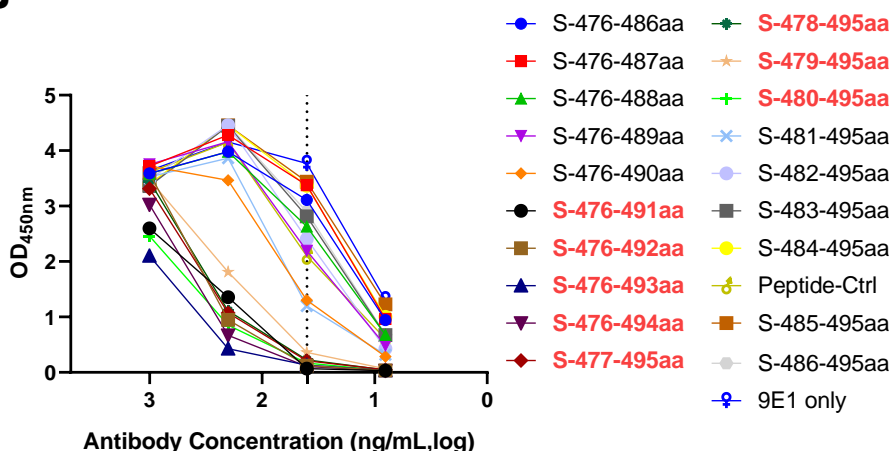
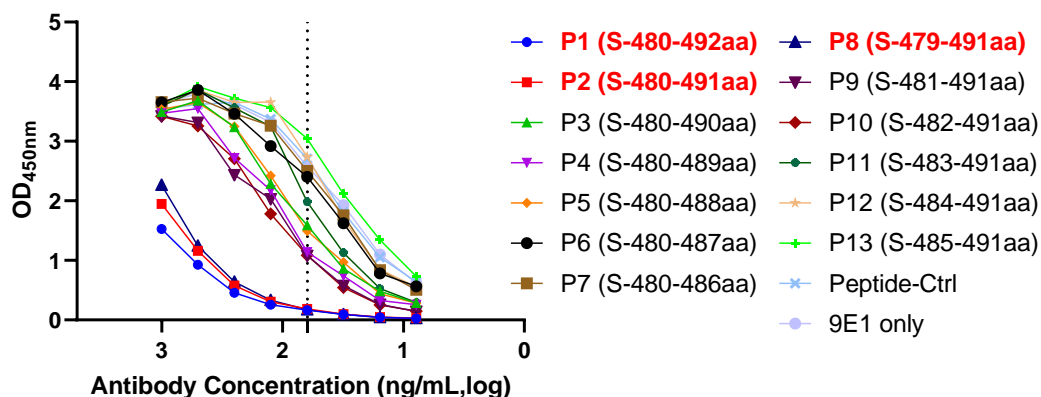
A**B****C**

Figure S3. Competition ELISA of 9E1 against truncated peptides.

Synthesized peptides(1 μ g) were precubated with 9E1-HRP and the reactivity of the mixture was evaluated with ELISA assay as described in Materials and Methods. The OD values marked by dotted lines were display in Figure 4.

Figure S5

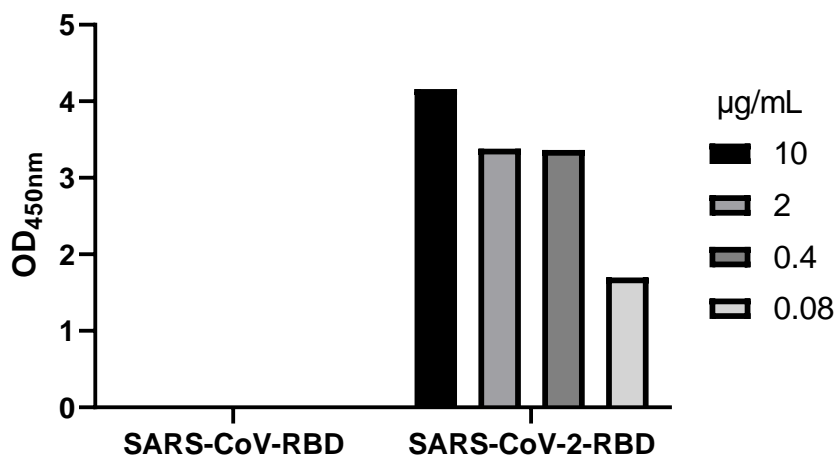


Figure S4. ELISA reactivity of 9E1 against SARS-CoV RBD protein.

9E1 was serially diluted and evaluated for reactivity against SARS-CoV-2 and SARS-CoV RBD proteins.

1 10 20 30 40 50 60 70
SARS-CoV-2MFVFVLLPLVSS...QCVNLTRTQLPFAAYTNSFTRGVYYPDKVFRRSSVLHSQTQDLFLPFPSNVTFWFHAIHVS...N
SARS-CoVMFIFLFLTLTSGSGLDRCTTFDDVQAPNYTQHTSSMRGVYYPDEIFRSDTLYLTLQDLFLPFPSNVTFGFHTLNHT.....
HCoV-OC43MFLTLTLTAFVIGDLKCTSDNINDKDTGPPFISTCTVGVNGLGTYYVLDRLVYLTNTLTLFLNGYYPTSGSTYRNMAKGSVLL
HCoV-HKU1MFLTLTLTAVIGDPNCTNSFINDYNNKTIIPRISEJVDVSLGLGTYYVLNRYVLTNTLTLFTGYFPKSGANFRDLAKGSYIL
HCoV-229EMKLFLTLTLVPLASCFCTCNSNANSMILQLGVPDSSSTIVTGLPTHRWFCANQSTSVYSANGEFYTDVGNHRSAPALHTGY
HCoV-NL63MKLFLTLTLVPLASCFCTCNSNANSMILQLGVPDSSSTIVTGLPTHRWFCANQSTSVYSANGEFYTDVGNHRSAPALHTGY
MERS-CoV MIESVFLMLTLTPTESYVDVGPDSVKSACIEVDIQQTFFDKTWPRIPIVSKADGIIYVQGRYTSNITLITYQGLFPYQGDHGDYVYSAGHAT

80 90
SARS-CoV-2 GTRKFDN?VLPFNDG.....VY
SARS-CoVFGN?VLPFKDG.....IY
HCoV-OC43 SRLWFKPPFLSDFIN.....GI
HCoV-HKU1 STLWYKPPFLSDFNN.....GI
HCoV-229E
HCoV-NL63 DANQYLYIVTINIGLNASVTKICKFSRNTTFDFLSNASSSFDCLVNLFLTEQGAPLGITISGETVRLHLYNVTRFYPVPAAYKCLKLSVKC
MERS-CoV GTTPQKLFVANYSQDVRFQFANG.....FVVRIGAAANSTGTVIISP

100 110 120 130 140 150 160 170 180
SARS-CoV-2 FASTEKSNIIRGWIFGTTLDSKTQSLIIVNNATNVVILKVCLEFQFCNDPFLGVYHKNNKSWMESERFVYSSANNCTFEYVSQPFLLMDLEGKQG
SARS-CoV FAATEKSNVVRGWVFGSTMMNKSSQSVIIINNSTNVVILRACNFELCNPFFAVSKPMG...TQHTMIFDNFNACTFEYISDAFSLDVSEKSG
HCoV-OC43 FARVKNTKVIKDRVMYSEFPATITIGSTFVNNTSYSVVVQPRITNSTQD.GDNKLGILEVSVCCVNMCEYPQTICHPNLGNHRKELWHLDTGVV
HCoV-HKU1 FSKVKNTKLYVNNNTLYSEFSTIVIGSVFVNNTSYTIVVQP.....HNGILEITACQYTMCEYPHTVCKS.KGSIRNESWHIDSSEP
HCoV-229E ...MFVLLVAYALLHIAACQTTNGLNTSYSYCNCGCVGYSENVFAVESGGYIPSDFAFNWFLLTNTSSVVDGVVRSFQPLLNLCLWSVGLRF
HCoV-NL63 YPNYSQVSVVNNATVTVNVTITNNGRVVNYTYCDDCNGYIDNLFVSQODGRLPNGEFFFNWFLLTNGSILVDGVSRLYQPLRLTCLWVPCLSK
MERS-CoV STSATIRKLYPAPMLGSSVGNFSDBGMRGFNHTLVLLLPDGCCTLLRAFYCILEPRSGNHCPACONSYYSFATYHTPATDCSGNYNRNASLNS

190 200 210 220 230 240 250 260 270
SARS-CoV-2 NFKNLRFTVFKNIDGVFKIYSKIHTPINLVRDLPGQGSALERLVDLPLGINITRFTLLALERSYLT...PGDSSSGWTAGAAAYVGYLQF
SARS-CoV NFKHLREFTVFKNKDGLVYVKCYQPIDVVRDLPSGFNTLKEIFKLPLGINITNFRAILTAFS.....PAQDIWGTSAAYVFCYLLKLP
HCoV-OC43 SCLYKRNFTYDVNADLYFHFYQEGGTFYAYFTDTGVVTKELFNVYLGMLLSHYVVMPLTCN.....SKLT.....LEYWVTPLLTS
HCoV-HKU1 LCLFKKNTTYNVSADLYFHFYQERGTFYAYADVCMPITELFSLYLGLTILSHYVVMPLTCN.....AISNIDKNETLEYWVTPLLSR
HCoV-229E TTEGFVYFNGTGRGD.CKGFSSDVLSDVIRYNLNFEN...LRRGTILFKTSYGVVVFYCTN.....NTLVSGDAHIFFGTIVLGNF
HCoV-NL63 STGEFVYFNATGSDVNCNGYQHSVVDVMRYNLNLFANSCLDNLKSGLVIVFKLQYDVLLEYCSN.....SSSGVLDHTIPFGPSSQPY
MERS-CoV KKEVFNLRNCTFMYTYNITTEDEILEWFGITQTAQGVHFLSSRYVDLYCGNMFQFATLPPVYDTIKYYSITPHSTRSTQSDRKAAAFVYKYLQF

280 290 300 310 320 330 340 350 360
SARS-CoV-2 RTFLLKYNNENGITTDAVDCALDPLSEETKCTLKSTFVERGIYQTSNFRVQPCESIVRFPNITNLCPFGFVFNATRFASVYAWNRKRISNCVADY
SARS-CoV RTFMLKKYDENGITTDAVDCSSQNPFLAEIKCSVKSFETDKGIYQTSNFRVQPCESIVRFPNITNLCPFGFVFNATKFPVSYAWNRKRISNCVADY
HCoV-OC43 RQYLLANQDGTIFNAEDCMSDFEIKCKTQSIAPPKTGYVELNGYITVQPIADVYRRKPNLPNCNIEAWLNDKSVSPFLNWERKRTFNCNFM
HCoV-HKU1 RQYLLANQDGTIFNAEDCMSDFEIKCKTQSIAPPKTGYVELNGYITVQPIADVYRRKPNLPNCNIEAWLNDKSVSPFLNWERKRTFNCNFM
HCoV-229E RQYLLANQDGTIFNAEDCMSDFEIKCKTQSIAPPKTGYVELNGYITVQPIADVYRRKPNLPNCNIEAWLNDKSVSPFLNWERKRTFNCNFM
HCoV-NL63 YCFINSTITNTIVSTFVCILPPIVREIVVARTCQFYINGCYFDFGLFIEAVNFNVTTIASATDFTVAFATFVDVLVNVVSATNQNLLYCDSPF
MERS-CoV LTFLLDFSVDGIVRRRVIDCAGFNDLSQLHCSYEFSDVRESGVYSVSEFAKESGSGVVEQAAGVECCFSPILSG...TPPQVYVNFRLVFTNCNYNL

370 380 390 400 410 420 430 440 450
SARS-CoV-2 SVTYNNSASFSTFKCYCVSPTRKNDLCTFTNVYADSFVIRGDEVROITAPGQTGKIADYNYKLPDDFTTCVIAWNSNNLDSKVG...GNINYLYR
SARS-CoV SVTYNNSFTFFSTFKCYGVSAATKLNLDLCTFSNVYADSFVIRGDDVROITAPGQTGVIADYNYKLPDDFMGCVLAWNTRNIDATST...GNINYKYR
HCoV-OC43 SSIMSFIAQDSFTCNNDIAAKIYGMCFSSITIDKFAIPNGRKVDLQLGNLGYLQSFNYRIDTTATSCOLYYNLFAANVSVRFNPSVWNRRYRG
HCoV-HKU1 STDLRLVHVDSFSCNNLDKSKIFGSCFNSITVDKFAIPNRRRDDQLGSGSGFLQSSNYKIDISSSSCOLYYSLPLVNVTTIKYFNPSVWNRRYRG
HCoV-229E NRRRCQDQLSDFVDFGFTSTPISQSVLPLVSIIVSLPVIYHKHTFIVLYVDFKPKQSGGKCFNCPYAGVNNITLANFNETKGPLCVDTSHTTKYV
HCoV-NL63 ERLQCEHLQFGLQDGFYSANPLDDNVLP.ETTYVALPIYYQHTDINTATAS...FGGSCYVCKPHQVNNISLN...GNTSVCVRTSFSIRYI
MERS-CoV TRKLLSLFSVNDFTCSQISPAALASNCYSSLLDYFESYPLSKSDDLVSVSAGPIITQFNYKQSFSNPTCLILATVPHNLTITIKPLKYSYINKCS

460 470 480 490 500 510
SARS-CoV-2 LFRKSNLKFPERDISTEIIYQAGSTPENGVEGNCYFELQSYGFGPTNGVG.....YQPYRVVVLSEFL
SARS-CoV YLRHGKLPFERDISNVPPSPDGKPCET.PPALNCYWLNDYGVGYITTGIG.....YQPYRVVVLSEFL
HCoV-OC43 FIEDSVFKPRPAGVLTNHDVVYAQHCFAKPNKFCCKLNGSCVGSQPGKNNIGITCPAGTNYLTCDN.....LCTPDPITCTGTGY
HCoV-HKU1 FGSENLNLS...SYDMVYSDECFSVNSDFCPADP.SVNSSCAKRPPSAICPAGTKYRCDLDTLYVKNWCRCSCLPDPITSTYSPT
HCoV-229E AVYANVG...RWSASINTGNCFFSPGKVNNEVFKPCSVCSLKDIPGCCAMPVAN.....WAYSKEYITGSLYVS
HCoV-NL63 YNRVKSQSGPDSSWHYLYKSGTCPPBFSKLNFPQKPTTICFTSTVFVPGCCNFPK.RAT.....WHYSYTYIGATVYV
MERS-CoV RLLSDRTEVPQLVNAQYISPCVSIYFSTVWEDGMYRKQLSPLLEGGLWVASSTVAMT.....EQQLQMCGGITVQY

520 530 540
SARS-CoV-2 LHAPA**TV**CGP.....KKS**TN**L**V**KN**K****CV**N**FN**FN
SARS-CoV LHAPA**TV**CGP.....KLS**TD**L**L**KN**K****CV**N**FN**FN
HCoV-OC43 CPQ**TK****SL**V**G**IG**EH**CS**GL**AV**KSD**Y**CG**NS.....CTCR**PQ**AE**L**GW**SAD**SC**LQ**GD**KCN**IFAN**FIL**H**DV**NS**GL**TC**SD**LQ**KAN****TD**L**L**GV**CV**N**YD**LY
HCoV-HKU1 CPQ**KKV**V**G**IG**EH**CP**GL**INE**EC**GT**QL**NH**SS**CF**SP**DA**FL**GW**SF**DS**IS**NN**RC**NI**FS**NI**FI**NG**INS**GT**CS**ND**LL**Y**NT**E**IS**TV**CV**N**YD**LY
HCoV-229E WSD**GD**G**IT**G**VP**Q**P**VE**G**.....VSS**FM**K**VT**L**KC**IT**KY**NI**Y**
HCoV-NL63 W**SF**GN**S**IT**G**VP**Y**PS**G**.....ITREF**SN**L**V**LN**NC**IT**KY**NI**Y**
MERS-CoV GTD**TN****SV**CP**E**K**L**E**FAN**.....DTK**IA**S**QL**GN**CV**E**YS**LY

550 560 570 580 590 600 610 620 630
SARS-CoV-2 GL**TCT**GV**LT**ES**NKK**FL**P**.F**Q**Q**FR**D**TD**T**T**AV**RD**P**OT**LE**ILD**IT**PC**S**F**GG**VS**VI**TP**GT**NT**SN**QV**AV**LY**Q**D**V**NC**TE**VP**FA**I**H**AD**Q**L**T**P**TR**W**Y**Y**
SARS-CoV GL**TCT**GV**LT**PS**SK**R**F**Q**P**.F**Q**Q**FR**D**VS**D**FT**DS**VR**D**PK**TSE**ILD**IS**PC**S**F**GG**VS**VI**TP**GT**NT**AS**SE**V**AV**LY**Q**D**V**NC**TD**V**ST**AI**H**AD**Q**L**T**P**AW**RI**Y**
HCoV-OC43 GI**IC**Q**CI**F**VE**V**N**AT**Y**Y**NS**W**Q**N**LL**Y**DS**NG**N**LY**CF**RD**Y**I**IN**RT**FM**IR**SC**Y**S**GR**VS**AA**F**AN**..**SS**EP**AL**L**FR**NI**CK**NY**V**FN**NS**L**TR**Q**L**P**IN**Y**FD
HCoV-HKU1 GI**TC**Q**CI**F**KE**VS**AA**Y**Y**NN**W**Q**N**LL**Y**DS**NG**N**LI**G**FK**DE**L**IN**K**I**Y**IT**L**PC**Y**S**GR**VS**AA**PY**QN**..SS**SP**AL**L**Y**R**N**L**K**C**SY**V**LN**..**IS**F**IS**Q**P**Y**FD
HCoV-229E D**VS**GV**GV**LR**VS**ND**T**FL**N**..G**IT**Y**TS**GN**L**G**FK**D**VT**K**GI**Y**SI**TP**CN**FP**D**Q**L**V**Y**Q**Q**AV**V**G**AM**L**SEN**TS**Y**GF**SN**V**EL**PK**FF**Y**AS**NG**T**Y**NC**
HCoV-NL63 D**Y**V**GT**GT**L**RS**SN**Q**SL**AG**..**G**IT**Y**VS**NS**GN**L**G**FK**N**V**ST**GN**IF**IT**PC**N**FP**D**Q**V**AV**Y**Q**Q**SI**IG**AM**T**AV**NE**S**RY**GL**Q**N**L**QL**P**FF**Y**VS**NG**G**NC
MERS-CoV G**VS**GR**GV**F**Q**NC**T**AV**GV**R**..**Q**Q**RF**V**Y**D**AM**Q**N**L**V**G**Y**S**DD**G**NY**Y**CL**AC**VS**VE**VS**VI**Y**D**KE**TK**TH**AT**L**EG**S**V**ACE**HI**SS**IM**S**Q**Y**S**RS**TR**SM**L**K**R**RD

640 650 660 670 680 690 700 710 720
SARS-CoV-2 ST**GS**N**V**F**Q**TR**AG**CL**IG**AE**H**V**NS**Y**E**CD**IP**IG**AG**IC**AS**Y**Q**QT**NS**FR**ARS**VS**AS**Q**SI**AY**TM**SL**GA**EN**SV**AYS**NN**...**S**IA**IP**T**N**FT**IS**VT**BE**
SARS-CoV ST**GS**NN**V**F**Q**TA**GC**CL**IG**AE**H**VD**TS**Y**E**CD**IP**IG**AG**IC**AS**Y**HT**VS...**L**LR**ST**S**Q**KS**IV**AY**TM**SL**G**AD**SS**I**AY**SN**..**...**I**AI**PT**N**FS**IS**IT**TE
HCoV-OC43 SY**L**GC**V**Y**N**AY**N**...**S**TA**IS**V**QT**CD**LT**V**GS**GY**CV**D**YS**K**..**N**RR**SR**GA**IT**T**GY**RF**T**NE**FP**FT**V**NS**V**ND**S**LE**PW**GG**L**VE**I**Q**IP**SE**FT**IGN**MY**E**
HCoV-HKU1 SY**L**GC**V**Y**N**AV**N**...**L**TS**Y**SV**SS**CD**LR**MS**SG**FC**ID**Y**AL**P**SS**R**R**K**R**RG**IS**SP**Y**RF**VT**TE**FP**FN**VS**F**V**ND**S**VE**TV**GG**L**FE**I**Q**IP**T**N**FT**IA**GH**BE**
HCoV-229E TDA**VL**TY**VS**FG...**V**CAD**GS**IA**AV**Q**PN**VS**YD**SV**AI**VT**AN**...**L**SS**IP**SN**WT**TS**VQ**VE
HCoV-NL63 TTA**VM**IT**YS**NG**..**...**L**CAD**GS**L**IP**VR**PN**KS**SD**NC**IS**AI**TAN**...**L**SS**IP**SN**WT**TS**VQ**VE
MERS-CoV ST**Y**GP**L**Q**TP**V**GC**V**L**GL**V**NS**SL**F**VED**CR**LP**L**Q**Q**SL**CA**LP**DT**FT**SL**TP**RS**VR**SV**PE**MR**LA**SI**AF**N**HP**I**Q**V**D**Q**LN**SY**..**FK**LS**IP**T**N**FS**FG**V**Q**BE**

730 740 750 760 770 780 790 800
SARS-CoV-2 IL**FP**VS**MT**K**TS**VD**CT**MY**IC**GD**ST**E**CS**N**LL**LO**Y**GS**FC**IT**QL**N**R**AL**TG**TA**VE**Q**D**KN**TQ**EV**FA**Q**V**K**Q**...**I**Y**K**TP**FP**IK**DF**GG**FN**EQ**IL**PD**...**
SARS-CoV VMP**VS**MA**K**TS**VD**CN**MY**IC**GD**ST**E**CAN**LL**LO**Y**GS**FC**IT**QL**N**R**AL**SG**IA**AE**Q**DR**NT**RE**V**FA**Q**V**K**Q**...**I**MY**K**TP**FP**IK**DF**GG**FN**EQ**IL**PD**...**
HCoV-OC43 FI**QT**SS**PK**VT**ID**CA**AF**Y**CG**D**Y**AA**CK**SL**VE**Y**GS**FC**IN**IN**AL**TE**VE**N**ELL**D**IT**Q**Q**V**AN**SL**LM**GV**TL**ST**KL**K**D**GV**FN**V**D**DI**NE**SP**VL**GC**LG**SE
HCoV-HKU1 FI**QT**SS**PK**VT**ID**CA**AF**Y**CG**D**Y**AA**CK**SL**VE**Y**GS**FC**IN**IN**AL**TE**VE**N**ELL**D**IT**Q**Q**V**AN**SL**LM**GV**TL**ST**KL**K**D**GV**FN**V**D**DI**NE**SP**VL**GC**LG**SE
HCoV-229E YL**Q**IT**TS**TP**IV**VO**CT**Y**VC**NG**N**VR**CV**EL**L**K**Q**Y**TS**ACT**IED**AL**R**NS**AR**LE**S**AD**VS**E**ML**TD**DK**...**A**FT**LAN**V**TS**FG**D**Y**NE**SS**VP**SL**PT**S
HCoV-NL63 YL**Q**IT**TS**TP**IV**VO**CT**Y**VC**NG**N**VR**CV**EL**L**K**Q**Y**TS**ACT**IED**AL**R**NS**AR**LE**S**AD**VS**E**ML**TD**DK**...**A**FT**LAN**V**TS**FG**D**Y**NE**SS**VP**SL**PT**S
MERS-CoV YI**Q**IT**TI**Q**K**VT**VD**CK**Q**Y**VC**NG**F**Q**K**CE**QL**LR**Y**Q**GF**CS**K**IN**Q**AL**H**GAN**L**R**Q**DD**SV**R**N**L**F**AS**V**KS...**S**Q**SS**PI**TP**EG**GD**EN**TL**TL**LE**FP**VS**TS

810 820 830 840 850 860 870 880 890
SARS-CoV-2 .**S**K**P**SR**RS**F**IED**LL**FN**K**V**IL**AD**AG**..**FI**K**Q**Y**GD**CL**GD**..**IA**ARD**L**IC**AO**K**FN**GL**V**LP**PL**L**TD**EM**IA**Q**Y**T**S**ALL**AG**TI**TS**GW**TF**GA**GA**AL**Q**IP**F
SARS-CoV .**I**K**PT**TK**RS**F**IED**LL**FN**K**V**IL**AD**AG**..**FM**K**Q**Y**GF**CL**GD**..**IA**ARD**L**IC**AO**K**FN**GL**V**LP**PL**L**TD**EM**IA**Q**Y**T**S**ALL**AG**TI**TS**GW**TF**GA**GA**AL**Q**IP**F
HCoV-OC43 CG**SS**SS**..**RS**LL**ED**LL**FN**K**V**K**L**SD**VG**..**F**VE**AY**NN**CT**GC**..SE**IR**DL**IC**VO**S**Y**K**GI**V**LP**PL**L**SE**Q**IS**GY**TL**AA**TS**AS**L**FP**P**WS**AA**AG**...**VP**F**
HCoV-HKU1 CG**SS**SS**..**RS**LL**ED**LL**FN**K**V**K**L**SD**VG**..**F**VE**AY**NN**CT**GC**..SE**IR**DL**IC**VO**S**Y**K**GI**V**LP**PL**L**SE**Q**IS**GY**TL**AA**TS**AS**L**FP**P**WS**AA**AG**...**VP**F**
HCoV-229E GS**RV**AG**RS**AI**ED**LL**FS**KL**V**TS**GL**TV**D**AD**Y**KK**CT**K**G**..LS**IA**DL**ACA**Q**Y**NG**IN**V**LP**GV**DA**DA**ERM**AM**Y**TS**GL**IG**IAL**GL**TS**AV**S**...**I**PF
HCoV-NL63 SS**RI**AC**RS**AI**ED**LL**FS**KL**V**TS**GL**TV**D**AD**Y**KK**CT**K**G**..LS**IA**DL**ACA**Q**Y**NG**IN**V**LP**GV**DA**DA**ERM**AM**Y**TS**GL**IG**IAL**GL**TS**AV**S**...**I**PF
MERS-CoV TG**SR**SS**RS**AI**ED**LL**FD**R**V**TI**AD**AG**..**Y**MO**Q**Y**DD**CM**Q**GP**AS**ARD**L**IC**AO**Y**V**AG**Y**V**LP**PL**MD**V**N**FE**AT**TS**LL**GS**IA**GV**GW**T**AG**L**SS**FA**AI**PF**

900 910 920 930 940 950 960 970
SARS-CoV-2 AM**Q**MA**Y**RE**NG**IG**VT**Q**N**V**LY**EN**Q**K**L**IAN**Q**FN**S**AI**CK**IQ**DS**LS...**S**TAS**AL**CK**Q**OD**V**V**N**Q**NA**Q**AL**NT**IV**K**OL**S**SN**FG**AI**SS**VL**
SARS-CoV AM**Q**MA**Y**RE**NG**IG**VT**Q**N**V**LY**EN**Q**K**L**IAN**Q**FN**S**AI**CK**IQ**ES**LT...**T**T**S**T**AL**GR**Q**OD**V**V**N**Q**NA**Q**AL**NT**IV**K**OL**S**SN**FG**AI**SS**VL**
HCoV-OC43 YL**N**V**Q**Y**R**IN**GL**GV**TM**D**V**LS**Q**N**Q**K**L**IAN**AF**N**N**AL**Y**AI**Q**EG**FD**...**A**T**NS**AL**V**K**Q**AV**V**N**ANA**E**AL**N**N**L**Q**Q**L**SN**RR**FG**AI**SS**SL**
HCoV-HKU1 SL**LV**Q**Y**R**IN**GL**GV**TM**D**V**LN**KN**Q**K**L**IAN**AF**N**N**AL**Y**AI**Q**EG**FT**...**A**T**NS**AL**AK**Q**S**V**V**N**ANA**Q**AL**NS**L**Q**Q**L**FN**KK**FG**AI**SS**SL
HCoV-229E SL**AI**Q**AR**LD**NY**VA**L**Q**TD**V**L**Q**EN**Q**K**IL**AA**S**FN**K**AM**T**NI**V**DA**FT**GV**ND**AI**T**Q**TS**QA**L**Q**TV**AT**AL**N**K**Q**OD**V**V**N**Q**Q**GS**LN**HT**TS**Q**LR**Q**N**FO**AI**SS**SI**
HCoV-NL63 SL**AL**Q**AR**LD**NY**VA**L**Q**TD**V**L**Q**EN**Q**K**IL**AA**S**FN**K**AM**T**NI**V**DA**FT**GV**ND**AI**T**Q**AE**AI**TH**TV**T**AL**N**K**Q**OD**V**V**N**Q**Q**GS**AL**N**HT**TS**Q**LR**Q**N**FO**AI**SS**SI**
MERS-CoV AQ**SI**F**Y**RE**NG**VG**IT**Q**CV**LS**EN**Q**K**L**IAN**K**FN**Q**AL**GA**MQ**T**GT**FT...**T**T**N**SA**FR**K**V**Q**DA**V**NN**QA**ALS**LA**SE**L**NT**FG**AI**SS**SI**

980 990 1000 1010 1020 1030 1040 1050 1060 1070
SARS-CoV-2 ND**IL**SR**LD**K**VE**AE**V**Q**LD**RL**IT**GR**L**Q**SL**Q**TY**VT**Q**OL**RA**AE**IR**ASAN**LA**AT**K**MS**EC**V**L**Q**S**K**R**V**Q**FC**GR**GV**HL**MS**FP**Q**S**APH**GV**VF**L**HT**Y**VP**E**
SARS-CoV ND**IL**SR**LD**K**VE**AE**V**Q**LD**RL**IT**GR**L**Q**SL**Q**TY**VT**Q**OL**RA**AE**IR**ASAN**LA**AT**K**MS**EC**V**L**Q**S**K**R**V**Q**FC**GR**GV**HL**MS**FP**Q**S**APH**GV**VF**L**HT**Y**VP**E**
HCoV-OC43 Q**E**IL**SR**LD**DA**LE**AE**AQ**LD**RL**ING**RL**TAL**NAY**S**Q**QL**SD**IT**L**K**AG**SA**Q**AME**K**V**NE**CV**K**S**Q**S**SR**IF**CG**NG**NH**IS**LV**Q**NAP**Y**GL**Y**FI**EF**SY**VP**E
HCoV-HKU1 Q**E**IL**SR**LD**DA**LE**AE**AQ**LD**RL**ING**RL**TAL**NAY**S**Q**QL**SD**IT**L**K**AG**SA**Q**AME**K**V**NE**CV**K**S**Q**S**SR**IF**CG**NG**NH**IS**LV**Q**NAP**Y**GL**Y**FI**EF**SY**VP**E
HCoV-229E QA**I**Y**DR**LD**IT**Q**AD**Q**Q**VD**RL**IT**GR**LA**AD**NV**FS**HT**L**K**Y**TE**VR**AS**QL**AQ**Q**K**V**NE**CV**K**S**Q**S**K**R**Y**FC**GN**TH**IS**IV**NA**AP**E**GL**VF**L**HT**Y**VP**E**
HCoV-NL63 QA**I**Y**DR**LD**IS**Q**AD**Q**Q**VD**RL**IT**GR**LA**AD**NV**FS**Q**V**L**K**Y**TF**VR**GS**R**RL**AQ**Q**K**V**NE**CV**K**S**Q**S**N**R**Y**FC**GN**TH**IS**IV**NS**AP**D**GL**VF**L**HT**Y**VP**E**
MERS-CoV GD**IT**Q**RI**LD**V**LE**Q**DA**Q**LD**RL**ING**RL**TT**NA**F**VA**Q**Q**VR**SE**SA**LS**AQ**L**AK**D**K**V**NE**CV**K**A**Q**S**K**R**SG**FC**Q**Q**GT**HI**YS**FP**V**N**AP**N**GL**Y**FM**H**VG**Y**YS

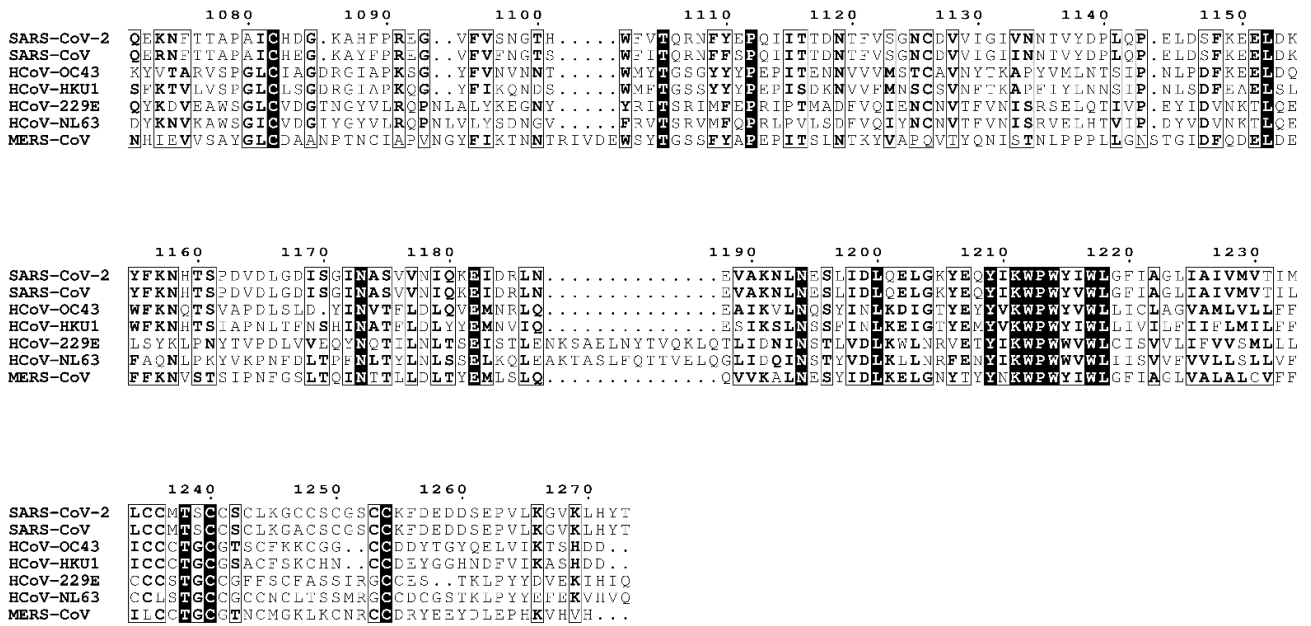


Figure S5. Alignment of S protein of human coronaviruses.

The sequence rcognized by 9E1 and corresponding sequences of other human coronaviruses S protein are marked in red color.

The sequence alignment was made by ESPrift 3.0. Swiss-Prot entry numbers for the sequences are P0DTC2 (SARS-CoV-2), P59594 (SARS-CoV), P36334 (HCoV-OC43), Q0ZME7 (HCoV-HKU1), P15423 (HCoV-229E), Q6Q1S2 (HCoV-NL63) and W6A028 (MERS-CoV) .